

THE DIGITAL TRANSFORMATION - EFFECTS IN THE FIELD OF LABOUR AND EDUCATION

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Abstract

Information and communication technologies (ICTs) have a broad impact on countries' economies. ICTs are the means that ensure the digital transformation of business and the economy. Digitalisation has a direct impact on the labour market. It creates new requirements for the training of personnel, expressed in the prioritization of competencies in the field of information and communication technologies. An even bigger change, as a result of the introduction of digital technologies in business, is the emergence of new and the disappearance of some existing professions. This, in turn, digitalisation poses a number of challenges to education related to creating and enhancing the knowledge and skills of learners at all levels. The education system has a key role in building basic digital skills that serve as a fundament for adapting the workforce to new labour market conditions.

The new reality on the labour market, requires transformation and modernization of the labour resources competence profile. This should become a permanent process of acquiring, updating, improving and upgrading knowledge and skills, integrating the specifics of digital technologies. Understanding and realizing these needs, as well as the need for adequate action in this direction, are key to the successful adaptation of human resources to a dynamically changing labour market environment.

In the process of clarifying the direct relationship between the education and training of specialists in economics, administration and management, their digital competencies and the labour market, the authors of this study focused on issues related to professional competence, types of competencies and skills that are formed in the process of education in higher education. In addition, they investigated the concept of adaptability of the educational process to new economic challenges. The authors also studied the formation of the professional competence of future economists in the adaptive-digital environment of higher education.

In order to meet the needs imposed by the process of digital transformation, the education system must implement technological advances, digital solutions, and innovations within a certain period. In this sense, the construction of digital and related skills and competencies of the population, respectively the workforce, should be among the main goals of formal education, incl. higher education, and to become an integral part of the curricula. In particular, the higher education system is directly responsible for creating conditions and models for the transfer of new knowledge, technologies and competencies required by the labour market. In higher schools, the fundamental skills of each specialist are formed, incl. cognitive abilities, contributing to the rapid acquisition of new knowledge; functional skills that contribute to the performance of specific activities specific to individual professions, and basic knowledge - a set of principles and facts that are handled in career development in the respective professional field.

Establishing a viable and adaptable to the constantly-changing requirements of the labour market system of higher education requires a change in the conceptual model of the system itself. The adaptive educational environment of higher educational institutions (HEIs) is defined as an innovative integrative system, including

educational activities based on ICT; innovative teaching methods; learning technologies; technical means that facilitate the learning process; adequate information and resource provision. In addition, all this should be in accordance with the potential and needs of students. It is necessary to focus not only on the technical means of teaching in the digital environment but also on the technology of teaching, teacher training, preparation of curricula and disciplines, development of new digital learning content and more.

In the conditions of adaptive digital environment, HEIs are forced to adapt to the education and training of specialists in a timely manner, despite the fast pace of penetration of digital technologies in the labour market compared to educational institutions. For this reason, the efforts of university professionals to prepare teaching materials that are adequate and reflective of the changes in the real economy are an extremely important factor in the training of specialists in economics, administration, and management. The determining factor for the effectiveness of the formation of professional competence of economists, in this case, is the achieved level of digitalisation and the use of innovative tools, teaching aids, teaching methods and more.

It is obvious that the digital transformation leads to fundamental and complex changes in the way business processes are carried out. These changes are an important factor for the development of the economy and are related to the emergence of new services and sectors, the creation of new jobs, but also qualitative changes in the necessary characteristics of the workforce. The ability to work with e-mail, social networks and other mobile platforms is no longer a competitive advantage for a potential worker. In addition, skills need to be constantly upgraded and improved due to the rapid pace of digital technology development.

Keywords: digital transformation, labour, education, higher education

1. INTRODUCTION

Information and communication technologies (ICTs) have a broad impact on countries' economies. They are the means by which the digital transformation of business and the economy takes place. Through ICTs, the economy becomes an increasingly dynamic system that needs flexible and timely solutions. They, in turn, are a function of the knowledge and access to information provided by digital technologies and reliable digital infrastructure.

In the fundament of building a digital economy are industries that develop software applications and systems and manufacture a variety of connectivity devices. Digital platforms allow economic agents who are not directly involved in the IT field to participate in this process. The digital economy, therefore, consists of relationships based on the implementation of digital technologies. The very process of implementation and application of these technologies in economic activity places new requirements on the organisation and management of production and provides it with the necessary resources.

Digitalisation has a direct impact on the labour market. It creates new requirements for the training of personnel, expressed in the prioritization of competencies in the field of information and communication technologies. An even bigger change, as a result of the introduction of digital technologies in business, is the emergence of new and the disappearance of some existing professions. This, in turn, poses some challenges to education related to creating and enhancing the knowledge and skills of learners at all levels. The education system has a key role in building at least basic digital skills to serve as a basis for adapting the workforce to new requirements of the labour market.

2. MAIN BODY

The importance of an economy, established on knowledge and information as the main strategic resource of production, has been emphasized since the end of the XX century. Nowadays, the circulation speed of creating, changing and disseminating information and knowledge is another especially important aspect for the development of the economy. ICTs play a key role in this process, as they provide much easier, faster and cheaper access to information and knowledge. Therefore, ICTs are defined as a catalyst for change and a source of cultural, economic, political and educational transformations.

The digital economy is invariably related to innovation and new technologies, in particular digital technologies, which increase the interconnection of the economic system elements. New technologies penetrated all spheres of public life, changing the way people live, make decisions, communicate, study,

work, etc. They bring unseen challenges to society, business and people's daily lives (Zahariev, A. et al., 2022). The use of digital technologies is changing traditional business practices and models and the service provision in all economic sectors, incl. the public sector.

Digital technologies support the creation, storage, monitoring and dissemination of information and knowledge, which increases the efficiency of activities in the enterprise, increases productivity and creates value through new methods and models. All this is related to increasing competitiveness and development opportunities of enterprises and the economy. Digitalisation stands out as the third most important factor for the economy's competitiveness (Boikova, T., Zeverte-Rivza, S., Rivza, P., & Rivza, B., 2021). For this reason, investments in information technologies have risen recently. Mostly this happens in the service sector, which is also the fastest developing in the world - financial services, insurance services, trade etc. In this manner, new technologies are becoming an important factor in economic growth. In addition, new technologies are a key tool for integrating economies into the global economy, as they facilitate communication and "cross-border interaction with suppliers, customers and competitors" (Singh, A. & Hess, T., 2017).

The digital economy establishes conditions for economic growth given the rapid development and consolidation of companies in the sectors of information and telecommunications technologies, which are the basis for building a digital economy. As a result, professions and their characteristics are changing, and employment in the IT industry is increasing. The demand for IT specialists is increasing, which increases payment for these jobs. Therefore, ICTs shape the characteristics of the labour market and determine relations between participants.

New information technologies and electronic communication also shape up consumer behaviour and change conducting production and trade relations. Shopping online and communication through social media or receiving information increases in cyberspace. Homes easily become "smart" through the use of various smartphone applications or gadgets based on artificial intelligence. The tendency foresees educational, health and public services to be offered more and more in electronic format. Thus, the use of new digital technologies is gradually becoming a new principle of the economy and is about to radically change traditional business rules. If companies are unable to adapt to these changes, they become less competitive and are likely to lose market position (Verhoefa, P. C., Broekhuizen Th., Bart, Y. Bhattacharya, A., Qi Dong, J., Fabian, N. & Haenlein, M., 2021). The same is valid for small businesses. If they fail to acquire the competencies necessary to work with new technologies, they become less rational in their behaviour as consumers and lose their competitiveness in the labour market.

Therefore, modern technologies such as big data, cloud systems, robotics, artificial intelligence, 3D technology, the Internet of things, blockchain etc. are a prerequisite for digital transformation in the economy. At the same time, they are a means to an end. In the process of digital transformation, are observed changes of an evolutionary and gradual nature, but there may also be ones that are revolutionary by nature (United Nations, Economic and Social Council, 2015, p. 9). The revolutionary change in development and implementation of ICTs brings an entirely new business model. The new business model logically leads to a change in the company's development strategy, corporate culture and organisational structure.

Digitalisation is the fundament of digital transformation. Fragmentation of information into small parts (bits), through which it acquires a digital form (Brennen, J. S. & Kreiss, D., 2016), allows for easy storage, processing and distribution through various systems. Digital information has another advantage - it can be compressed (Negroponte, N., 1995), which makes it possible to store a huge amount of data (Orehov, M., 2020). But digital content requires the use of appropriate digital technologies. Therefore, the dissemination and use of digital information are linked to the digitalisation of the economy and business. In other words, it is necessary to implement digital technologies in business activities such as management, communication, customer and supplier relations, distribution, logistics, finance, etc., to reap the corresponding benefits for business. As a direct effect, this optimizes existing business processes, reduces costs, generates revenue and improves the user experience (Pagani & Pardo, 2017). The main tool in this regard, is the use of digital platforms and web-based applications, which perform two functions - on the one hand, intermediaries, and on the other - they create the infrastructure.

In the modern economic environment, digital platforms and social networks facilitate sharing and organising resources, create information infrastructure and provide communication and coordinated actions between participants in the business system (partners, suppliers and customers). Digital platforms make it possible for non-company software developers to design different applications. Through social networks, users share information, generate content and participate in companies' innovative projects through recommendations and comments about the products and services they offer. Thus, applications become a joint development

and bear the hallmarks of a personalized product or service. In this way, all participants in the business system benefit, which is the trend in the new economy - mutual benefits and relationships based on cooperation.

As a result of technology, the intellectual component of labour increases at the expense of the routine, based on repetitive operations in a predictable environment. Routine activities are mostly taken over by machines, and as a result, human labour is concentrated on creative and social-communicative processes. It is based on non-standard thinking, decision making, people management, and emotional communication. At the same time, many of these purely human (so far) activities are complemented by the capabilities of modern technology and thus form a synergistic effect in terms of labour intensification and productivity. The introduction of digital technologies modifies the very nature of labour and labour relations, establishes a new organisation of labour and brings new requirements to the labour market.

Changes in the characteristics of labour bring changes in labour relations. In the conditions of digital transformation, they become more complex and rise to a higher level. Modification of labour relations is observed in the following aspects (Golovenchik, G. G., 2018):

- The model of vertical business relationships in companies, carried out on the principle of "order-execution" is replaced by horizontally developed relationships, meaning managers are no longer just managers, but people who effectively organise, coordinate and directly participate in the production process;
- Communication between employers and employees, as well as between employees themselves, in a virtual environment, becomes less and less related to time and space. This forms a special kind of partnership based on cooperation and trust;
- Gradually weakens the dependence of employees (especially if they are qualified) on their managers. Increased autonomy enables employees to determine and be responsible for the volume of their work commitments, deadlines, place of work, work schedule, payment, and work-leisure balance;
- The existing philosophy of "one job for life" in the traditional economy and lifelong employment with one employer is being replaced by the desire and opportunities for independent choice of direction and pace of professional development. Employees are free to form and manage a portfolio of professions and work commitments in search of better conditions and achieving professional and personal satisfaction.

The development of the digital economy leads to the reorganisation of the labour process itself. It contributes to the development and widespread use of modern forms and ways of organising work. Modern technologies transform production processes in a way they increase the flexibility of workplaces and make it possible to work from home or another place convenient for the employee; work while travelling; work combining professional and personal commitments (raising a child, caring for a close relative), etc. Nowadays, the most popular is the remote form of work. Unlike the industrial revolution, which caused a mass migration of labour resources, the digital economy creates jobs without the need for a physical change of settlement or crossing national borders. Innovative online platforms overcome the geographical factor and harmonise the interests of employers and employees.

These Internet platforms, where labour demand and supply "meet" are another aspect of organizational change in the field of labour. Through these platforms, employers have access to the workforce they need, and specialists find and perform work according to their qualifications from anywhere in the world and without the limitations of astronomical time. In this regard, flexible work schedules, individual work schedules and part-time work are increasingly applied. They aim to optimise the relationship between work and personal life and improve the physical, emotional and mental state of man without negatively affecting productivity. Moreover, as technology increases productivity, incl. by saving time (for getting to the workplace, contacts with contractors and communication with employees and customers) creates conditions for reducing working hours resp., days and working week. This will further increase the free time of economic subjects and will establish preconditions for increasing human capital and hence the overall benefits.

Another manifestation of new technologies' transformative impact on the organization of labour is replacing permanent employees with long-term contracts, with temporary employees for the implementation of specific tasks or projects (The World Bank, 2019). In the conditions of digitalisation, companies segment their production activity through the online platforms to provide realisation of separate tasks or processes to external contractors, with whom they conclude temporary contracts. This, on the one hand, reduces costs and streamlines activity, and on the other - creates conditions for using the services of the best professionals in the industry (worldwide) without having to pay a high price all year round.

The changes considered disturb the relative balance of the labour market and significantly change its characteristics. According to a World Bank report, the impact of digital technologies on the labour market has at least three aspects (The World Bank, 2019): increasing the productivity and efficiency of the employed in a given position; replacement of human labour with machines and reducing of labour demand, resp. of employment; increase in the number of jobs offered due to the emergence of new productions (and/or functions) and the increased demand for new goods and services.

In conditions of dynamic economic development and intensified competition, it is quite natural for companies to strive to implement modern technologies and innovative production methods. They allow more rational use of available human resources and more efficient organisation of workplaces, increase productivity and quality of work, expanding the product portfolio of the company. In this sense, digitalisation is not only not a threat to jobs but also contributes to increasing production efficiency and in general - increasing the comparative advantages of the business structure.

In other cases, however, the introduction of technology leads to job cuts and rising unemployment. Guided by the principle of rationality, employers prefer to replace workers with machines. This is observed mainly in areas where routine low-skilled work predominates and there are greater opportunities for automation. Cheaper technology and increased consumer demand transfer these processes to higher skilled labour in standardised professions. All these factors at first glance have a negative impact on employment and increase the sense of conflict between labour and technology.

In fact, increased productivity as a result of technological innovation has led to lower commodity prices, and rising income and demand, which ultimately stimulates job creation and increased employment. Thus, the initial negative effect of new technologies on some areas of labour is neutralised and the number of jobs is generally increased. Their growth is observed mainly in high-tech industries and creative and analytical activities (New Markets and New Jobs in the Digital Economy, 2016).

Of course, not all employees, industries and economies fully and equally benefit from the positive effects of technology. Job cuts in some industries are offset by the creation of new ones in others. For some people, the risk of losing their job for a longer period of time is higher and it is determined by many factors, incl. subjective such as age, gender, education, learning ability, adaptability, etc. In some countries, the achieved level of economic development, the structure of the population, the nature of the activity of the companies, etc. limit the possibilities for the application of modern technologies. Nevertheless, their impact on the state and dynamics of jobs becomes more tangible and determines the evolution of the future labour market.

It is important to emphasize that despite all its advantages and disadvantages, technology cannot completely replace living labour. Many areas require skills that technology does not have at this stage, especially for activities such as critical thinking, leading and motivating people, negotiating, solving complex problems, etc. Therefore, at this stage, the role of technology is not as much to cut jobs as to improve them and stimulate staff development according to new requirements.

All this determines the following trends in the labour market (Chto takoe tsifrovaya ekonomika, 2019):

- Reducing demand for professions related to the implementation of recurring operations;
- Reducing the life cycle of professions;
- Emergence of new functions and professions;
- Increasing the demand for specialists with the ability and desire to use new technologies and through these new technologies to create new, competitive products;
- Increasing the requirements for flexibility and adaptability of staff;
- Increasing the demand for soft skilled staff.

The new reality in the labour market requires transformation and modernisation of the competence profile of the labour resources. This should become a permanent process of acquiring, updating, improving and upgrading knowledge and skills, integrating the specifics of digital technologies. Understanding and awareness of these requirements, as well as the need for adequate action in this direction, are key to the adaptation of human resources to a dynamically changing environment. Development of the education and training system and the formation of attitudes toward lifelong learning play a key role in this process.

To meet the needs imposed by the process of digital transformation, the education system should implement technological advances, digital solutions and innovations within a certain period. In particular, the higher education system is directly responsible for establishing conditions and models for new knowledge,

technologies and competencies transfer required by the labour market. According to Miloš Krstić et al., higher education is a key factor for sustainable economic development, as it plays a crucial role in determining a country's competitiveness, whether at the local, regional or national level (Lane, J., 2012). Sanjaya Lall (Lall, S., 2001) points out, that "workforce skills at all levels" (Johnson, S., 2015) are a key factor in competitiveness, especially in a dynamic and digitalising economic environment. This means that continuous efforts must be taken to form and develop adequate human capital with a focus on the skills required in the workplace (Khan, M.; Kiani, F.A.; Ashraf, A.; Iftikhar-ul-Husnain, M, 2009), resp. meeting the requirements of the labour market. In this sense, the construction of digital and related skills and competencies of the population, resp. the workforce should be among the main goals of formal (incl. higher) education and become an integral part of the curricula.

Additional incentives in this regard were created by the new economic and social reality observed in the last two years, caused by COVID 19, which in practice proved the great importance of digital transformation and the need for up-to-date digital skills. They have become a challenge for states and international organizations. National governments, through public policies, are responsible for ensuring a stable and accessible digital infrastructure for all users, and this is a fundamental precondition for the digital economy's proper functioning. In other words, the main task of the government is to establish an institutional and legal environment that encourages innovation and the integration of digital technologies. In such a situation, it relies on the education system as the main government tool that can prepare society for such a transformation and the effects of its implementation. (Czubala Ostapiuk, M. R., & Benedicto Solsona, M. Àngel, 2021). In this context, it is necessary to emphasize that the impetus for faster digitalisation of the educational process in higher education, due to COVID 19, is not temporary and this process will not slow down after the end of the pandemic. Over the past two years, the higher education system has had the opportunity to explore the opportunities that digital learning offers, leading to the increasing implementation of so-called hybrid learning - a combination of face-to-face and distance learning. In this regard, through the National Recovery and Resilience Plan of the Republic of Bulgaria, with the additional support of the Program "Education" 2021-2027, it is planned to expand the combined method of teaching (face to face and distance) by developing innovative curricula and introduction of new teaching methods (project and problem-based, research training, etc.) that allow high efficiency of the educational process.

Higher schools form the fundamental skills of each specialist incl.: cognitive abilities, which contribute to the rapid acquisition of new knowledge; functional skills that contribute to the performance of particular activities specific to individual professions and basic knowledge - a set of principles and facts handled in career development in the respective professional field. In the scientific literature, the adaptability of the educational process is mainly associated with the use of ICTs to provide flexibility, focus on personal interests and individual characteristics of the learner, and to a much lesser extent the question of the digital readiness of staff for the labour market.

The development and implementation of new ways of doing business through digital solutions and digital tools largely determine the evolution of professions and the labour market, and hence the sought-after new digital skills and competencies of young professionals. Preparing these new professionals for the labour market, and their digital preparedness for its requirements largely depend on higher education and the ability of the system to meet the current needs of both employers and students. Moreover, the digitalisation of higher education is a process that affects not only the education and training of HEI's staff but also offers various optimisation management strategies to improve the quality of education (Lazić Z, Đorđević A, Gazizulina A., 2021). The systematic and purposeful approach of higher education institutions to this problem can multiply its beneficial effects not only in terms of improving the training of future professionals but also in improving the quality of education and the authority of the institution itself.

Establishing a vital and adaptable to the ever-changing demands of the labour market higher education system requires a change in its conceptual model. The adaptive educational environment of HEIs is defined as an innovative integrative system, including educational activities based on ICTs; innovative teaching methods; learning technologies; technical means that facilitate the learning process; adequate information and resource provision. And all this must be consistent with the potential and needs of students (Bakhmat & Sidoruk, 2019).

In this regard, it is necessary to focus not only on the technical means of teaching in a digital environment but also on the technology of teaching, academic staff training, preparing curriculum and disciplines, new digital learning content creation etc. The main purpose of technical teaching means in a digital environment is to provide the process of teaching and acquiring new knowledge, skills and competencies, but a key role in this process is assigned to teachers and their ability to transfer this knowledge to learners. The

digitalisation of education inevitably requires the development of new adequate to the economic conjuncture curricula, as well as the development and implementation of digital learning content that meets the needs and expectations of students and employers. The creation of qualitatively new digital teaching materials presupposes a high level of digital competence of university lecturers. For this reason, teacher training and the continuous process of improving their digital skills and competencies are the factors that have a major impact not only on digitalisation in higher education but also on the students' digital readiness for the labour market. Learning in a digital environment, including the application of innovative teaching methods and techniques and the involvement of learners in the process, creates natural preconditions for increasing their digital skills and competencies and thus ensuring their digital readiness for the labour market. This statement is especially valid for students majoring in Economics and Administration and Management. The strong relationship between professions in these areas and digitalisation requires students to acquire fundamental digital skills and competencies that will form their digital readiness for professional realisation in the course of study. Most commonly, this happens through applying learning methods such as "learning by doing" or case studies, which allow students to gain not only the knowledge they need but also the key competencies and skills to cope in a real working environment.

In an adaptive digital environment, higher education institutions are forced to adapt in a timely manner to the education and training of specialists, despite the exceeding pace of digital technologies entering the labour market compared to educational institutions (Claro et al., 2012; Ross & Sennyey, 2008). For this reason, the efforts of university professors to prepare adequate, reflective of changes in the real economy teaching materials are an extremely important factor in the teaching specialists in economics, administration and management. The determining factor for the effectiveness of the professional competence formation of economists, in this case, is the achieved stage of digitalisation and the use of innovative tools, teaching means, teaching methods etc. (Illge & Schwarze, 2009; Charness & Kuhn, 2011). Traditionally, the application of technology as an innovative method of learning and teaching in HEIs is significantly higher than in other educational phases, as a result of the close relationship between universities and business and the efforts of higher education to build and operate the "business-education" ecosystem.

The National Recovery and Resilience Plan of the Republic of Bulgaria puts a special emphasis on digital readiness and the acquisition of specific digital competencies for realisation in the labour market. It foresees developing and delivering unified digital skills profiles in key professions during the period 2021-2023. The development of these profiles will take into account the specific characteristics and activities related to practising different professions. It goes through the following stages: identifying the deficits of specific digital skills in pilot professions, ensuring the relationship between the necessary knowledge and skills and the requirements of the future labour market to achieve a competitive and developing economy based on technological development and sustainable jobs. The unified digital skills profiles in key professions will allow HEIs to adapt their curriculum to the labour market requirements and ensure that graduates own the necessary digital skills and knowledge for their future careers.

3. CONCLUSION

Digital transformation requires a flexible approach, private and public investment in innovation and technology, new skills and change in institutions and policies to meet the conditions needed by the modern economy. As technological change is significantly outpacing the process of adopting social, political and economic conditions and institutions to new realities, the efforts in this direction must be a priority. There is a serious lag in time between the digital technologies development and their application in business, on the one hand, and staff training for working with new technologies, on the other. Due to these circumstances, it is necessary to highlight some preconditions for digital economy development, namely:

- Introducing new, horizontally oriented and data-based business models;
- Creating competitive advantages for companies in conditions of increased global competition through the extensive use of the Internet and ICTs in production and trade;
- Using web-based user-friendly applications to please customers, aiming not only to make sales or orders;
- Ensuring secure digital connectivity for management, business operations and communication;
- Formation of digital knowledge, skills and competencies in staff and users, as well as readiness for lifelong learning, as in just 10 years 90% of jobs will require digital skills (Robbert van Eerd & Jean Guo, 2020).

Digital transformation leads to fundamental and complex changes in carrying out business processes. These changes, in turn, are a major factor in economic development. They are related to the emergence of new services, economic sectors and new job creation, but also to the qualitative changes in the workforce

characteristics. The ability to operate with e-mail, social networks and other mobile applications is no longer enough to form competitiveness in those who search for a job. In addition, digital skills should be constantly upgraded and improved due to the expeditious pace of digital technology development.

Forming an adequate attitude toward lifelong learning and the acquisition of basic digital skills and competencies should start in the educational system. This is, first of all, related to the introduction and application of digital technologies in education, and in particular in higher education. In this regard, it is necessary to build digital skills and competencies in the academic staff, i.e. the people who transfer knowledge to the learners. Executing these two conditions will contribute to the higher quality and efficiency of the educational process and to achieving higher flexibility in the course of speciality training. The innovative teaching methods based on digital technologies establish a natural environment for forming and upgrading students' skills and competencies, which are the basis that ensures their labour market readiness in the context of digital transformation.

REFERENCE LIST

- Bakhmat, N., & Sidoruk, L. (2019). Formation of modern ideas about the adaptive educational environment of higher education institutions. *Educational space of Ukraine*, (15), 17-25.
- Bates, R. A., & Phelan, K. C. (2002). Characteristics of a Globally Competitive Workforce. *Advances in Developing Human Resources*, 4(2), 121–132. <https://doi.org/10.1177/1523422302004002003>
- Boikova, T., Zeverte-Rivza, S., Rivza, P., Rivza, B. (2021). The Determinants and Effects of Competitiveness: The Role of Digitalization in the European Economies. *Sustainability*, 13(21). <https://doi.org/10.3390/su132111689>
- Brennen, J. S., Kreiss, D., Digitalization, *The international encyclopedia of communication theory and philosophy*, 2016, p. 1-11. <https://doi.org/10.1002/9781118766804.wbiect111>
- Brynjolfsson, Erik, and McAfee, Andrew P. "La digitalización de prácticamente todo." *Harvard Deusto Business Review*, nº 215 (2015): 18-27.
- Bukht, Rumana, and Heeks, Richard. "Defining, Conceptualising and Measuring the Digital Economy." *GDI Development Informatics Working Papers*, nº 68 (2017): 1-24.
- Chen, J., Liu, Q., & Billger, S. (2013). Where do new Ph. D. economists go? Recent evidence from initial labor market. *Journal of Labor Research*, 34(3), 312-338.
- Chto takoe tsifrovaya ekonomika? Trenday, kompetentsii, izmerenie. *Izdatel'skiy dom Vaysshey shkoly ekonomiki*. Moskva, 2019, s.40.
- Claro, M., Preiss, D. D., San Martín, E., Jara, I., Hinojosa, J. E., Valenzuela, S., ... & Nussbaum, M. (2012). Assessment of 21st century ICT skills in Chile: Test design and results from high school level students. *Computers & Education*, 59(3), 1042-1053. <https://doi.org/10.1016/j.compedu.2012.04.004>
- Czubala Ostapiuk, M. R. ., & Benedicto Solsona, M. Ángel . (2021). NEXT GENERATION EUROPEAN UNION AND THE DIGITAL TRANSFORMATION: AN OPPORTUNITY FOR SPAIN. *Journal of Liberty and International Affairs*, 7, 118-135. <https://doi.org/10.47305/JLIA21371118o>
- Eerd, R. van, Guo, J., Jobs Will Be Very Different in 10 Years. Here's How to Prepare, *The World Economic Forum Annual Meeting*, 2020. (<https://www.weforum.org/agenda/2020/01/future-of-work/>).
- Golovenchik, G. G. Transformatsiya raynka truda v tsifrovoy ekonomike. *Tsifrovaya transformatsiya*, 2018, № 4 (5), s. 27–43.
- Illge, L., & Schwarze, R. (2009). A matter of opinion—How ecological and neoclassical environmental economists and think about sustainability and economics. *Ecological Economics*, 68(3), 594-604. <https://doi.org/10.1016/j.ecolecon.2008.08.010>
- Johnson, S. Education and international competitiveness. *J. Initial Teach. Inq.* 2015, 1, 22–24. <http://dx.doi.org/10.26021/833>

- Keser, H.Y. Effects of Higher Education on Global Competitiveness: Reviews in Relation with European Countries and the Middle East Countries. *Ann. „Constantin Brâncu,si” Univ. Târgu Jiu Econ. Ser.* 2015, 1, 58–68.
- Khan, M.; Kiani, F.A.; Ashraf, A.; Iftikhar-ul-Husnain, M., Skills, Competitiveness and Productivity. *Pak. Dev. Rev.* 2009, 48, 473–486. (<http://thepdr.pk/pdr/index.php/pdr/article/view/2343/2343>)
- Krstić M, Filipe JA, Chavaglia J. Higher Education as a Determinant of the Competitiveness and Sustainable Development of an Economy. *Sustainability.* 2020; 12(16):6607. <https://doi.org/10.3390/su12166607>
- Lall, S. *Competitiveness, Technology and Skills*; Edward Elgar Publishing: Northampton, MA, USA, 2001.
- Lane, J., *Colleges and Universities as Economic Drivers: Measuring Higher Education’s Contribution to Economic Development, Higher Education and Economic Competitiveness.* 2012. Available online: https://www.researchgate.net/publication/255576096_Characteristics_of_a_Globally_Competitive_Workforce
- Lazić Z, Đorđević A, Gazizulina A. Improvement of Quality of Higher Education Institutions as a Basis for Improvement of Quality of Life. *Sustainability.* 2021; 13(8):4149. <https://doi.org/10.3390/su13084149>
- Martyniv, L., Sokolova, A., Kurinna, S., Kopeliuk, O., Sediuk, I., & Khomova, O. (2021). The modern problems and prospects of music formation and art education development during COVID-19. *International Journal of Health Sciences*, 5(3), 670-680. <https://doi.org/10.53730/ijhs.v5n3.2936>
- Muralidharan, K.; Shanmugan, K.; Klochkov, Y. The New Education Policy 2020, Digitalization and Quality of Life in India: Some Reflections. *Educ. Sci.* 2022, 12, 75. <https://doi.org/10.3390/educsci12020075>
- National Recovery and Resilience Plan of the Republic of Bulgaria, 2022, <https://www.nextgeneration.bg/14>
- Negroponte, N., Hodder and Stoughton, *Being Digital*, London, 1995
- New Markets and New Jobs in the Digital Economy. 2016 Ministerial Meeting on the Digital Economy. OECD, 2016, c. 3, <https://www.oecd.org/digital/ministerial/meeting/New-Markets-and-New-Jobs-discussion-paper.pdf>
- Oyer, P. (2006). Initial labor market conditions and long-term outcomes for economists. *Journal of Economic Perspectives*, 20(3), 143-160.
- Pagani, M., Pardo, C., The impact of digital technology on relationships in a business network, *Industrial Marketing Management*, 67 (2017), pp. 185-192. <http://dx.doi.org/10.1016/j.indmarman.2017.08.009>
- Portuguez Castro M, Ross Scheede C, Gómez Zermeño MG. The Impact of Higher Education on Entrepreneurship and the Innovation Ecosystem: A Case Study in Mexico. *Sustainability.* 2019; 11(20):5597. <https://doi.org/10.3390/su11205597>
- Singh, A. Hess, T., How chief digital officers promote the digital transformation of their companies, *MIS Quarterly Executive*, 16 (1), 2017, pp. 1-17.
- Skills and jobs in the digital economy. OECD, 2016, <https://www.oecd.org/digital/broadband/lac-digital-toolkit/Home/toolkit-text-chapter9.htm>
- Sydoruk, L., Bakhmat, N., Poberezhets, H., Misenyova, V., & Boyarova, O. (2022). Formation of future economist professional competence in adaptive-digital environment conditions of higher educational institution. *International Journal of Health Sciences*, 6(1), 103-114. <https://doi.org/10.53730/ijhs.v6n1.3390>
- Tanase, D.; Franț, F.; Manciu, V.; Tanase, A. Analysis of Labour Market in Romania and the European Union. *Ann. Univ. Oradea, Econ. Sci.* 2013, 22, 205–214.
- The Changing Nature of Work. 30 signals to consider for a sustainable future, 2021, <https://acceleratorlabs.undp.org/content/acceleratorlabs/en/home/library/changing-nature-of-work-emerging-signals-sustainable-future.html>
- The Changing Nature Of Work. *World Development Report 2019.* The World Bank, 2019, c. 23, 26 <https://www.worldbank.org/en/publication/wdr2019>
- The Future of Jobs Report 2020. *World Economic Forum*, 2020, <https://www.weforum.org/reports/the-future-of-jobs-report-2020/>

- The Global Human Capital Report. Preparing people for the future of work. World Economic Forum, 2017, https://www3.weforum.org/docs/WEF_Global_Human_Capital_Report_2017.pdf
- United Nations, Economic and Social Council, Digital development, Commission on Science and Technology for Development, Geneva, 2015.
- Verhoefa, P. C., Broekhuizen Th., Bart, Y. Bhattacharya, A., Qi Dong, J., Fabian, N., Haenlein, M., Digital transformation: A multidisciplinary reflection and research agenda, Journal of Business Research, Vol. 122, January 2021, pp. 889-901. <https://doi.org/10.1016/j.jbusres.2019.09.022>
- Zahariev, A., Angelov, A., Angelov, P., Mihaylova, M., Slavov, S., Mladenov, S., DESIGNING AN INTERNATIONAL BACHELOR DEGREE SYLLABUS - CORPORATE SOCIAL RESPONSIBILITY IN INDUSTRY 4.0, Abstracts & Proceedings of INTCESS 2022- 9th International Conference on Education and Education of Social Sciences, 17-18 January, 2022, ISBN: 978-605-06286-4-7, <https://doi.org/10.51508/intcess.202279>
- Орехов, М., "Същност на процеса на дигитализация като нов етап в глобалната информатизация," Business Management, D. A. Tsenov Academy of Economics, Svishtov, Bulgaria, issue 1, 2020, pp. 75-95). <https://ideas.repec.org/a/dat/bmngmt/y2020i1p75-95.html>