

TIES 2020

International conference «Trends and innovations in economic studies»

TRANSFORMATION OF HIGHER EDUCATION IN DIGITAL ECONOMY

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Abstract

The work is devoted to the issues of transformation of the higher education system in the digital economy. Challenges facing Russian universities are discussed: technology, the rhythm of life, business activity have accelerated so much that the set of competencies acquired at a university “burns out” within three to four years, and you need to be prepared for the fact that the individual often has to radically change his profession or range of duties. The data from specialized statistical collections are presented, which show the situation with the provision of qualified personnel in the Russian Federation in the digital economy. The internal environment of the university has a number of questions that include: how do they see the process of digital changes employees of educational organizations, what role do digital technologies play in the transformation of traditional teaching practices. It is assumed that the digital university model should consist of four blocks: a university management information system, online support of the educational process, key competencies of the digital economy and educational process management on the basis of an individual educational path. In the face of uncertainty, the only thing that will help to quickly reorient and train specialists for the tasks of a particular moment is high-quality secondary and higher education, which will train not narrowly-focused specialists who are in demand right now, but will form a universal basis, based on which people will be able to quickly re-train in accordance with the future requirements that are yet unknown.

2357-1330 © 2020 Published by European Publisher.

Keywords: Higher education, digital economy, university, university reform, university management, challenges for university.



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1. Introduction

With the onset of the fourth economic revolution, all sectors of the economy are undergoing a digital transformation. Education, as a public good, is no exception, despite its inertness and even ossification. Information technologies give a new quality to public and private life, both opening up new opportunities and at the same time creating new challenges. Technology, the rhythm of life, business activity have accelerated so much that the set of competencies acquired at the university “burns out” within three to four years, and you need to be prepared for the fact that the individual often has to radically change his profession or range of responsibilities.

This process accelerates the development of the digital economy: robotics, the Internet of things (IoT), automated processing of large data arrays (Big Data), the use of distributed registries (block chain). The Internet of Things, according to a study by The Future of Jobs, the number of jobs in the field of repair and maintenance services is reduced and will be reduced by 8 % annually (Skills of the future. What you need to know and be able to in a new complex world, 2020).

For instance, the HeadHunter website recently automated the initial selection of candidates: the system itself filters out the resume, and three people instead of five will be able to cope with the selection. Sberbank in the prospect of switching to block chain plans to reduce staff by 30 %. Such a reduction in 2016 occurred in the five largest world banks, which switched to electronic currency in their mutual settlements. Now the number of such banks has increased to 60. But the role and influence of the block chain is not limited to bitcoins. This technology is radically changing the work of notaries, expert services in real estate valuation, artifacts. It also affects socio-political processes—from official work to election technology (Antonova, Ospennikova, & Spirin, 2018).

2. Problem Statement

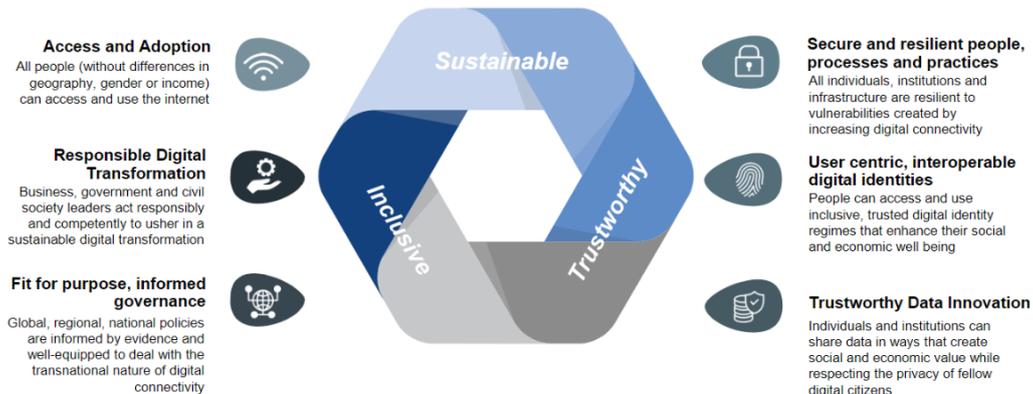
In a broad interpretation, the "digital transformation" of the life of society as a concept is considered in three contexts:

- the use of digital technology to automate various processes of companies, enterprises, institutions; in addition, each technology update determines the beginning of a new stage in the digital transformation of this activity;

- the use of a complex of high-level digital technologies that arose at a certain stage in the development of society and determining the possibility of the emergence of digital companies, which are based on a fundamentally new model of organizing professional activities, which is practically not associated with the use of “non-digital assets”;

- the introduction of a complex of high-level digital technologies in the activities of a company, enterprise or institution in order to build such a model of professional activity that will be based on the effective application of these technologies to solve professional problems; in this case, non-digital assets of the company’s activities should be preserved; in different professional environments, the set of digital technologies that determine the effective model of the company will differ.

Six Shared Global Outcomes to Achieve a Sustainable, Inclusive and Trustworthy Digital World



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Figure 01. Challenges for the digital economy

These ongoing processes are becoming a challenge for higher education (Figure 1). Effective education includes not only the transfer of information from teacher to student; it requires complex social interactions and adaptation to the needs of each student and their cultural and social context (Diamont, 2017).

3. Research Questions

The review of domestic scientific literature on the issues of transformation of the higher education system in the digital economy showed the following. There are two main arrays of literature. The first group includes literature discussing the prospects of the digital economy and the upcoming transformation of the higher education system both at the global level and at the national level. As a rule, the basis for such forecasts are the works of mainly Western scientific schools.

The second group includes “practice-oriented” works, concentrated mainly on the problems and results of the introduction of advanced virtual information environment tools in higher schools.

Separately, the studies of the Higher School of Economics related to the problem under study should be noted. This is a huge array of statistical information on the digital economy and places of education in it, which, of course, help researchers of the stated problems (Tulchinsky, 2017).

4. Purpose of the Study

The new “wave of digitalization” is associated with the adoption of the national project "Education", in which a series of large-scale changes is planned. The question, however, is how the employees of educational organizations themselves see the process of digital changes: do digital technologies play a role in the transformation of traditional pedagogical practices? What opportunities does the introduction of technology offer and what barriers stand in the way of successful digitalization of education? The presented

article reflects only part of the study, carried out as part of a grant from the Academic Council of INRTU, dedicated to the transformation of the university in the digital economy.

5. Research Methods

First of all, statistical data processing methods were used in the work. They were taken from the proceedings compiled by the Higher School of Economics, for example, we are talking about a brief statistical digest “Digital Economy-2019” (Digital Economy-2019..., 2019).

6. Findings

Over the past 3–4 decades, the process of digital transformation has been observed in the field of education. Denying the need for digital technology in education is no longer possible. The unique features of the virtual information environment (multimedia, modeling, "communicativeness", interactive, "intelligence", productivity) determine the undeniable effectiveness of its application in any area of human activity.

The fact that the university is given a huge role is also evidenced by the fact that the development of digital university models is provided for by the “Personnel for the Digital Economy” direction of the state program “Digital Economy of the Russian Federation”. Its performance indicators provide that by 2024 universities will graduate 120 thousand people a year in areas of training related to information and telecommunication technologies. And 800 thousand graduates a year should have competencies in the field of information technology at the global average level. In all, 40 percent of Russia's population should have digital skills by 2024.

The digitalization index of Russia in 2017 was 28. It characterizes the level of use of broadband Internet, cloud services, RFID technologies, ERP systems, and the involvement of organizations and the business sector in electronic commerce. There are figures to compare: the same index in France is 36, 38 in Germany and 50 in Finland.

The contribution of the ICT sector to the development of the economy (in % of GDP) in 2017 amounted to 2.7 % (while mining was 10.4%). At the same time, the digital sciences of the population in Russia are inferior to those in other countries. For example, in Russia, the proportion of people aged 74 years who can use a text editor was 42 % in 2017, while the same indicator in France is 54 %, Great Britain – Finland – 65 %, Estonia – 54 %, Germany – 62 % (Digital Economy–2019..., 2019).

At the same time, the challenges and needs of the digital economy pose the task of developing new skills for the population, as, for example, shown in Figure 2. The report of the specialists of Global Education Futures and World Skills Russia (Skills of the future. What you need to know and be able to do in the new complex world, 2020) lists the basic skills that an employee will need in almost any position in the 21st century:

- concentration and attention management (they are necessary to cope with information overload and manage complex equipment);
- emotional literacy (understanding your emotions and empathy will help you interact with colleagues);

- digital literacy (it will be as demanded as the ability to write and read);
- creativity (when automating routine activities at any job, there will be an increasing need to think outside the box and create new ones);
- ecological thinking (it is important to understand the connectedness of the world, to perceive our activities in the context of the entire ecosystem, to support evolutionary processes);
- cross-culture;
- self-learning ability (in a rapidly changing world, a person will have to continue learning throughout their life, sometimes acquiring new skills on their own).

These skills are not necessary when performing routine physical or intellectual tasks, but in the future their number will decrease. Accordingly, the labor exchange will present the above requirements to applicants (Krasikova, 2011; Krasikova, & Ognev, 2015).

A “digital university” is not just a university that has implemented any kind of digital technology, but a university that has launched a digital transformation process within itself. Unlike traditional automation, digital transformation refers to the complete reengineering of business processes through the introduction of modern digital technologies. If you do not go further than the introduction of digital technologies, the effectiveness of such an introduction cannot be seen (Basaev, 2018; Itinson, 2019).

It is assumed that the digital university model should consist of four blocks. This is a university management information system, online support for the educational process, the key competencies of the digital economy and educational process management based on an individual educational path. Today, the leading universities in digital transformation are such universities as: Higher School of Economics, St. Petersburg National Research University of Information Technologies in Mathematics and Optics, Bauman Moscow State Technical University, as well as Tomsk, Tyumen and Togliatti state universities (Larionova & Karasik, 2019; Mikhailova, Shekhonin, Eliseeva, & Egorova, 2019; Peshkova & Samarina, 2018).

FUTURE-ENABLED SKILLS IN DIGITAL BANKING

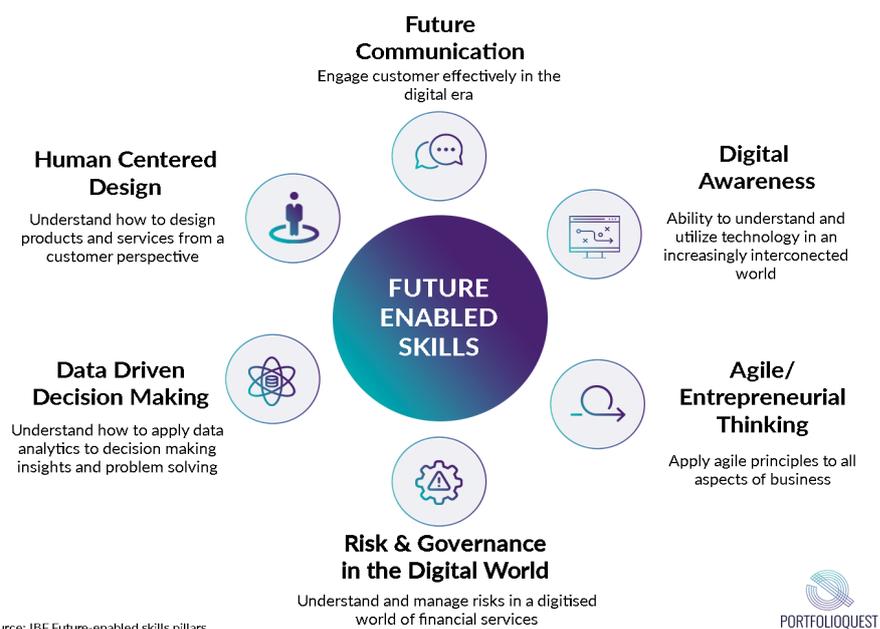


Figure 02. Skills for the digital economy exemplified by banking

Such a transformation is long-term in nature; therefore, it is necessary to approach the automation of educational processes systematically (Dneprovskaya, 2018; Mishina, 2019; Sundukova, Bobyleva, & Derevyagina, 2019). In training for work in the digital economy, the main activities should be:

- formation of a list of ICT competencies for graduates of all specialties in higher educational institutions;
- development of distance learning courses and training modules;
- development of modules for additional training of students in the framework of independent work in order to develop their ICT competencies;
- inclusion in the procedures of final certification of general and narrow-focused professional digital tools of educational activity;
- development of cooperation of higher education institutions with companies operating in the IT field (Antonova et al., 2018);
- development of modules for professional retraining of people who already have higher education, for their adaptation to the digitalization of production, technological and economic processes.

7. Conclusion

Thus, it is obvious that universities play a huge role in the training process for the digital economy. In the face of uncertainty, the only thing that will help to quickly reorient and prepare specialists for the tasks of a particular moment will be high-quality secondary and higher education, which will train not narrow-focused and currently-in-demand specialists, but will form a universal foundation based on which people can quickly retrain in accordance with future requirements unknown so far go. The main question is how it is already possible to change the work of the university today in order to take the first steps to digital transformation. This serves as a motivation for further research within the framework of the problem posed.

Acknowledgments

The work was carried out under the grant of the Scientific Council of INRTU “Research and educational center “Digital Economy” (2019).

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