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**UNIVERSITY DIGITALIZATION - A FASHIONABLE TREND OR**  
**STRATEGIC FACTOR OF REGIONAL DEVELOPMENT?**

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***Abstract***

The article examines the main factors of the transformation of higher education in the conditions of intensive development of the digital economy and increasing use of new technologies as a management tool and means of increasing the consumer value of educational services. The authors consider the main trends of the observed changes in the digital economy that have an impact on higher education: retaining competitive advantages through innovation and technology change, a high level of uncertainty and risk, the need for constant adaptation to a highly dynamic environment, the demand for new competencies and new learning models. The article examines the factors that transform the impact on higher education that can destroy the model of a university born of an industrial era. Universities aimed at success and change in accordance with the demands of society and business begin to change their strategies fundamentally and make decisions about improving existing processes. The article describes the main stages of improving the management of the university, based on the active use of digital tools, and aimed at shaping the image, the introduction of modern teaching methods, the possibility of maximum integration into the regional economy. The authors also consider the main stages of improving the management of the university, based on the active use of digital tools, and aimed at shaping the image, the introduction of modern teaching methods, the possibility of maximum integration into the regional economy.

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## **1. Introduction**

The proliferation of digital technologies has led to a radical change in business processes and business models in many industries. Digital technologies offer the opportunity to develop innovative ideas, implement new methods of interaction with consumers and new methods of creating value added. However, the most significant economic effect is provided by the transformation of data arrays into useful information for decision-making. The digital revolution has led to the formation of a digital economy, in which data become both the basis of economic analysis and the main production resource (The World Bank, 2016). The transformation of business processes based on digital technologies aimed at a qualitative breakthrough in productivity growth leads to a fundamental change in information-based economic relations. Information and communication technologies are used to create new ways of interaction between economic agents, a network of partnerships, becoming a competitive asset and a dynamic system requiring the development of new approaches to making management decisions. Platform models of doing business based on revising the principles of interaction with customers, suppliers and partners cause significant shifts in the sphere of competition: confrontation with direct competitors is becoming less intense, the probability of confrontation between asymmetric competitors increases, blurring the boundaries between industries.

The digital revolution and globalization have triggered change in all areas of society. The increasing complexity of social relations, dynamic changes in the labor market, the disappearance of some professions and the emergence of others, the rising value of intangible assets and human capital, the extensive development of the educational market place new demands on the quality of higher education. Technological processes developing in companies and successfully adapting to the conditions of the digital age are borrowed by prestigious universities.

## **2. Problem Statement**

The increase in stratification in higher education has a destabilizing effect on regional universities, reduces the personnel potential of these regions, creating the threat of a depressing economic situation. The relevance of the study is conditioned by the high rate of changes occurring in the external environment of universities and requiring adequate changes to the internal environment based on improving the quality of management decisions.

## **3. Research Questions**

What causes the digital transformation in business?

What factors have a transformative effect on higher education?

How can a regional university improve its competitiveness in the educational environment and become a scientific center for the development of the regional economy?

## **4. Purpose of the Study**

The authors analyze the factors affecting higher education and explore the possibility for a regional university to strengthen competitive positions and bridge the gap between education and the needs of society.

## **5. Research Methods**

The study of higher education transformation factors combines general scientific methods and principles characteristic of neoinstitutional economic theory. The key phenomenon of economic evolution is the accumulation of knowledge in the society on how to achieve the desired results in accordance with the economic change model of North (1990). The transformation of the economy on the basis of a new technological paradigm reflects the system of beliefs spreading in the business environment: prospects are created by proactive actions and the use of digital technologies for timely assessment of the situation.

## **6. Findings**

### **6.1. Digital transformation of business**

The introduction of digital technologies, such as cloud computing, use of big data, application programming interfaces, increases information flows and leads to the emergence of virtual markets and new transnational IT entities with platform business models. Digital platforms, as trading platforms, digital payment system or media platform combine distributed economic resources, gathering community business partners around themselves. The use of digital platforms ensures unimpeded entry of new customers, fast scaling, transnational functioning, and availability in any place and at any time, reduction of transaction costs. Enterprises with platform business models are among the fastest growing companies in the world (Table 01) (Rogers, 2017).

Digitalization, aimed at expanding relationships with customers, allows establishing a link between the main models of consumer behavior and the company's objectives. Changes in the product line, conditions for the provision of goods and services, adjustment of the company's offers to the preferences of various groups of real and potential consumers, their behavioral characteristics are made possible through the use of electronic commerce, automation of the delivery and accounting of goods, processing of big data. Digital technologists make it possible to define new tasks and, through continuous experimentation, develop possible solutions with their subsequent refinement. The company turns into a testing laboratory that develops innovations by identifying working and non-working options based on obtaining information about consumers, competitors, and market conditions. The ability to use digital resources, receive and process unstructured data becomes a key intangible asset, the most important tool in achieving the company's competitiveness.

**Table 01.** List of the most expensive open companies

Company	Platform type	Market value as of 9.05.15 (billion dollars)	Year of foundation	Country
Google	Media with advertising	425.50	1998	USA
Facebook	Media with advertising	248.30	2004	USA
Amazon.com	Exchange	235.70	1994	USA
China Mobile	–	232.63	1997	PRC
Alibaba Group	Exchange, transactions	167.00	1999	PRC
Tencent Holdings	Exchange, media with advertising	150.87	1998	PRC
Sinopec	–	73.62	1998	PRC
Priceline Group	Exchange	62.86	1994	USA
Baidu	Media with advertising	52.40	2000	PRC
Salesforce. com	Standard PC	45.45	1999	USA

Note: Source: (Rogers, 2017)

The digital transformation of companies is an adaptation to the fundamental changes taking place in society, caused by the intensive development of the digital economy and hypercompetition. Globalization of economic relations, technology transfer, reduction of time for research and development creates a competitive environment that is global in nature with intensive and fast actions of economic entities. Acceleration of innovation processes aimed at increasing the value of the product for the consumer, obliges all organizations to adapt constantly to fluctuations in the external environment. The position of companies in a rapidly growing digital economy is becoming increasingly uncertain due to the inability to make accurate predictions about future innovations, market situation, and incomplete information. Companies are increasing their competence in the field of digital technologies, which help to improve the interaction between product developers, consumers and suppliers, and create the opportunity for collective work of researchers who are developing innovations based on consumer suggestions to survive in an era of instability and rapid change. Leading technological, managerial and product innovations become the most important strategic advantage in the context of hypercompetition. Technological leadership is provided by active investments in new developments, participation in international technological transfer of innovations, and advanced training of specialists. The digital economy of global leading countries is based on high-tech industries based on advances in basic and applied sciences.

## 6.2. Factors transforming the impact on higher education

The need to train highly qualified personnel with advanced competencies, the formation of new data processing skills, the transfer of new knowledge in the conditions of high dynamics of technological changes and growth of economic uncertainty face a limited ability to forecast the labor market, rising education costs, global competition for the best teachers and students. The model of higher education of the industrial age once entered into a fundamental contradiction with the demographic situation, growth

of online segment of educational services, investing corporations in their own educational platforms and corporate universities, starts losing the role of an important public institution that provides graduates with the necessary level of training and guarantee a successful career.

The problem of the crisis of education was first raised by Coombs (1970) at the UNESCO conference: “Depending on the conditions prevailing in different countries, the crisis manifests itself in different forms, stronger or weaker. But its internal springs equally appear in all countries – developed and developing, rich and poor, which have long been famous for their educational institutions or creating them now with great difficulty”. This crisis, according to F. Coombs, was caused by the slow adaptation of educational systems to the rapid changes caused by scientific and technical progress, massive nature of higher education, and the reduction of state expenditures on higher educational institutions.

Barber, Donnelly, & Rizvi (2013) highlight factors that can completely destroy the paradigm of the university of the XX century in the work “On the Eve of Avalanche. Higher Education and the Coming Revolution”:

- combination of globalization and new technologies, qualitatively changing the demand for knowledge and new employees;
- global economic crisis causing unemployment and lower incomes;
- increasing cost of higher education that does not meet the level of required training;
- drop in the value of a diploma of higher education;
- general availability of information;
- high competition in the educational environment.

The higher education system is forced to adapt to global challenges that require new models of education that are capable of responding productively to the demands of the economy. World-class universities, recognized by the international community, conduct advanced research, integrate research into the educational process and train competitive specialists in the global labor market (Salmi, 2009). Such scientific, research and educational activities require significant financial expenditures and a high concentration of talents among both teachers and students. The desire to compete for the best applicants and teachers, a greater amount of public and private funding, the ability to carry out the most relevant scientific research and the introduction of new technologies change the scale of the university's activities beyond national borders.

The university becomes a key element of the national innovation system and the center of the innovation cluster of technology companies, facilitating the interaction of promising students and potential employers by acquiring the status of a locomotive of innovative development of the economy. The concentration of science, knowledge-intensive production, finance and highly qualified personnel creates the prerequisites for the emergence of a center of transnational influence at the global level. The principle that operates in the most digitally developed sectors of the economy: “the winner gets everything”, based on the achievement of market superiority, destroying the advantages of competitors, begins to transform the academic culture of universities increasingly. The well-known university in the metropolis, possessing significant opportunities to attract talented students and successful teachers who are able to further enhance its potential and develop its position, has clear advantages in comparison with regional universities. Higher education institutions, acquiring the status of a strategically important factor

in the framework of international competition, receive priority state funding, which creates the danger of increasing social and territorial stratification (UNESCO World Report, 2005).

The first step to improve the competitiveness of a regional university may be the introduction of digital technologies, the introduction of online learning resources that can be accessed from portable devices. The availability of e-learning, the development of digital libraries, digital campuses are an important marker of the changes observed in world-class universities (Carr, 2012). Universities respond to the challenges of the external environment, formed under the influence of telecommunications and digital technologies, transforming not only the economy, but culture as a whole, mastering modern models of reproduction and dissemination of information.

A new generation of students (digitalnatives) has emerged under the influence of the digital information environment, for whom digital technologies have become an integral part of life, the network space is a sphere of everyday communication, and social inclusion is determined by connecting to the Internet community. The university's digital adaptation to the target audience is not only a marketing tool that creates additional value, but also the accounting of the sociocultural aspect of the modern era. A high-quality online resource with educational content and a social network of teachers and students will be in demand among learners, which will help improve the image of the university. The use of digital media directly affects the reputation of the university in the external environment.

It should be understood that the digitalization of the educational process, like any technological innovation, carries not only the possibility of gain, but also the risks of loss (Bowen, 2018). The main advantages of online learning include:

- interactivity that contributes to improved learning outcomes;
- increased student activity in gaining knowledge;
- development of self-learning and self-control skills among students;
- availability of educational resources in any place and at any time;
- possibility of teaching people with disabilities;
- release of time spent by a student on recording a lecture;
- reducing academic load;
- reducing the cost of tuition per student;
- use of educational data analytics to improve the quality of education;
- use of feedback to improve and develop educational courses.

Along with the above advantages, there are risks of digitization of learning:

- transition from real interpersonal transfer of knowledge to virtual communication through information resources violates the system of transfer of values, life meanings, traditions, interrelation of generations;
- social skills of students necessary for performances, contacts, job search do not develop;
- importance of individual work and greater student autonomy in the process of acquiring knowledge increases, which aggravates the gap in learning outcomes between motivated students with good training and poorly prepared students;

- low motivation of students who have no interest in the content of education leads to the need to create more enticing tutorials and increase interactivity;
- reduction of teaching staff as technology grows.

Digital transformation of the university, combining educational resources, social network and analytics of educational data, will be effective if it brings real benefits to students and improves the quality of teaching and the content of educational programs. Statistics and analytics in the field of attracting applicants, analysis of students' educational data allows finding a deeper understanding of what type of applicants the university attracts, which students will successfully study, what changes in the content and organization of curricula can be offered. Analytical tools used in the framework of online resources can be used to identify difficulties encountered by students in the process of studying the material, to understand which teaching techniques and tools are effective for increasing student engagement and performance, what most influences the assessment of courses by students. The university's digital platform, which includes electronic document management system and remote and e-learning management system, allows for the systematic collection and analysis of educational data and provides a deeper understanding of learning outcomes and improving the educational process.

The role of analytics in managing the educational process is great, because diverse information can be used as the basis for evaluating performance and solving problems: network and social analytics, standard reporting, statistics on clicks on the site, the amount of time spent on tasks, login pages and exit pages, etc. Possession of this information will help identify students at risk, understand how their performance changes over time, increase the speed of decision making, and increase the variability of courses and teaching techniques depending on the needs of employers and the characteristics of students. Analysis of the target audience, its key characteristics will help to adjust the available web resources. Data analysis will make it possible to draw conclusions regarding the effectiveness of the implemented measures to promote the university. Digital technologies reduce the cost of processing various types of data, allowing improving all business processes of the educational organization.

### **6.3. Main stages of digital transformation of a regional university**

Digitizing of existing training materials "as is" without searching for new opportunities, new competitive advantages, does not contribute to the transformation. Digital transformation involves cardinal rethinking of the university's interaction with the external environment, which in modern conditions should be dynamic, flexible, market-oriented, and sensitive to sociocultural and technological innovations. The development of digital educational resources aimed at developing educational programs through existing infrastructure and streamlining of existing processes will be a true transformation if it helps attract new students.

A key factor in the success of technological innovations is their integration into the university's development strategy, which determines the priorities and necessary resources. Development of a Digital-strategy is based on the analysis of current situation, identifying the strengths and weaknesses of the university's scientific and educational activities and in managing its image and business reputation. Monitoring of the regional labor market, research of the market of new technologies and the market of educational services will allow determining the direction of training of bachelors and masters, the content

of supplementary education programs in accordance with modern trends and prospects for the development of the region. A university becomes a city-forming center if it forms an environment that meets the actual needs of students and employers.

Significant investments in hardware, server machines, high-speed communication lines corresponding to the world-class technology, training of teaching staff will be justified if they allow improving the educational process of the university in accordance with the demands of society. It is important for the regional university to find its own niche in the educational environment on the basis of specific regional conditions in order to provide the training and retraining of highly qualified personnel at the proper level. The development of highly specialized areas of scientific and technical research and development will allow reaching the necessary concentration of resources and high quality of work. Close integration of a regional university having a scientific and technological base, with a regional business environment focused on the introduction of innovations, provides training of specialists in demand, and improves greatly the position of the university in the eyes of applicants.

The basis for developing a digital transformation strategy is the competence of top management in understanding the promising areas of market development and the choice of directions for further development. Digital transformation of the university is a modern tool necessary for a cardinal increase in its competitiveness, and can be defined as the introduction of the necessary skill sets to achieve organizational agility and strategic goals.

The recognition of the need to adapt a university to the conditions of the digital age by top management is the first step towards transformation. If existing processes do not allow the university to create and strengthen competitive advantages and develop in conditions of rapid obsolescence of knowledge and social uncertainty, then, at the first stage of digital transformation, a clear understanding of the target prospects and the sequence of transformations should be developed based on a realistic assessment of existing problems and a sound development strategy. The competitiveness of the university, striving to maintain and consolidate its position in the educational environment, is ensured, first of all, by improving the processes that determine strengths and eliminating inefficient processes that weaken the ability to respond to economic inquiries in a timely manner in a digital economy that requires constant development and revision of the proposal. The university doesn't set economic return as its primary goal, no matter how important it is, but increasing student loyalty and attracting more prepared applicants, meeting their needs in acquiring the knowledge and skills necessary to get a good job when initiating digital transformation. The use of the digital technology environment will be effective if it ensures success in the competitive struggle for a student that occurs among universities no longer within the region or country, but internationally. The decision to introduce digital technologies reflects the university's readiness for fundamental shifts in the direction of the educational models of the new generation.

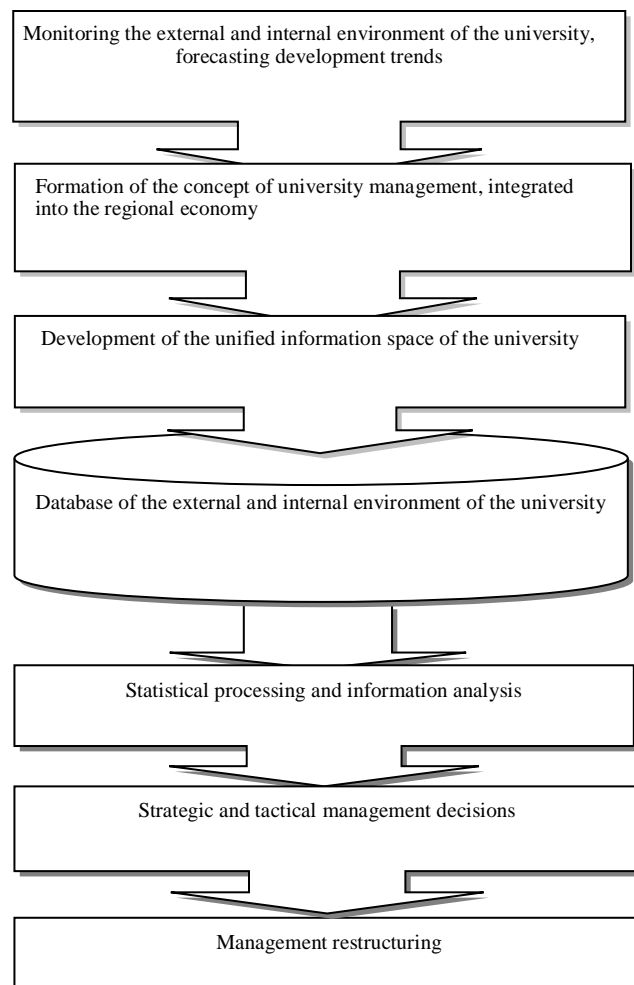
Digitization of processes is the second stage of transformation, aimed at accelerating information flows and creating a unified information space inside the university, which allows identifying the most important strategic objectives more accurately and understanding what actions should be taken to increase the value and relevance of educational services. Digitalization allows making decisions in real time based both on information relating to the activities of the university and on the basis of contextual information not originally contained in the system, but provided through the analysis of big data. User data analytics,



risk analysis and analysis of regional economic trends allow the university to identify timely the needs of business environment and the priorities of consumers of educational services, establishing implicit patterns that have real practical significance. Adaptation of the university education system to the conditions of a dynamic external environment occurs through the identification of knowledge that will be commercially demanded, active branding based on the interests of students, and using efficient communication channels, automating business processes, allowing minimizing routine work and focusing on innovation.

The competitiveness of the university increases if the quality of educational services and their innovativeness are ensured, the prestige of the educational institution and a high level of service are maintained. Sustainable competitiveness of the university becomes the foundation of the competitiveness of educational services.

The third stage of digital transformation is the restructuring of management, focused on the implementation of new tasks. Improving the interaction of departments at the university level, making changes in the educational process during the transition to a new educational model, improving relationships with potential employers, creating conditions for the development of the innovation-entrepreneurial ecosystem will allow the university to be positioned as a leading center for training highly qualified specialists in accordance with the requirements of the digital age as the scientific center for the development of the regional economy.



**Figure 01.** Digital transformation of the University (author's development)

The university will be able to bridge the gap between education and the needs of society, survive in conditions of uncertainty if it becomes the center of the innovative, technological and social development of the region. Increasing the academic reputation of the university becomes a guarantee of its competitiveness and attractiveness for applicants, a factor that ensures the innovative potential of the region.

## **7. Conclusion**

The global digital revolution, contributing to the creation of a cross-border information space and a high level of environmental uncertainty, has radically changed business models and business processes and influenced all aspects of society, including communication practices and education, transforming communication styles and habits of digital natives' generation.

The digital economy, built on big data processing technologies and a high level of intellectual resources, puts new demands on higher education, creating the need for advanced training of highly qualified personnel to achieve and retain leadership positions in global competition. The global system of higher education is beginning to use the principles of leading international high-tech companies responding to global challenges. World-class universities become not just multinational, but transnational, focused on the demands of the global labor market, and competitive due to the high concentration of talented students and teachers, including those from abroad.

Digital transformation of the university is not just a fashion trend, it is a new reality of higher education. In a world of all-embracing globalization, the use of digital technology provides market excellence that instantly destroys the advantages of competitors. The ability of the university to adapt to changes in the external environment quickly, to create and strengthen competitive positions is determined by the timely introduction of digital technologies. The loss of competitiveness of the university leads to the loss of the most capable part of the youth of the region, leaving to study in major cities or other countries.

Making a decision on the digital transformation of a university is based on rethinking of existing organizational processes and understanding the challenges of the digital age. The university must be constantly prepared for the fact that a change in the conditions of the business environment will entail a change in the needs of employers and students. Analytical processing of digital data should be used to plan future actions strategically and identify new opportunities. Digital transformation allows increasing the speed of decision-making, ahead of fluctuations in the external environment, which contributes to the strengthening of academic reputation and competitiveness of the university, solving regional problems and sustainable development of the regional economy. The main competitive advantage of firms, regions and countries in the digital economy is associated with intellectual capital, in the development of which the education system is directly involved. Digital transformation of the university, aimed at managing change and creating advanced knowledge, becomes the most important basis for regional development.

## References

- Barber, M., Donnelly, K., & Rizvi, S. (2013). On The Eve Of An Avalanche. Higher Education And Future Revolution. *Education issues*, 3, 152-231.
- Bowen, W.G. (2018). *Higher education in the digital age*. Moscow: Publishing House of Higher School of Economics
- Carr, N. (2012). *The Crisis in Higher Education*. Retrieved from: <http://www.technologyreview.com/featuredstory/429376/the-crisis-in-higher-education/>.
- Coombs, F. G. (1970). *The crisis of education in the modern world: system analysis*. Moscow: Progress.
- North, D. (1990). *Institutions, Institutional Change, and Economic Performance*. New York: Cambridge University Press.
- Rogers, D.L. (2017). *Digital Transformation. Practical guide*. Moscow: Publishing Group "Tochka"
- Salmi, J. (2009). *Creating world-class universities*. Moscow: Publishing House "Ves Mir"
- The World Bank. (2016). *World Development Report 2016 "Digital Dividends". Overview*. Washington, DC: World Bank. Retrieved September 01, 2018, from: <https://openknowledge.worldbank.org>.
- UNESCO World Report (2005). *To knowledge societies*. Paris. Retrieved August 11, 2018, from: <http://unesdoc.unesco.org/images/0014/001418/141843r.pdf>.