Digitalization of the Russian Education System: Opportunities and Prospects

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Abstract. The purpose of the article is to determine the current state, opportunities and prospects for the digitalization of the Russian system of (higher) education while maintaining the existing approach to state regulation of this process and developing a new (improved) approach to speed it up. For this purpose, in this study, a method is used to assess the degree of digitalization of the system of (higher) education. As a result, it was found that at present the greatest degree of digitalization is considered through the characteristics of additional indicators of the functioning of the system of (higher) education in modern Russia, such as the work of library resources, state and public control. At the same time, the degree of digitalization of the main indicators (educational and scientific activities of universities) is at a low level. At the same time, the digitalization infrastructure of the Russian system of (higher) education is sufficiently developed, which determines significant opportunities for the further development of this process. The final degree of digitalization of the Russian system of (higher) education is estimated at 25.8% and is very low. The reason for this problem lies in the insufficient state regulation of the process of digitalization of the Russian system (higher education).

1 Introduction

In today’s global economy, there is global competition in the development and dissemination of digital technologies. In order to maintain competitiveness in the domestic economic system in the current conditions in the external environment and to increase its efficiency, the Government of the Russian Federation approved the Digital Economy Program of the Russian Federation (Decree No. 1632-r. for digital modernization).

One of the key areas for the practical implementation of this program was “Personnel and Education”. However, in this direction, the emphasis is on training personnel in the field of digital technologies and the digitalization of the education of the system itself is not expected (Digital Economy of Russia 2024, 2018). The digital modernization of the education system is declared as one of the most important tasks of the State Program of the Russian Federation “Development of Education” for 2013-2020 (Order No. 792-r of May 15, 2013) (Government of the Russian Federation, 2018a).
At the same time, practical measures for the digitalization of the education system, as well as indicators for monitoring their implementation, are not provided for in this program. According to the latest information presented at the Russian Investment Forum and devoted to the discussion of the prospects for the development of digital education, a serious obstacle to the implementation of this process is the concern about the unpreparedness of society, especially at the lower levels of the education system [1].

In this regard, the higher education system has the highest potential in the field of digitalization in modern Russia.

In the context of the general course towards the digital modernization of the Russian economy, it is not advisable to maintain the traditional (pre-digital) technological structure of the (higher) education system, which plays an infrastructural role in the economy, since this will slow down the entire process of this modernization.

In this regard, the problem of digitalization of the Russian system of (higher) education is becoming very relevant.

2 Research Methodology

To solve the problem, the authors developed and presented a new (improved) approach to state regulation of the digitalization of the Russian system of (higher) education. This approach involves full-scale financing of relevant activities, priority promotion of the digitalization of the main activities of the (higher) education system, as well as orientation to the proposed model for the functioning and development of the (higher) education system based on digital technologies. Its practical implementation will increase the efficiency and competitiveness of the Russian system of (higher) education.

The working hypothesis of this study is related to the fact that at present, due to insufficient regulation of the degree of digitalization, the Russian system of (higher) education is at a low level.

Despite the multitude of existing studies and publications on this topic, the methodological support for assessing the degree of digitalization of the (higher) education system is weak and relies mainly on statistical indicators that are not taken into account in modern Russia. Therefore, in this article, the authors use a methodology for assessing the degree of digitalization of the (higher) education system, assuming the use of the following calculation formula:

\[ CLDES = \sum (ILDES \times Mass) \] (1), where CLDES is a coefficient reflecting the degree of digitalization of the (higher) education system (measured in % from 1 to 100, where 1% is the minimum degree, 100% is the maximum degree);

ILDES are the values of the degree of digitalization of the (higher) education system (measured in % from 1 to 100, where 1% is the minimum degree, 100% is the maximum degree);

Mass - the weight of these indicators (measured in fractions of 1, including 1 in the total) [2,3].

Table 1 shows the proposed composition of indicators and their weights (determined by the degree of significance in the education system):

<table>
<thead>
<tr>
<th>Types of activities</th>
<th>Indicators (CLDES)</th>
<th>Weight (the sum of 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key</td>
<td>Educational process</td>
<td>0.35</td>
</tr>
<tr>
<td></td>
<td>Research activity of universities</td>
<td>0.25</td>
</tr>
<tr>
<td></td>
<td>Interaction of universities with enterprises (linkage of education and labor market)</td>
<td>0.15</td>
</tr>
</tbody>
</table>
3 Results and Discussions

According to the results of the assessment of the degree of digitalization of the Russian system of (higher) education in 2020, using the method developed by the authors, we obtained the following results (Table 2).

The highest degree of digitalization is characterized by additional indicators of the functioning of the system of (higher) education in modern Russia, such as the work of library resources (90%), state and public control (80%) and international cooperation (40%). At the same time, the degree of digitalization of the main indicators is low. For example, the degree of digitalization of the educational process is 15%, research activities of universities - 20%, interaction between universities and enterprises - only 5%. At the same time, the digitalization infrastructure of the Russian system of (higher) education is quite developed (70%), which determines significant opportunities for the further development of this process [4].

**Table 2. Results of the assessment of the degree of digitalization of the Russian system of (higher) education in 2021**

<table>
<thead>
<tr>
<th>Types of activities</th>
<th>Indicators</th>
<th>Weights</th>
<th>Values, % (1-100)</th>
<th>Values weights, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key</td>
<td>Educational process</td>
<td>0,35</td>
<td>15</td>
<td>5,25</td>
</tr>
<tr>
<td></td>
<td>Research activity of universities</td>
<td>0,25</td>
<td>20</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Interaction of universities with enterprises</td>
<td>0,15</td>
<td>5</td>
<td>0,75</td>
</tr>
<tr>
<td></td>
<td>with enterprises (linkage of education and labor market)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Selection of applicants for admission to universities</td>
<td>0,02</td>
<td>30</td>
<td>0,6</td>
</tr>
<tr>
<td>Additional</td>
<td>Infrastructure support</td>
<td>0,05</td>
<td>70</td>
<td>3,5</td>
</tr>
<tr>
<td></td>
<td>Library resources work</td>
<td>0,03</td>
<td>90</td>
<td>2,7</td>
</tr>
<tr>
<td></td>
<td>International cooperation</td>
<td>0,1</td>
<td>40</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>State and public monitoring</td>
<td>0,05</td>
<td>80</td>
<td>4</td>
</tr>
<tr>
<td>N TOTAL: the degree of digitalization of the Russian system of (higher) education (CLDES)</td>
<td></td>
<td></td>
<td></td>
<td>25,8</td>
</tr>
</tbody>
</table>

As can be seen from Table 2, the final degree of digitalization of the Russian system of (higher) education (the value of TsIDO) was and is estimated by us at 25.8%, which is very small.

The following shortcomings of the existing approach to state regulation of this process are identified, which are the key causes of this problem, creating barriers to realizing the
existing opportunities in the field of digitalization of the Russian system of (higher) education:

- the absence of a model for the functioning and development of the system of (higher) education based on digital technologies, which should be guided by program activities in the field of digitalization of this system;
- lack of funding for activities in the field of digital modernization of the Russian system of (higher) education [5, 6].

While maintaining the current approach, most likely, by 2022 or in the next few years, significant progress in the digitalization of the Russian system of (higher) education may not take place. To solve this problem and increase the degree and speed of digitalization of the Russian system of (higher) education, a new (improved) approach to state regulation of this process can be applied [7,8,9].

In accordance with the new (improved) approach to state regulation of the digitalization of the process of the Russian system of (higher) education, this provision assumes:
- full-scale financing of relevant activities for a year;
- priority stimulation of digitalization of the main activities of the system of (higher) education;
- orientation to the model of functioning and development of the system of (higher) education based on digital technologies [10].

The key results of the proposed approach are to increase the efficiency of the main and auxiliary activities of universities by reducing costs while simplifying and accelerating operational processes, as well as to increase their efficiency and, consequently, the competitiveness of the Russian system of (higher) education by increasing the quality of educational services, including including the qualifications of graduates, services (convenience) and other characteristics, to expand international scientific and educational cooperation between Russian universities, and improve the research activities of universities and its efficiency through automation.

Conceptual and applied issues of digitalization of the (higher) education system in the context of building a digital economy are discussed in numerous studies and publications by such scientists as (Baumol, Bockshecker, 2017), (Bogoviz et al., 2018a), (Bogoviz et al., 2018b), (Bogoviz et al., 2018c), (Chashchin et al., 2013), (Cheng et al., 2018), (Fleacă, 2017), (Ghemawat, 2017), (Munro, 2018), (Murphy and Costa , 2018), (Pacheco et al., 2018), (Popkova et al., 2015), (Ratsinger et al., 2018) and (Sukhodolov et al., 2018), which served as a theoretical platform for this work [11, 12,13].

So, the results of the study confirm the working hypothesis and show that the digitalization of the system of (higher) education in Russia is at the initial level (25.8%) and covers only some elements of this system while maintaining the traditional (pre-digital) technological way of educational and scientific activities of universities. Failure to use the possibilities of digital technologies hinders the development of this system both in terms of increasing its efficiency and in terms of increasing its global competitiveness [14,15].

The reason for this problem lies in the insufficient state regulation of the process of digitalization of the Russian system of (higher) education, which is associated with funding on a residual basis (which, in turn, leads to underfunding), the lack of a model for the functioning and development of the system of (higher) education based on digital technologies on which program activities in the field of digitalization of this system can be directed (fuzzy regulatory tasks), as well as incorrect prioritization of funding and stimulation of elements of this system (emphasis on the digitalization of additional elements with insufficient attention to the main elements of the system).

4 Conclusions
To solve the problem, the authors developed and presented a new (improved) approach to state regulation of the digitalization of the Russian system of (higher) education. This approach involves full-scale financing of relevant activities, priority promotion of the digitalization of the main activities of the (higher) education system, as well as orientation to the proposed model of functioning and development of the (higher) education system based on digital technologies. Its practical implementation will increase the efficiency and competitiveness of the Russian system of (higher) education.

References