

REGIONAL DIGITALIZATION PROGRAMS AS A FACTOR OF HUMAN CAPITAL REPRODUCTION

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Abstract

Human capital is one of the most important factors of production and economic development. That is why the qualitative reproduction of human capital is the key to the prosperity of the countries' economies. Traditionally, education and healthcare are the areas of reproduction and accumulation of human capital. Regional digitalization programs are designed to accelerate digitalization processes, including through the development of IT skills among employees. The article discusses the digitalization programs of all Russian regions for 2022-2024. The hypothesis of the study was the assumption that digitalization programs contribute to the reproduction of human capital. As research method there was used content analysis of regional programs. Digitalization technologies, digital transformation tasks, problems and challenges of digital transformation by industry, as well as digital transformation projects were chosen as the subject of content analysis. As a result of the analysis, there were identified groups of regions. These groups differ in the level of influence of regional programs on the human capital reproduction. Thus, it was concluded that the regional digitalization policy has little effect on the reproduction of human capital. But this approach leads to a slowdown in economic growth, slowing down the formation and development of digital competencies of the workforce.

Key words: digitalization, labor productivity, Russia

JEL code: J24, O38, R58.

Introduction

The reproduction of human capital is a key factor in the economy development. Transition of the traditional economy to a digital one presupposes the development of digital competencies of labor market participants, and, consequently, their intensive and extensive reproduction. On the one hand, it is necessary to increase the number of people with digital competencies (extensive approach). On the other hand, it is necessary to deepen digital skills of people who are already involved in solving "digital" tasks in their workplaces (intensive approach). Naturally, in both cases, reproduction will be achieved at the expense of formal and non-formal education systems. It is the reform of educational programs towards the formation of digital

competencies that will ensure the reproduction of human capital necessary for the digital economy.

Currently, Russia is implementing national program entitled "Digital Economy of the Russian Federation". While participating in this program, the regions of the Russian Federation have developed their digital transformation programs. In order to implement these programs regions require specialists with digital competencies. Therefore, it can be assumed that these regional programs will contribute to the development of digital competencies of the population either directly (through the implementation of projects for training personnel in digital competencies), or indirectly (through the introduction of digital technologies in the industry, for the use of which appropriate specialists will be needed). Therefore, it is important to analyze regional digital transformation programs in order to assess how these programs will allow developing digital competencies of regional employees. The results of this analysis will allow us to predict the growth rates of digitalization in the regions of the Russian Federation.

The issues of the impact of digitalization on the human capital reproduction are considered by various authors and from different points of view. First, we can distinguish the direction associated with the deterioration of workers' conditions due to the introduction of digitalization, for example, Arntz et al. (2017), Gimpelson et al. (2015), Kim et al. (2009), Vermeulen et al. (2018), Zemtsov (2017), Zemtsov et al. (2019). In these works, the authors assess how the workers' conditions will improve or worsen due to the emergence of various forms of digitalization, including in regional labor markets.

Secondly, a number of authors assess the qualitative change in human capital under the influence of digitalization. For example, these are the works of Autor et al. (2003), Pitaikina et al. (2018), Zaborovskaia et al. (2020). These works emphasize the development of digital competencies of employees is influenced by digitalization.

The third group of authors examines the influence of regional determinants on the use of human capital in the digital age, and also analyzes the most effective ways of digital transformation of regions – Kelchevskaya et al. (2019), Lowry (2021).

Thus, we see that the problem of the impact of digitalization programs on the reproduction of human capital is very complex. On the one hand, such programs can lead to a deterioration in workers' conditions in the labor market and, consequently, to a deterioration in the quality of their human capital. On the other hand, they certainly lead to the development of digital competencies. Consequently, regions need to develop comprehensive digitalization programs that would reduce the risks of negative consequences of digitalization and enhance the positive effects of human capital development.

1 Methodology

The information base of the study was the regional digital transformation programs for 2022-2024. There are currently 84 programs. Each region described in its program which digitalization technologies will be implemented to transform the sectors of the economy, social sphere, and public administration. Further, the strategy includes the directions of its implementation, a list of tasks by industry, as well as stakeholders of the program. Transformation challenges are formulated for each sector of the economy, which allow us to draw a conclusion about the most problematic areas of each region. Separate projects have been created for each challenge to increase the level of digitalization of the region.

The content of each program will be studied using content analysis. The following semantic units are selected: human capital, reproduction of human capital, competencies, digital competencies, personnel training. Next, the typological features of the regions will be revealed, depending on the content of their digital transformation programs. It is assumed that groups of regions will be allocated according to the frequency of use of semantic units in their programs.

The reproduction of human capital through digital transformation programs is traced through projects aimed at increasing labor productivity. It should be noted that all projects of digital transformation strategies indirectly affect the reproduction of human capital in general, and the formation and development of digital competencies in particular. At the same time, we believe that the formation of digital competencies will allow us to get the greatest effect in the direction of reproduction of human capital.

Unfortunately, regional digital transformation strategies link the development of digital competencies with problems in the field of industry. At the same time, not all regions have such a section in the strategy, which definitely reduces the impact of the strategy on the reproduction of human capital.

In our opinion, each direction of the strategy should to provide a section or a project aimed at the development of digital competencies.

2 Results

In those regions that have identified the lack of digital competencies development, the following features can be distinguished.

Thus, the program of the Altai Territory includes a project entitled "Implementation of a training (retraining) program on digital production management and modern methods of increasing labor productivity for engineering personnel in industry and energy of the Altai

Territory". The benefits for the project stakeholders will be the training of engineering personnel whose competencies meet the requirements of industrial enterprises that are implementing automation, robotization, digitalization and digital transformation projects.

Administration of the Ivanovo region sees the problem of a shortage of qualified personnel with competencies for digital transformation and the introduction of digital technologies, and also understands the risks of non-compliance of human resources with the requirements in the conditions of digital transformation of the industry. To solve this problem, there is proposed a project to develop a competence exchange for industrial workers (according to the model of public-private partnership) on the platform of the state information system of industry.

The Kaluga Region also notes the low level of digital competence of human resources at industrial enterprises. But at the same time, they do not develop separate projects for the development of digital competencies of the employed. A similar situation has been revealed in Karachay-Cherkessia. The digital transformation program of this region recorded a low level of automation, lack of competencies and a low level of IT literacy of employees, but no projects to change this situation are provided in the program. There are similar situations in Kemerovo, Kurgan, Leningrad, Murmansk, Nizhny Novgorod, Orenburg, Penza, Tver, Tula, Ulyanovsk Regions, Primorsky Krai, the Republic of Crimea, St. Petersburg, Yamalo-Nenets Autonomous District.

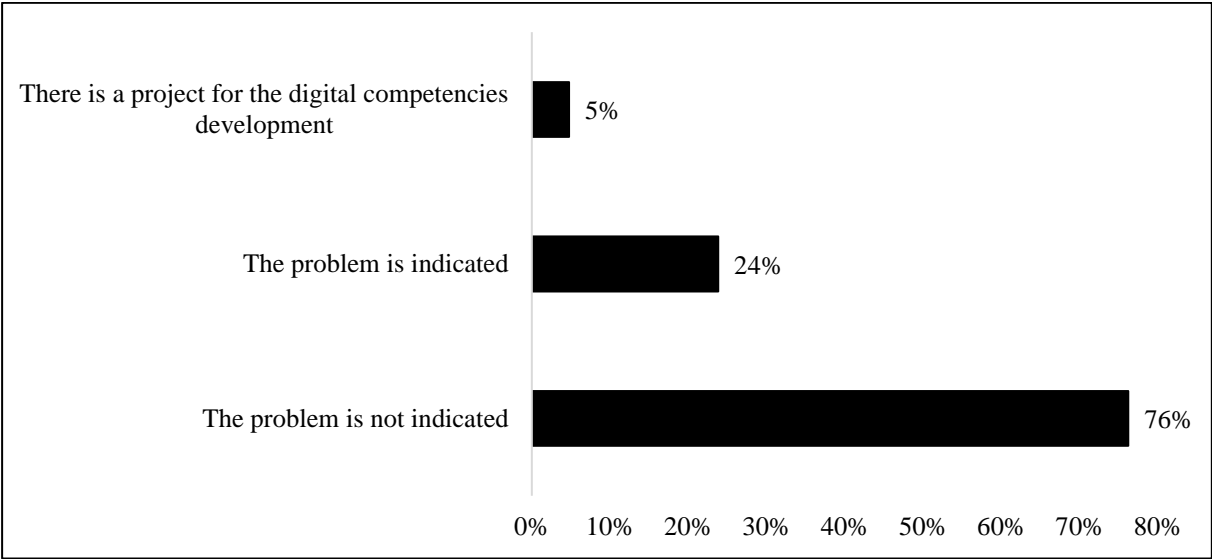
The administration of the Pskov region, in order to solve the problem of increasing the competence of employees in the field of digital transformation, proposes a project to improve the personnel potential of industrial enterprises in order to provide them with highly qualified personnel. This project provides for the formation of permanent mechanisms for improving the competence of employees in the field of digital transformation and the introduction of digital technologies, the creation of mechanisms to stimulate personnel to implement digital transformation activities and projects.

The greatest attention to the issues of reproduction of human capital is paid in the digital transformation strategy of the Khanty-Mansiysk Autonomous District-Yugra. In this strategy, the development of human capital is considered as a key condition for the digital transformation of the region and includes the following measures: financial support for additional education programs in the IT industry, financial support for talents in the IT industry, and the development of a system of measures to popularize digital transformation among the population of the autonomous district. In addition, the program of this autonomous district provides financial and

organizational support for the development of digital competencies of individual entrepreneurs operating in the autonomous district.

Thus, among the 84 analyzed digital transformation strategies, only 20 regions have identified the problem of a lack of IT competencies, while only 4 regions have developed projects for the reproduction of digital competencies (Fig.1).

Fig. 1: Differentiation of regions by the influence of their transformation strategies on the reproduction of human capital



Source: authors' calculations

Figure 1 shows that Strategies of only 5% of regions carry out targeted activities for the reproduction of digital competencies. This is a very small percentage, it turns out that the remaining 95% of regions solve the problem of digital transformation without developing digital competencies of the population. Therefore, it can be assumed that this situation is not favorable and will lead to a slowdown in the digital transformation programs of the regions.

As the result of our analysis, we can distinguish three groups of Russian regions based on the criterion of the impact of their digitalization programs on the human capital reproduction.

The first group of regions is the largest (76%) and these are the regions that do not indicate the lack of digital competencies. At the same time, all regions of this group indicate the problem of low labor productivity, but offer to solve it with the help of other mechanisms not related to the development of human capital. Of course, such an approach is possible, but in our opinion, it is unproductive – ultimately, regions will need specialists who know how to use digital technologies (in future all regions of this group intend to expand the list of digital technologies that are currently used in the regions). And since the digital transformation programs for 2022-2024 do not provide for the development of digital competencies in these

regions, it can be assumed that there is a risk of insufficiency of specialists who own digital technologies.

The second group of regions (19%) are regions that have identified the problem of a shortage of IT specialists and understand the lack of development of digital competencies in the region. But, despite the existence of such a problem, these regions have not developed projects to solve it. Most likely, these regions rely on similar federal programs in this area. But, in our opinion, this is not enough, since regions in such a situation cannot independently regulate the number of necessary specialists with digital competencies, track their specialization in the IT field. In fact, they become hostages of federal programs and, like the regions of the first group, do not affect the reproduction of human capital through their digital transformation strategies.

The third group of regions is the smallest (5%) and it does not only indicate the presence of problems in the field of human capital reproduction, but it also offers projects to solve them. In our opinion, it is this group of regions that has a better chance of achieving the goals of digital transformation, since it takes into account all development factors – from technological to human. Despite the fact that this group of regions is quite heterogeneous (some regions plan to train small groups of employees, while others single out the development of digital competencies in a separate direction), they are united by the complexity of views on digital transformation.

Conclusion

Based on the results of the study, we can draw the following conclusions.

Firstly, the digital transformation of regions is a factor in the reproduction of human capital. First of all, we consider the development of digital competencies. Regional transformation programs involve the development of the digital technologies use, which is impossible without the availability of appropriate specialists.

Secondly, the regions assess the problem of the current sufficiency of the digital competencies development differently.

The first group of regions develops digital competencies of employees only in order to solve the tasks of digital transformation. The second group of regions notes the lack of development of employee's digital competencies in general and states the problem of low labor productivity. The third group of regions has projects for the development of digital

competencies of employees and assumes to increase labor productivity through their development. But this group of regions is the smallest one.

Thirdly, the regions consider the formation of the necessary skills to be the main stage in the reproduction of digital competencies. At the same time, it is worth noting that the stages of distribution and use of human capital are also important, and digital transformation programs do not include these stages.

Thus, according to the results of the analysis, it can be assumed that the digital transformation of the regions of the Russian Federation will be quite slow and, most likely, will not achieve its goals, since most regions do not realize the importance of human capital in solving the tasks of digital transformation.

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