Labour market and educational potential in Russia's regions under the conditions of an innovative development vector

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Abstract. The paper analyses static data showing improvement in the labor market in all federal districts of Russia in the post-pandemic period, with unemployment rates declining annually. Regarding the leaders among Russian industries in terms of average wages, only two federal districts have changed. In the Northwestern Federal District, information and communication activities have become the most lucrative among other sectors since 2021. In the North Caucasian Federal District, people employed in public administration, military security, and social security have higher average salaries than others do. The winner of the rating of Russian regions in terms of the level of implementation of educational potential in science, mathematics and engineering was Moscow, with St Petersburg coming in second and the Republic of Tatarstan in third place.

Key words: Labour market; Education; Russian regions.

1 Introduction

A quality education is a fundamental life strategy for the majority of Russian citizens. People's desire for education corresponds to modern trends in global development, where the relationship between the education market and the labor market is seen to be the most important mechanism for meeting the needs of the national economy and an individual [1]. According to research, even the least educated informal workers in Russia have a sufficient level of education to work in formal jobs. One of the most important causes of labor market "deformalisation" is the reduction of jobs in the formal sector belonging to large and medium-sized enterprises, which pushes workers into informality. Thus, insufficient labor demand results in informal jobs that, other things being equal, are not different in their non-cognitive abilities from formal jobs, which can lead to an under-utilisation of their human capital and a loss in productivity [2].

Mobilizing university management means concentrating the resources and efforts of the scientific and pedagogical community on the strategic directions of university development.

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In their work, Zborovsky and Ambarova consider this approach as an alternative to administrative management and interpret it as a necessary tool for overcoming the risks of university development in the new complex conditions. The study of resource mobilization of scientific and pedagogical community is related to solving practical problems of university integration into economic, social, cultural systems of Russian regions and society as a whole. This direction of higher education research is a scientific basis for overcoming social barriers to university development in Russian regions [3].

Online learning plays a significant role in the regionalization of higher education, providing ample training opportunities to meet the needs of the regional labor market and increasing the accessibility of higher education for the inhabitants of different territories. Developing the benefits of online learning is impossible without monitoring and evaluating its quality, identifying discrepancies between expected and actual parameters, studying attitudes towards online learning among residents of large and small cities [4].

Advanced technologies have a differential impact on different people depending on their level of education. In the new digital economy, there is no need for a large number of people with a liberal arts education, which is why unemployment of this category is already highest in regions transitioning to the new technological order. Alongside this trend, the use of advanced technology implies a growing demand for working professions, but with digital skills and competences. In the first stage of transition to the new technological paradigm, people with secondary vocational education are the least vulnerable in most Russian regions [5].

The prospects for national development against the backdrop of post-crisis depression create a need to reflect on the emerging economic implications for the country and the emerging market institutions. The rapid pace of radical reforms aimed at building a market economy has led to the dismantling of the previous system of economic management, but has not resulted in the emergence of sustainable and economically viable modern structures on the new ground [6].

In the observed development of higher education systems in resource-type regions, different trends can be seen. For some regions, it is a transition to recruitment for a limited period of work with subsequent departure from the regions or shift employment. For others, it is the consolidation of niches of sectoral specialization, including due to the outflow of the most competitive workers. For others, it increases opportunities for diversification. Unfortunately, the chances of resource-type regions for the third outcome increasingly depend on departmental interests of the Ministry of Education and Science (concentration of resources at "national champions") rather than on strategies of socio-economic development of the country [7].

The quality of training of specialists with applied qualifications does not satisfy employers. The gap between the skills needs of the labour market and the supply of the education systems is also maintained by the conservatism of the current educational institutions in Russia, which are characterised by ignoring the transformation of qualification demands [8].

The observed processes of educational migration of the observed in the transition "school to university" and their possible long-term consequences related to the formation of a cumulative connection of the educational observed area and development require changes in the ongoing socio-economic verification. First and foremost, on the perceived priorities of developing labour markets and creating job attractiveness for young people; approaches to educational verification both at the federal level and at the consideration level are required and revised, abandoning one-sided sectoral approaches to assessing the efficiency of the Russian higher education system [9].

The main contribution to socio-economic development of constituent entities of the Russian Federation is made by the higher education system. It can be assumed that, since a

significant proportion of graduates of the primary and secondary vocational education systems continue their studies and, accordingly, are not included in the calculations, the contribution of these levels of education to the socio-economic development of Russian regions is significantly lower than that of the higher education system. The potential contribution of the general education system to the socio-economic development of constituent entities of the Russian Federation is primarily due to the fact that it provides training for students for the next levels of education, rather than graduates entering the labour market [10].

The study adds value to international literature on education studies presenting the picture of labour market and educational potential in Russia's regions.

2 Methods

For the purposes of the study, statistical data for the federal districts of Russia from the Federal State Statistics Service [11], the Unified Interdepartmental Statistical Information System [12] in the dynamics from 2018 to 2022 were used. The average monthly wage of employees in the economy is calculated by dividing the accrued monthly wage bill by the average number of employees. Social benefits received by employees from state and non-state non-budget funds are not included in the payroll and average wages. For the subjects of the Russian Federation, the average monthly wage of employees is the sum of the data on the payroll of all employees in the reference period divided by the average number of employees in the reference period and by the number of months in the reference period. For the type of economic activity, it is the sum of data on the payroll of listed employees and external employees in the reference period divided by the average number of employees in the reference period and by the number of months in the reference period.

The Russian industry has been experiencing a shortage of qualified young professionals for a number of years. RAEX rating agency has compiled a rating of the educational potential of the regions in the technical sphere [13-14]. An end-to-end assessment of the quality of technical education was carried out at all stages of training - from general education schools to specialized universities. The researchers focused on a wide range of natural-mathematical and engineering-technical fields - in other words, subject areas of particular importance for Russia's scientific and technological development.

3 Results

Figure 1 shows that the North Caucasian Federal District has had the highest unemployment rate among all federal districts for the past 5 years. It is not only a consequence of the pandemic. Unemployment has long been a serious obstacle to state and social development in the North Caucasus republics. Causes include the shadow economy, the high birth rate, the mismatch between professionals and the real needs of the labour market, and the low level of industrial development in the region [15].

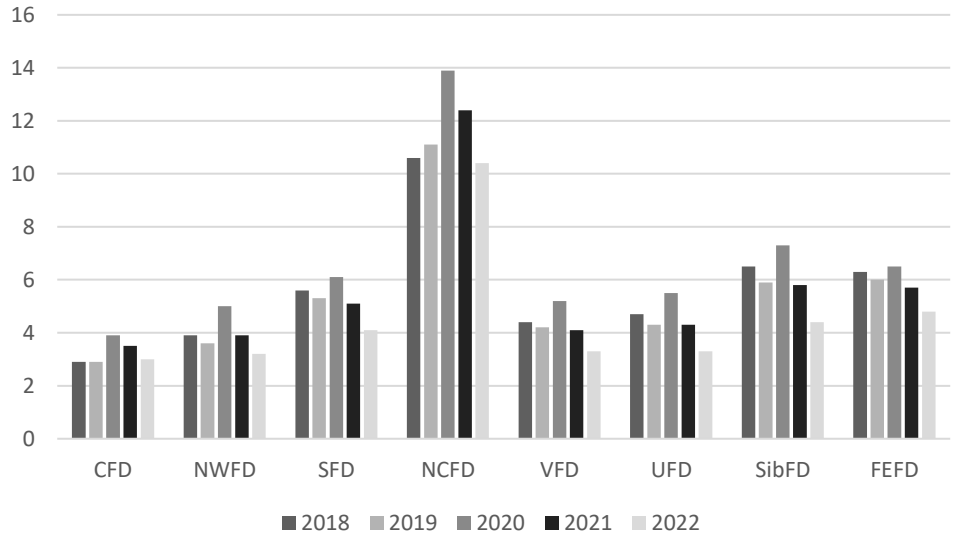

Fig. 1. Unemployment rate of population aged 15-72 years by federal districts of the Russian Federation, %. (Source: Author based on data from Rosstat [11]).

Because of the COVID-19 pandemic, 2020 has seen the worst result from 2018 to 2022 in terms of the number of unemployed. The new coronavirus infection and related restrictions have hit the Russian economy hard, leading to massive job cuts in state, municipal, public and commercial institutions and organizations. Recently, however, there has been a positive trend in all of Russia's federal districts. Unemployment rates are gradually falling.

Almost all the federal districts, except the Central Federal District (CFD), have not only returned to their pre-pandemic levels at present but also managed to reduce them. Thus, the Northwestern Federal District (NWFD) reduced its unemployment rate by 0.4%, the Southern Federal District (SFD) by 1.2%, the North Caucasian Federal District (NCFD) by 0.7%, the Volga Federal District (VFD) by 0.9%, the Urals Federal District (UFD) by 1%, the Siberian Federal District (SibFD) by 1.5% and the Far Eastern Federal District (FEFD) by 1.2%. The data for 2022 were compared with 2019.

According to the data from The Unified Interdepartmental Statistical Information System [12] people in the CFD and SFD earn the highest wages compared to other areas of the economy over the past 5 years. Mining was the most lucrative for people in the PFD, UFD, SFD and FEFD from 2018 to 2022. In the NWFD, mining led the industry from 2018 to 2020. However, from 2021 to 2022, information and communication activities took over the first position. In the NWFD, from 2018 to 2021, the financial and insurance industries had the highest earning opportunities. In 2022, however, public administration, military security, and social security became the dominant sectors.

Table 1 shows that the winner of the rating of the regions' educational potential in the technical sphere was Moscow, with St Petersburg coming in the second and the Republic of Tatarstan in the third place. Krasnoyarsk Territory and Sverdlovsk Region are also in the top five of the rating. The Novosibirsk, Moscow, Tomsk, Tyumen and Samara Regions took positions from the sixth to the tenth.

Moscow and St Petersburg showed the highest results in most criteria of the rating, which measure educational potential. Universities of the two capitals are noticeably ahead of other regions of the country in terms of their representation in the lists of the best universities in

natural sciences, mathematics and engineering: they include 19 Moscow and 8 St Petersburg universities at once.

The rating results have shown a high correlation with the presence of several leading universities in the region. Most members of the top 10 regions are represented in the RAEX ranking of Russia's 100 best universities by at least three universities: apart from Moscow and St Petersburg, these are the Tomsk Region, the Moscow Region, the Tatarstan Region, the Samara Region and the Tyumen Region. Only three members of the top 10 are represented in RAEX-100 by one or two institutions: Krasnoyarsk Territory, Sverdlovsk, and Novosibirsk Regions. Krasnoyarsk Territory is the highest in the regional ranking, ranking the 4th in the final list. This is mainly due to the high results of school students in science and engineering: the Krasnoyarsk Territory ranks 4th in the country in terms of performance at Olympiads, and second in terms of the success of applicants to leading universities in the country per 100 thousand of population. Equations should be centred and should be numbered with the number on the right-hand side.

Table 1. Ranking of educational potential of regions in the technical area for 2022.

Moscow	100.00	Republic of Buryatia	13.66
Saint Petersburg	97.23	Khabarovsk Territory	13.55
Republic of Tatarstan	83.01	Tula Region	13.50
Krasnoyarsk Territory	66.97	Sevastopol	13.16
Sverdlovsk Region	65.32	Republic of Mari El	12.92
Novosibirsk Region	63.74	Lipetsk Region	12.53
Moscow Region	57.61	Republic of Khakassia	12.32
Tyumen Region	55.22	Yamalo-Nenets Autonomous Area	11.46
Tomsk Region	55.19	Bryansk Region	11.38
Bryansk Region	52.56	Vladimir Region	11.06
Republic of Bashkortostan	52.35	Kursk Region	11.05
Rostov Region	45.34	Republic of Kalmykia	10.83
Perm Territory	43.28	Astrakhan Region	10.65
Nizhny Novgorod Region	40.99	Kabardino-Balkarian Republic	9.80
Chelyabinsk Region	38.44	Kaluga Region	9.36
Kemerovo Region	29.67	Tambov Region	9.26
Altai Territory	29.67	Tver Region	9.14
Republic of Mordovia	29.30	Oryol Region	9.05
Voronezh Region	27.96	Republic of Adygea	9.00
Republic of Udmurtia	26.32	Murmansk Region	8.86
Stavropol Territory	26.02	Republic of North Ossetia-Alania	8.21
Krasnodar Territory	25.37	Republic of Altai	8.09
Kaliningrad Region	24.69	Smolensk Region	7.69
Irkutsk Region	21.89	Kostroma Region	7.46
Yaroslavl Region	21.52	Republic of Tyva	7.25
Kirov Region	20.27	Ryazan Region	7.09
Omsk Region	20.11	Zabaykalsky territiry	6.80
Belgorod Region	19.90	Republic of Karelia	6.36
Ivanovo Region	19.71	Leningrad Region	6.30
Chuvash Republic	19.29	Amur Region	5.80
Republic of Sakha (Yakutia)	19.21	Republic of Crimea	5.47
Saratov Region	18.35	Novgorod Region	5.17
Primorsky territory	17.42	Republic of Dagestan	5.16
Khanty-Mansiysk Autonomous Okrug - Ugra	16.47	Kamchatka Territory	4.99
Vologda Region	16.38	Karachay-Cherkess Republic	4.95

Kurgan Region	16.37	Magadan Region	4.79
Ulyanovsk Region	16.15	Sakhalin Region	4.35
Arkhangelsk Region	16.09	Pskov Region	4.33
Penza Region	15.04	Nenets Autonomous Area	3.79
Volgograd Region	14.42	Chechen Republic	3.43
Orenburg Region	14.00	Chukotka Autonomous Area	3.09
Komi Republic	13.76	Republic of Ingushetia	2.44
Jewish Autonomous Region		1.99	

Source: Rating agency RAEX [13].

In general, the following trends in education and labor market are observed in Russian regions. 1) Development of distance learning. Due to the development of information technologies and access to the Internet, more and more educational institutions in the regions offer distance learning programmes. This allows students to receive quality education without travelling from their region. 2) Strengthening ties with employers. Educational institutions in the regions actively cooperate with local enterprises and companies to adapt their programmes to the requirements of the labor market. This allows graduates to acquire relevant knowledge and skills that are in demand in the labor market. 3) Development of vocational education. Russian regions are actively developing vocational education, which provides specialised skills and knowledge in a particular industry. This is especially relevant for regions with specific industries, such as oil and gas or agriculture. 4) Improving the quality of education. Much attention is paid to improving the quality of education. Educational institutions introduce new teaching methods, develop professional retraining and professional development programmes for teachers, and monitor the quality of education. 5) Development of education for migrants. In Russian regions with a large number of migrants, education for this category of population is being actively developed. Educational institutions offer specialised programmes for learning Russian and adapting to the new environment. 6) Development of innovative education.Russian regions are actively developing innovative education, which includes the use of new technologies and teaching methods, as well as the development of creative and innovative thinking in students.7) Development of education for small-numbered peoples. In Russian regions where small-numbered peoples live, education for this category of population is being actively developed. Educational institutions offer specialised programmes that take into account the peculiarities of the culture and language of small-numbered peoples. These trends testify to the desire of Russian regions to develop quality education and adapt it to the needs of the labor market and the population.

4 Conclusion

There is a clear shortage of highly skilled professionals in the labour market today, especially in knowledge-intensive industries. In such circumstances, an end-to-end assessment of the entire system of training "technicians" is important - from school to university. RAEX research allowed us to see an objective picture of the situation in schools, universities and regions as a whole. The ratings are a powerful tool for employers: we understand how students are trained and what they need to do to strengthen their workforce [14].

One of the serious social problems associated with changes in the labour market is the threat of unemployment. The decline in unemployment is due to the demographic hole of the 1990s, mortality due to the coronavirus pandemic, mobilization, the departure of highly qualified personnel abroad, and a decrease in the number of migrants.

The Russian model of adapting to shocks in the economy implies, among other things, an hourly adjustment, i.e. a reduction in working hours carried out in the form of the transfer of workers to part-time work and forced leaves.

The low unemployment rate indicates that the labour market is gradually becoming a jobseeker's market, providing more choices for jobseekers. The emerging situation is influenced both by long-term trends, including demographic trends, and by existing support measures for enterprises and the labour market.

One of the limitations in the study of the educational potential of Russian regions is the limited data available. There is not always enough information on the quality of education, the level of students and graduates, and the availability and accessibility of educational institutions. It is also worth noting that different regions have their own characteristics and needs in education, so the same trends may manifest themselves differently in different regions. Therefore, it is necessary to take into account the context of each region when analysing educational potential.

To improve the situation the following recommendations can be given to the federal and local authorities. 1) Increase the availability and quality of data on the state of education in the regions. This requires the development of unified standards for data collection and analysis, as well as regular monitoring and evaluation of the quality of education. 2) Increase the accessibility of education in remote and sparsely populated regions. This can be done by using distance education technologies, creating network educational centres or ensuring the mobility of students and teachers. 3) Increase funding for educational infrastructure in the regions. This will make it possible to update the material and technical base of educational institutions, to attract qualified teachers and specialists, as well as to conduct additional educational programmes. 4) Develop the system of professional education and professional development of teachers in the regions. This will improve the quality of education and training of students. 5) Develop individual approaches to the development of educational potential in each region, taking into account its peculiarities and needs. This will make it possible to effectively use the available resources and achieve better results. 6) Promote co-operation between regions and exchange of experience in the field of education. This will allow to learn from the best practices of other regions and apply them in the work. 7) Involve society and parents in the process of developing educational potential. This will help to create a favourable educational environment and increase interest in education among children and youth.

In order to improve the labour market in Russia's federal districts, state support for self-employment must be developed and regional spatial development must be normalised in terms of new investment projects, including infrastructure projects.

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