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Labor market, wage rates and unemployment: A study of general trends during the corona crisis

Galina V. Astratova

Dr. (Dr.) of Economics, Ph. D. of Techniques, Professor, Department of Integrated Marketing Communications and Branding of the Ural Federal University named after the first President of Russia B. N. Yeltsin; Professor of Socio-Economic Disciplines of the Ural Juridical Institute of MIA of Russia, Yekaterinburg, Russia
Email: galina_28@mail.ru

Elena B. Bedrina

Ph.D., Assistant Professor, the Ural Federal University named after the first President of Russia B. N. Yeltsin; Russian Institute of Economics, the Urals Branch of the Russian Academy of Sciences, Yekaterinburg, Russia
Email: bedrina1967@mail.ru

Dababrata Chowdhury

Associate Professor in Entrepreneurship and COO Truefeedback
Email: nipdev@hotmail.co.uk

Gaikar Vilas B

Vice-Principal and Associate Professor in Economics, Smt. CHM. College, Member-Board of Studies in Economics, University of Mumbai, India
Email: dr.vilasgaikar@gmail.com

Abstract---The rapid and undulating spread of the new dangerous COVID-19 infection across the world has exacerbated many socio-economic problems, showing the precariousness and vulnerability of modern civilization. The labor market was particularly hard hit under the current conditions, as it had been undergoing a gradual structural transformation in the previous period due to the digitalization of the economy, and was now forced to adapt at an accelerated pace to changes in the external environment under the influence of the pandemic and the response of the government to it. At the same time, the directions of adaptation were quite controversial, which led to the appeal to the chosen research topic. The authors conducted a comparative analysis and evaluation of adaptation practices. The following conclusions were made: 1) The pandemic confirmed the importance of non-price factors for the labor market; 2) Comparative analysis showed that the labor markets of developed and developing

countries were affected unevenly; against this background, the Russian labor market, based on official statistics, looked quite positive; 3) The coronacrisis led to a widespread change in the structure of employment and demand for various groups of professions; 4) The pandemic forced enterprises to save on the wage fund; 5) Inequality and discrimination in the labor market increased, and the problem of equal access to new digital technologies for various groups of the population also worsened; 6) The pandemic accelerated the processes of digitalization, changing not only the structure, but also the forms of employment of the population.

Keywords---labor market, coronavirus, COVID-19, corona crisis, unemployment, employment, wage, remuneration, digital technologies, digitalization, remote work, Russia.

Introduction

The rapid spread of the new SARS-CoV-2 infection around the world makes us think about the socio-economic problems that make modern civilization vulnerable to new, previously unknown diseases. To prevent future situations like the COVID-19 pandemic, researchers need to analyze the development of the epidemic and identify its patterns. For example, to assess the impact of various socio-economic factors on the epidemic parameters that characterize the rate of spread of the disease (number of cases, growth rate) and the severity of its course (duration of the disease, mortality). The results of this analysis can be used to build models of the spread of the epidemic and make decisions to contain it (Sinitsyn Evgeny V., Tolmachev Alexander V., Ovchinnikov Alexander S., 2020). These studies are especially relevant for the labor market, which has to adapt to changes in the external environment at an accelerated pace.

Indeed, any non-market forceful influence on the market leads to its oppression. The labor market in this case is no exception, on the contrary, due to its specificity (the peculiarity of the product, asymmetry, active state regulation, etc.); it is more affected by non-price factors than other markets. This was confirmed by the situation with COVID-19 and the partial or full lockdowns announced by the governments of the countries as a fight against the epidemic, which had a significant impact on the main characteristics of the labor market: employment, unemployment, job structure, and wages.

It is also important that the digital transformation of the global economy and the transfer of organizations to remote work in connection with the pandemic could not but affect the labor market and the interests of its participants. Today, it is safe to say that the impact of digitalization on the labor market is of great importance, as it is increasingly taking over more and more of its segments. However, the problems and prospects for the labor market development in connection with the COVID-19 pandemic and digitalization are very controversial, both in Russia and abroad. In this regard, it was considered appropriate to highlight the main characteristics of the labor market and consider the following main trends in this study: 1) unemployment; 2) employment structure; 3) wages;

4) inequality and discrimination; 5) digital technologies and their impact on employment.

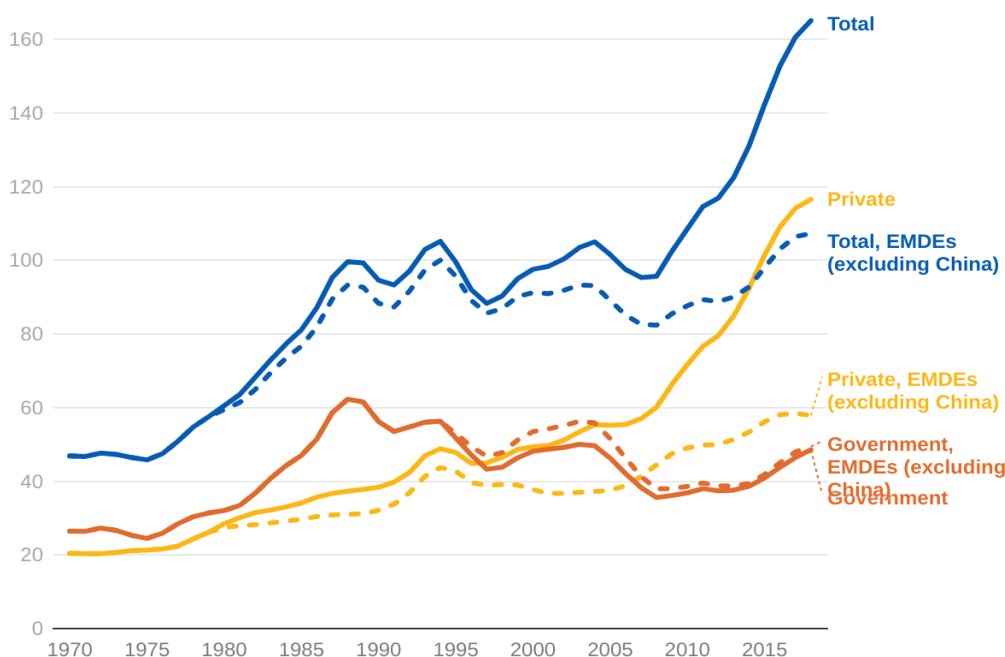
Research methods

The main research tools used in this work are comparative and system analysis. Methods of empirical research, principles of formal logic, synthesis, statistical, logical methods, as well as methods of comparison, generalization, and structuring are used to study theoretical and practical material.

Results of the study

Unemployment rate

The SARS-CoV-2 pandemic has caused a sharp deterioration of the economy in all countries of the world (Ceylan Rahmiye Figen , Ozkan Burhan, Mulazimogullari Esra, 2020; Xiaolei Zhang, Renjun Ma and Lin Wang, 2020; etc.), but especially in emerging markets and developing countries (Astratova G.V., Mikhailova N.S., Porotnikov P.A., Danilova E.V., 2020; Sinitsyn Evgeny V., Tolmachev Alexander V., Ovchinnikov Alexander S., 2020; etc.) (Figure 1).



Averages computed with current U.S. dollar GDP as weight and shown as a 3-year moving average.

Source: International Monetary Fund, World Bank • Download image

Figure 1. Debt in the world and EMDEs (emerging markets and developing economies), % of GDP

The World Bank's Global Economic Outlook Report for June 2020 says that COVID-19 has triggered a global crisis that is leading to the deepest recession

since World War II (The World Bank's 2020 country classifications explained, 2020). Moreover, restrictive measures of a sanitary and epidemiological nature have led to an unprecedented loss of employment around the world, including in Russia. So, in April 2020, experts of the International Labor Organization (ILO) said that due to the coronavirus pandemic quarantine measures, a significant deterioration in the global labor market is expected, as more than 340 million people will lose their jobs, and 1.6 billion people will lose their livelihoods (Vicky McKeever, 2020). In July 2020, it became clear that the global loss of official employment during 2020 was significantly less due to the active use of adaptation mechanisms and amounted to 114 million people (Monitor: COVID-19 and the world of work). However, these losses affected the interests of 85% -87% of all workers in the world, according to various estimates (Experts have assessed the impact of the coronavirus on the global labor market; ILO Bulletin: COVID-19 and the world of work; Vicky McKeever, 2020; etc.).

But the financial losses, on the contrary, were significant. For example, the UN International Labor Organization has predicted that 1.6 billion workers in the informal sector, most affected by the pandemic, could suffer "huge damage" to their livelihoods (How coronavirus has hit employment in G7 economies, 2020). However, in reality, almost 2.0 billion people or about 50% of the global labor market actually lost their livelihood during the pandemic (Experts have assessed the impact of the coronavirus on the global labor market; ILO Bulletin: COVID-19 and the world of work; Vicky McKeever, 2020; etc.).

The average global unemployment rate was about 6.5% (according to the ILO methodology*), increasing by more than 1% over the year. Although in some countries it has reached a fairly high level - more than 14.5%, indicating the emergence of cyclical unemployment (Figure2).

* The indicator is calculated on the basis of representative labor force surveys conducted by the ILO at the national level. In the absence of data, other sources (census data and estimates provided at the national level) are taken into account. In this case, unemployed people are those who are unemployed, actively looking for work and are ready to start working as soon as it appears, including people who have lost their jobs or voluntarily left them, as well as people who have not looked for work because they have agreements about future work, are also considered unemployed if they were not yet employed at the time of the survey (from the explanations to the methodology for calculating the indicator on the WorldBank website).

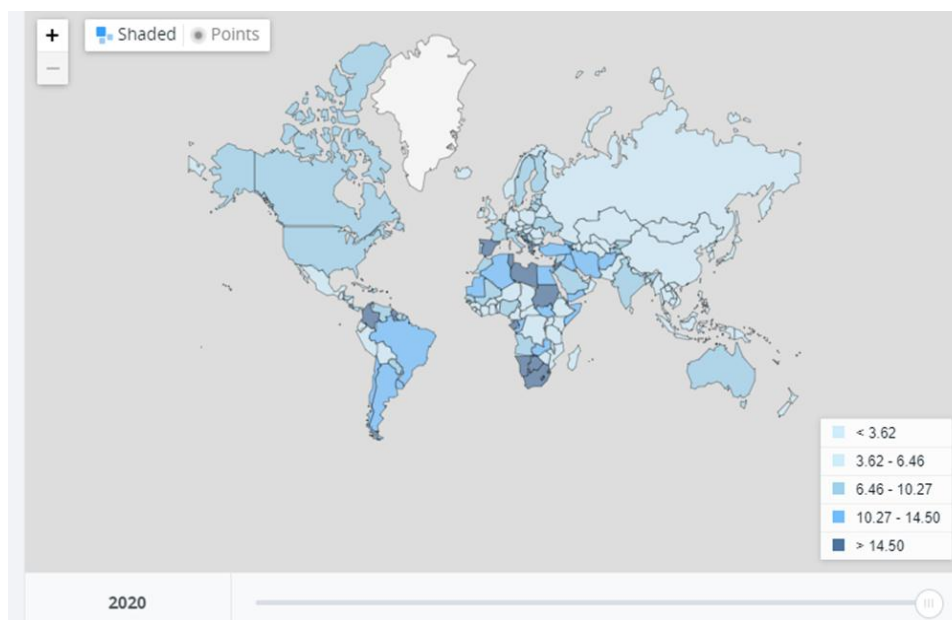


Figure2. Unemployment, total (% of total labor force) (modeled ILO estimate)[†]

The explanation for the differences in the unemployment rate is the specialization of countries in the global market and the sectoral structure of employment, as well as the structure of business by type of enterprise and the share of the public sector.

It is also necessary to pay attention to the specific situation in the labor market in 2020, which also contributed to the growth of differences in the unemployment rate. The fact is that the main “culprit” of the conditions deterioration and the employment’s loss of most of the population in a number of countries was not the deterioration of the economic condition, but not always the deliberate actions of the government of the countries. National leaders imposed extremely tough lockdowns in the face of rising disease rates and the unwillingness of the local health system to “digest” the unexpected influx of patients infected with COVID-19. The reason for the adoption of hard lockdowns in rich countries with developed economies was the relatively high level of infection of the local population with COVID-19 due to its high mobility and “crowding”, especially in large metropolitan areas. For example, according to the sociological study Understanding Coronavirus in America, conducted in the United States, 43.9 % of respondents in the period from April 1, 2020 to November 11, 2020 were unemployed. Since lockdowns were accompanied in most cases by financial payments to the population, the richest countries with developed economies were able to afford hard lockdowns. Accordingly, the employment losses in developed countries were quite significant. According to the World Bank, in countries with high per capita income, the unemployment rate calculated according to the ILO methodology was on average 6.8%, while in low-income countries is only 5.3%

[†]A source:

<https://data.worldbank.org/indicator/SL.UEM.TOTL.ZS?end=2020&start=2020&view=map>

(Raifman J., Bor J., Venkataramani A., 2021, p. 1).

Another factor that has contributed to the decline in employment and the increase in unemployment in some countries, namely, in the countries of traditional labor donors, was the closure of borders, which made it impossible for the population of these countries to access the global labor market. The existing shortage of jobs in domestic labor markets, which is usually triggered by the relatively rapid growth of the working-age population that previously went abroad to work, has increased the already traditionally high unemployment rate in these countries. For example, according to the World Bank, the unemployment rate in Kyrgyzstan during the epidemic in 2020, calculated according to the ILO methodology, was 7.9%, in Tajikistan is 7.8%[‡].

Another group whose labor market was severely affected during the pandemic was the countries and regions of countries that earn their income from the tourism and hospitality industries. Especially in this group, we would like to highlight the island states, for which tourism is the most important source of well-being of their citizens. Restrictions on international travel and the complete closure of borders have led to an unprecedented increase in unemployment in these countries. So, according to the World Bank[§], in New Caledonia, it increased from 15.4% in 2019 to 16.6% in 2020, in the Bahamas from 10.1% to 11.8%, in the Virgin Islands from 8.2% to 11.8%, in the Maldives from 5.8% to 7.2%, respectively.

As for Russia, in April 2020, according to Federal State Statistics Service of the Russian Federation (here and further – Rosstat), the number of unemployed increased to 4.3 million people, and the unemployment rate reached its highest in the last four years, that is, 5.8%. In other words, the unemployment rate in the Russian Federation, calculated according to the ILO methodology for the period from 2019 to 2020, increased by 1.3%. At the same time, only 1.1 million people received unemployment benefits, according to Rosstat (Rosstat reported 800 thousand new unemployed in non-working April, 2020). According to the results of November 2020 – January 2021, compared to the same period last year, the number of unemployed Russians increased by 1.3 percentage points and amounted to 4.46 million people. The increase in official unemployment, we can explain, to a greater extent, by the fact that the amount of unemployment benefits was increased, which led to an increase in the officially registered unemployed. In the regional context, the most favorable situation on the labor market is observed in the Yamalo-Nenets Autonomous Okrug and Khanty-Mansi Autonomous Okrug, and in Chechnya and Ingushetia – the worst situation (Rosstat reported 800 thousand new unemployed in non-working April, 2021).

The relatively low level of unemployment in Russia as a whole can be explained,

[‡] A source: The World Bank. [Electronic resource]. // Access mode: https://data.worldbank.org/indicator/SL.UEM.TOTL.ZS?most_recent_value_desc=true (date of request: 10.03.2021).

[§] A source: The World Bank. [Electronic resource]. // Access mode: https://data.worldbank.org/indicator/SL.UEM.TOTL.ZS?most_recent_value_desc=true (date of request: 10.03.2021).

to our mind, on the one hand, by the adoption of too soft lockdown; on the other hand, by the traditionally high level of informal employment of the population, the use of “gray” schemes, etc. (Bedrina E.B., 2019; Bobkov V. N., 2017; Kozlova O. A., Karmakulova A.V., 2013; etc.). In this regard, it should be emphasized that the labor market in Russia is regulated not through unemployment, but through the informal (“gray”) sector and a reduction in wages with an increase in the burden on the employee (ZubarevichN.V., 2020). Since the share of the “gray” sector in 2018-2020 was, according to various estimates (StarostinaYu., 2019; ZubarevichN.V., 2020), at least 20% of GDP or 20 trillion rubles, then in connection with the coronavirus pandemic, one in five Russian families is expected to lose their livelihoods.

Employment structure

The pandemic has had a significant impact on changing employment patterns. Thus, one of the ways to mitigate the restrictions on the labor market during the coronacrisis was the transfer of an employee to a remote format. In this connection, we note that the structure of employment in the labor market of countries and regions also affected the unemployment rate in them, since not all professions allow working in this mode. For example, during the coronacrisis, medical personnel, employees of law enforcement agencies, law enforcement agencies, etc. were in the most difficult situation employees who, on duty, were obliged to work “on the front line” and literally risk their lives.

Also in a difficult situation were representatives of mass professions, whose enterprises for one reason or another were not closed: builders, shift workers-oil workers, workers of public transport, assembly plants, housing and communal utility services, etc. They were forced to continue their work with an increased risk of infection, although the management of the enterprises operating in the normal mode tried to provide their employees with protective and hygiene products, taking additional measures to more thoroughly clean and disinfect the premises where the workers were employed (TimokhinaA.A., 2020).

At the same time, employers were able to transfer many highly qualified specialists to remote work without much difficulty: programmers, specialists of the State Information System, researchers, teachers, accountants, lawyers, etc. Moreover, many employees – owners of the above-mentioned specialties, and before the pandemic worked remotely, being freelancers. Some Western companies, in connection with the unexpected savings in office expenses (including office rent, utilities, etc.), have committed themselves to pay extra to employees transferred to work “outside the office” for utility costs and the cost of the Internet. Other companies have provided their employees with desktop computers and laptops. A number of employers used this situation to repair their offices and premises. Remote work has made it possible to intensify the holding of online seminars, meetings and conferences, holding online contests and online quizzes in their free time have become firmly embedded in the corporate culture.

Of course, the decisive factors in organizing remote work in the context of the pandemic were the level of development of digitalization of countries and the degree of coverage of the territory by mobile operators, as we have already

discussed in the previous sections of the monograph. Some countries (especially South Asia, Africa, and Latin America) have experienced some difficulties due to poor Internet access. This has led to digital inequality not only in the education system (COVID-19 and Higher education: today and tomorrow, 2020; How COVID-19 is Impacting Prospective International Students Across the Globe, 2020), but also in access to the labor market, both among countries and regions, and among the population (Novozhenina O.P., Grebnyak O.V., Afanasyev V.A., 2020).

In a less enviable position were teachers and teachers, many of whom had to quickly master the technologies of distance learning, create electronic educational resources and improve their computer literacy (Agranovich M.L., 2020; Arzhanova I.V., Baryshnikova M.Yu., Zavarykina L.V., Nagornov V.A., Perfilova O.V., 2020). At the same time, the highly qualified employees and the achievements of digitalization have also allowed them to maintain their employment. For example, a sociological study conducted among teachers in the UK showed that 49.5% of respondents were not ready to switch to online training. Moreover, many of them expressed concern that such training would worsen the quality of education (Watermeyer R., Crick T., Knight C., Goodall J., 2021).

In Russia, the use of remote employment mode had certain specificity. First, in most cases, during the coronacrisis, the management remained at their jobs, but the employees, if possible, were transferred to remote work. This is evidenced by the results of the Russian monitoring of the life cycle of qualifications, conducted by the VCIOM (Russian Public Opinion Research Center) and the National Agency for the Qualifications Development. According to monitoring data from May 6, 2020 as of June 29, 2020, half (48%) of business managers, line managers, and HR staff worked in the usual mode, while the other half worked remotely (44%). Only a small percentage of respondents were at home with wages saved – 6% (The labor market will grow after the pandemic, 2021). Secondly, in many enterprises, there was a problem of accounting for working hours worked, since the norms of remote work mode and standards for accounting for working hours in online mode were not developed by the beginning of the pandemic. This, accordingly, led to an overload of workers (especially in the education system) and problems of adequate remuneration in the new conditions.

As a result of the coronacrisis, there was a change in the structure of demand for workers. First, due to the active introduction of remote employment of the population, IT specialists are in demand in the labor market more than ever before: computer engineers, system administrators, system analysts, programmers, specialists in the repair of digital equipment, etc. Secondly, the unprecedented increase in COVID-19 infection, which occurs especially in large cities and mega-polices due to the crowding of the population, required the construction of new hospitals, the deployment of mobile medical care centers, and the conversion of various premises, including former non-core hospitals and polyclinics. This has led to an increase in the demand for medical professionals: doctors, mid-and junior medical staff and workers who maintain this infrastructure, as well as ambulance drivers. The resulting shortage was covered, among other things, through the rapid re-profiling of medical workers, the involvement of students and volunteers in the “red zone”. At the same time, due

to the closure of a number of medical institutions and/or changes in their profile, the demand for “online doctors” of narrow specialization has increased (Timokhina A.A., 2020, p. 100).

Third, there was an increase in demand for workers who made the forced stay of the population at home more comfortable: couriers, food deliverers (YandexEda, DeliveryClub, Sber-delivery, etc.), call center operators, tutors, etc. The temporary closure of schools has led to the return to the labor market of the tutor profession, which has long been a thing of the past (The labor market has changed in a few weeks, 2020). Once at home, many residents of apartment buildings and country houses began to solve deferred household problems, which increased the demand for craftsmen who provide services for the repair of houses, household appliances, interior design and cleaning (Timokhina A.A., 2020, p. 99). In Russia, this was also facilitated by preferential mortgages (6.0-6.5% for new buildings) and the deferred demand for real estate, which became relevant due to the desire of the population to preserve their existing savings. In connection with the transition of trade to virtual stores, the demand for managers-consultants of electronic sales, marketers, specialists in the field of Big Data has increased, and so on.

At the same time, due to the closure of borders and the introduction of various types of regulations that limit the working hours and occupancy of premises, as well as due to the forced reduction in demand from consumers, there was a reduction in the staff of the tourism, hospitality and entertainment sector: travel agents, tour guides, hotel administrators, cooks, waiters, etc. The administration of enterprises in this area dismissed some of the employees, some of them were sent on indefinite leave without saving or with partial preservation of wages. Some workers in the tourism, hospitality and entertainment sectors were forced to temporarily change their occupation. This was especially pronounced in large cities.

Wages

As it is well known, the World Bank distributes the economy of countries into four income groups: low -, lower-middle -, upper-middle-and high-income countries. The GNI per capita thresholds for 2020 are as follows (The World Bank's 2020 country classifications explained, 2020):

- Low income: Less than \$ 1,036
- Below-average income: \$ 1,036 to \$ 4,045
- Above-average income: \$ 4,046 to \$ 12535
- High yield: More than \$ 12535.

This classification is based on GNI per capita in current US dollars and is updated annually on July 1. It should be noted that to date, there is very little research on the impact of the minimum wage on wages and employment, and even less on the impact of poverty and household inequality. Especially it is true for developing countries. This is a matter of concern, as the minimum wage is a very active regulator of labor policy and markets, and this minimum is regularly

reviewed**.

The data on the impact of the pandemic on wages are very contradictory. At the same time, it is known that the United States and the governments of several European countries have mitigated the growth of unemployment with the help of generous wage subsidies, which allowed compensating for up to 40% of the losses of the wage fund (How coronavirus has hit employment in G7 economies, 2020; Koop Avery, 2021).

Overall, average wages in many countries have either stabilized or declined significantly during the global pandemic. A sharp decline occurred in a number of European countries, as well as, for example, in South Africa and Japan. This is due to fiscal stimulus deficits in most low-income countries (Koop Avery, 2021). Figure 3 shows a visualization of the impact of the pandemic on global wages.

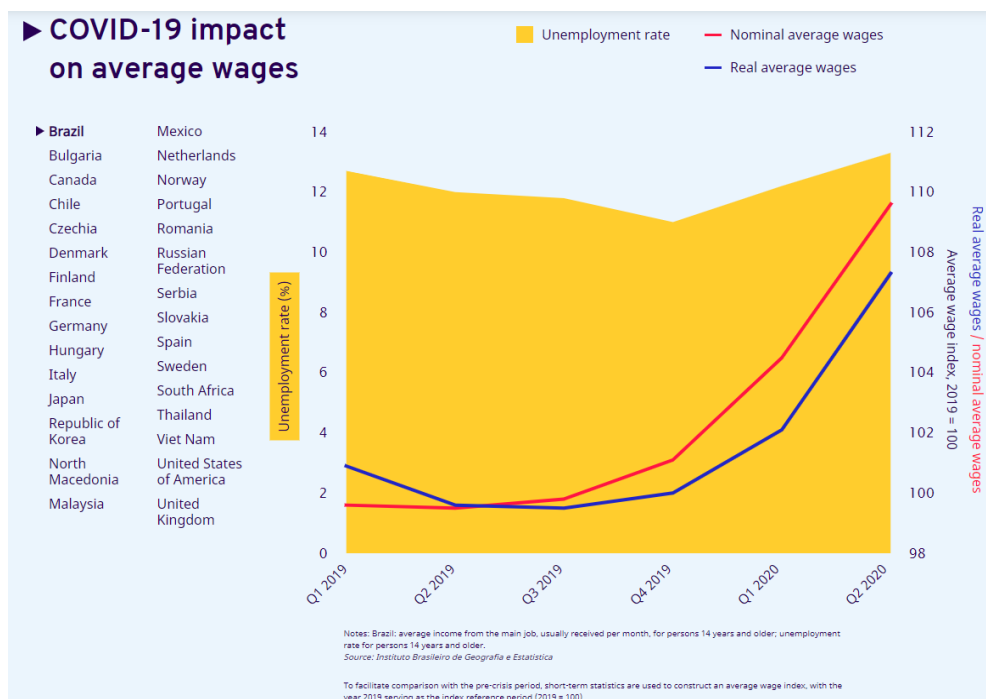


Figure 3. Visualizing How COVID-19 Impacted Global Wages (Koop Avery, 2021)

It should also be noted that the crisis situation forced enterprises to save, including on wages. This is confirmed by the data on the average salary in Russia, collected by the site's analysts GorodRabot.ru (i.e. "Job in City, Russia"), based on information about 9 million vacancies announced by 150 companies in 2,800 localities (Salary statistics in Russia, 2021). It should be noted that wages are also affected by the processes of digitalization. Jobs in the field of high technology

** A source: The World Bank. [Electronic resource]. // Access mode: https://data.worldbank.org/indicator/SL.UEM.TOTL.ZS?most_recent_value_desc=true (date of request: 10.03.2021).

are in demand, and therefore, they are, as a rule, one of the highest paid. Moreover, as the demand for IT specialist's increases, the level of differentiation in remuneration increases. Employees who do not have digital technology competencies lose out significantly in terms of pay to those who do.

In addition, a lack of digital skills can lead to job losses. Job cuts also lead to a reduction in the wage fund and an increase in poverty. In order to save on wages, modern technology companies (Apple, Microsoft, Facebook, etc.) transfer some of their processes to other countries, where labor costs are much lower than in their own countries. They also transfer employees to the status of self-employed or individual entrepreneurs, saving on deductions to various funds and social guarantees (AranjinV.V., 2020).

Inequality and discrimination

The pandemic has also exacerbated labor market problems such as inequality and discrimination. The least protected workers in the labor market were in a difficult situation: women, elderly people, ethnic minorities and migrant workers, especially low-skilled ones. There are several reasons for this. First, the above-mentioned employees are usually subjected to statistical discrimination (Tagarov B.Zh., 2019); secondly, they turned out to be less proficient in the competencies that were in demand during the coronacrisis, allowing them to work remotely. A number of researchers (Borbasova Z.N., Sedlarski T., Bezler O.D., 2019; Dvořák, M., Rovný, P., Grebennikova, V., Faminskaya, M., 2020; Nasher M., 2019; PowerK., 2020; etc.) agree that women were the most vulnerable category of workers during the coronacrisis. In addition to the above-mentioned problems, there is also a problem related to the structure of their employment, namely, their large share in the most affected sectors of the economy during the specified period: the hospitality industry, entertainment, public catering, trade, and health care (Dvořák, M., Rovný, P., Grebennikova, V., Faminskaya, M., 2020; PowerK., 2020).

Inequality of opportunities, including in the labor market, has particularly exacerbated inter-ethnic relations in a number of countries. The "Black Lives Matter" movement thundered around the world, which once again drew attention to the situation of the colored population in the developed countries of the world. After analyzing the data of the Bureau of Statistics and Employment in the United States, the scientists concluded that during the pandemic in the USA, the colored population most often lost their jobs and earnings: African Americans, people from Asia and Latin America (GemelasJ., DavisonJ., KeltnerC., 2021).

At the same time, in the Russian labor market, the most vulnerable category was labor migrants. This is evidenced by an online survey conducted by the Center for Social Demography of the Russian Academy of Sciences in April 2020. In particular, the survey showed that more than half (65%) of migrant workers were actually left without work due to the restrictions imposed by the COVID-19 pandemic; one in five (20%) said that they worked at the same place; about 4% of respondents found additional work; about a third of migrants (34%) wanted to go home, but could not do it as borders was closed (Riazantsev S.V., Vazirov Z.K., Garibova F.M., 2020).

Thus, it can be noted that the COVID-19 epidemic and the lockdowns announced in connection with it have had a significant impact on the labor market in many countries of the world, causing crisis phenomena in it, changing employment regimes and the structure of demand for workers. The digitalization of economies helped to mitigate the crisis, but it also increased the inequality of countries, regions and people in access to the labor market. The coronacrisis has sharpened the existing problems of inequality and discrimination, highlighting them in a new light.

Digital technologies and their impact on employment

The global pandemic has provided an additional incentive for the active development of digital technologies around of the world. To date, digital technologies have evolved from a separate technological industry into a new way of life that affects all types of human activities and requires new competencies (Astratova G.V., Danilova E.V., 2020). Digitalization has changed the requirements for employees, forcing them to constantly retrain and master the competencies that allow them to interact in an electronic environment (Astratova G.V., 2020).

The question of the demand for certain competencies was updated (SchwabK., p.37). Thus, some authors (Andreeva L.Yu., Dzhemaev O.T., p. 29) write that in modern society, the demand for competencies in the field of information technology is increasing. At the same time, other researchers (Sologubova G.S., 2018) believe that in the digital economy there will be a demand for universal knowledge of workers, which will, if necessary, contribute to their retraining, re-profiling, adaptability and development throughout life. Speaking about the impact of digitalization on employment, we can identify several groups of professions that will be in demand in the coming years after the pandemic, such as:

- *A group of professions in the field of IT technologies* that are already known and most common at the moment: computer engineer, programmer, system administrator, texturist, data analyst, web designer, etc.;
- *A group of professions in the field of new and rapidly developing digital technologies*: an artificial intelligence specialist, a machine learning specialist, a Data Scientist, an expert in process automation, an information security analyst, developers of the user interface and human-machine interaction, a robotics engineer, a blockchain specialist, etc.
- *A group of professions in the field of Internet marketing*: Internet marketers, Internet sales managers, Internet advertisers, Internet distributors, Internet blogger and social media specialists, remote service specialists, and other specialists engaged in the rapidly growing worldwide e-commerce;
- *A group of professions where the human factor is of great importance*, and therefore they should remain in the foreseeable future: teacher, artist, designer, musician, artist, tutor, doctor, junior and secondary medical staff, social worker, etc.

Thus, artificial intelligence develops more and more new specialties, and automation of work processes and robotics displace people from routine specialties in the labor market. At the same time, as experts of the World Bank

note (The World Bank, 2016, p. 33), a very modest number of jobs are being created directly in the field of digital technologies. However, the number of jobs created by digital technologies can be enormous.

For example, in the United States, every job in the digital technology sector creates another 4.9 jobs in other sectors (Moretti Enrico, and Per Thulin, 2013). In the OECD countries, only 3-5% of employees were employed in the digital sector in 2016. In developing countries, the digital technology sector accounts for an average of no more than 1% of the workforce (less than 0.5% in Ghana and Bolivia, and almost 2% in Sri Lanka and Colombia). At the same time, for example, in China, the rapid growth of e-commerce has led to the creation of 10 million jobs in the country (Online stores and online services), which is only 1.35% of all jobs in the (Brynjolfsson Erik, and Andrew McAfee, 2014; Moretti Enrico, and Per Thulin, 2013).

The average number of jobs with a high risk of automation in 2018 for the OECD countries was 13.5. The negative impact of automation on the labor market will be more pronounced in the countries of Eastern and Southern Europe, such as Slovakia, Greece, Spain and Slovenia; and to a lesser extent in the countries of Northern Europe, North America, and New Zealand. Norway, Finland, Sweden and Korea will be in a better position (Chinoracký R., Čorejová T., 2019). This dependence is also influenced by the level of countries development, their innovative potential, as well as the existing industry structure.

As for the Russian reality, it is very difficult to make any forecasts on this issue. However, the researchers note that in Russia there is a strong digital inequality, there are quite advanced enterprises, others, on the contrary, are very far from this process (Lola I.S., Bakeev M., 2020). Thanks to digitalization, the labor market is becoming more flexible and mobile; new forms of employment are emerging and developing, and the nature of work in all industries and professions is radically changing. For example, electronic freelancing is widely spread in the modern world (especially in Western countries), makes the employment of an employee more comfortable and allows getting relative independence from the employer.

Companies also benefit from the use of new forms of employment; they allow them to significantly save on the costs associated with the maintenance of full-time employees (rent and maintenance of premises, equipment, etc.) and R&D. There is an opportunity to attract highly qualified expensive specialists on the terms of short-term outsourcing. For example, in Russia, crowd sourcing has become widespread. As in the case of freelancing, it is mainly young people who participate in it. At one time, crowd sourcing was used by Sberbank of Russia, JSC "Russian Railways", Corporation "RosAtom", JSC "TatNeft", JSC "MOEK", "Azbuka Vkusa", etc. Since 2014, crowd sourcing has been actively used by the Moscow government to receive feedback and collect interesting proposals for the development of the city. For this purpose, a special website "City of Ideas" was created. Among the projects that residents of the city were involved in the discussion of through crowd sourcing are: "Our Routes" (2014), "Environmental Strategy of Moscow" (2015), "Children's Clinics" (2016), "Cultural Centers, the future" (2017), "Museum of Moscow" (2018), "My Park" (2019), "Moscow

Electronic Services and other Services” (2020), etc.

Such projects have a significant social impact. Some researchers believe that crowd sourcing is an effective marketing tool, especially in the era of digitalization and integrated marketing communications. At the same time, it is believed that many forms of crowd sourcing are a way to attract free labor, bypassing standard hiring procedures (Popova S.M., 2020). Thus, we can conclude that the pandemic that caused the increased use of digital technologies around of the world has also led to positive changes in the labor market.

Conclusion

The authors presented a brief summary of five topical issues: 1) unemployment; 2) employment structure; 3) wages; 4) inequality and discrimination; 5) digital technologies and their impact on employment.

As a result of the study, authors were made the following main conclusions:

First, the pandemic confirmed the importance of non-price factors for the labor market. So, in particular, the impact of COVID-19 and lockdowns organized by national governments, and their impact was quite unexpected, and forecasts were difficult, both due to the very asymmetry of the labor market, and in connection with the transformations taking place in the labor market in the pre-crisis period.

Secondly, comparative analysis showed that the labor market of developed countries was more affected, where due to the high mobility of the population, the coronavirus infection spread faster, and the governments of the countries introduced more stringent lockdowns. Among developing countries, traditional labor exporters were the most affected, with the labor market under unprecedented pressure from those forced to seek work in the domestic labor market due to border closures. A special group, whose market was also significantly affected during the coronavirus crisis, consisted of countries that earn their income from the tourism and hospitality industries. Against this background, the Russian labor market, at least according to official statistics, looked quite positive, and the increase in official unemployment, we can explain, to a greater extent, by the fact that the amount of unemployment benefits was increased, which led to an increase in officially registered unemployed. Although in reality, the deterioration of the situation was somewhat more significant, due to the active use of gray employment schemes.

Third, the coronavirus crisis led to a change in the employment structure of the population. It is so as there was a change in demand for various groups of professions. At the same time, those whose work could be easily translated into a remote format were in a more favorable position. In Russia, due to the significant differentiation of territories by the level of digitalization, regions, industries, and enterprises found themselves in different conditions, the problems of material and technical support, and the possibility of Internet coverage in various parts of the country have worsened.

Fourth, the pandemic has forced to save on the payroll. In a number of countries,

the Government was able to compensate for some of the wage losses. The tendency to move enterprises to countries with a lower standard of living in order to save on wages has increased.

Fifth, in these conditions, inequality and discrimination in the labor market have increased both globally and locally; the problem of equal access to new digital technologies for different groups of the population has become more acute.

Sixth, the pandemic has accelerated the implementation of digitalization, changing not only the structure, but also the forms of employment of the population, giving companies the opportunity to try out the remote format. Although these transformations were available only to the most financially secure countries, territories, and enterprises. These problems have become widespread in the Russian labor market, primarily due to the enormous regional differentiation.

References

- Agranovich M.L. *Organization of education in the context of a pandemic*. The practice of the OECD countries. April 19, 2020. [Electronic resource] // Access mode: <https://firo.ranepa.ru/novosti/105-monitoring-obrazovaniya-na-karantine/789-agranovich-ekspertiza> (accessed 10.03.2021). (In Russian).
- Andreeva L.Yu., Dzhemaev O.T. The influence of the digital economy on the economy on the formation of new trends in the Russian labor market. // *Scientific notes of SKAGGS*. 2017. No. 3, pp. 25-32 (In Russian).
- Aranjin V.V. Problems of the ratio of wages and labor productivity: a systematic approach. // *Social and labor research*. 2020. No. 2 (39), pp. 18-29. (In Russian).
- Arzhanova I.V., Baryshnikova M.Yu., Zavarykina L.V., Nagornov V.A., Perfilova O.V. *The impact of the COVID-19 pandemic on the higher education sector and the Master's degree program: an international, national and institutional response*. Analytical material. - M.: Vladimir Potanin Charitable Foundation-NFPK-TERRA COURSE, 2020. - 23 pp. (In Russian).
- Astratova G.V. Key trends in the development of the modern market of on-line services of higher education // *The world of science. Pedagogy and psychology*, 2020. No. 3. - 17 p. [Electronic resource]. // Access mode: <https://mir-nauki.com/PDF/33PDMN320.pdf> (accessed 14.09.2020). (In Russian).
- Astratova G.V., Danilova E.V. Marketing tools for digitalization of the industry providing consulting services. // In the collective scientific monograph: *Innovative development of the economy and law in the context of the digitalization model*. Baranovichi: Publishing House of UO BSU, 2020, pp. 7-18. (In Russian).
- Astratova G.V., Mikhailova N.S., Porotnikov P.A., Danilova E.V. On the issue of economic effects in connection with the coronavirus COVID-19. // *Bulletin of the Altai Academy of Economics and Law*. 2020. No. 6-2, pp. 183-192. - 15 p. [Electronic resource]. // Access mode: <http://vaael.ru/ru/article/view?id=1181> (accessed: 22.12.2020). (In Russian).
- Bedrina E.B. *The role of labor migration in the formation of unstable forms of employment of the population*/ In the collection papers: Russian Regions in the focus of change. Collection of reports of the XIII International Conference.

- 2019, pp. 76-80. (In Russian).
- Bobkov V. N. Unstable employment in the formal economy of Russia - the main reason for informal employment // *The standard of living of the population of the regions of Russia*. 2017. No. 1 (203), pp. 7-16. (In Russian).
- Borbasova Z.N., Sedlarski T., Bezler O.D. Analysis of the modern interaction of the labor market and the professional education in Kazakhstan. // *Bulletin of Karaganda University. Economy Series*. 2019. V. 93. No 1, pp. 98-105.
- Brynjolfsson Erik, and Andrew McAfee. *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies*. – New York: W. W. Norton, 2014. – 440 pp.
- Ceylan Rahmiye Figen , Ozkan Burhan, Mulazimogullari Esra . Historical evidence for economic effects of COVID-19. // *The European Journal of Health Economics*. 04 June 2020. [Electronic resource.] // Access mode: DOI 10.1007/s10198-020-01206-8 (date of request: 05.06.2020).
- Cherian, J.; Gaikar, V.; Paul, R.; Pech, R. Corporate Culture and Its Impact on Employees' Attitude, Performance, Productivity, and Behavior: An Investigative Analysis from Selected Organizations of the United Arab Emirates (UAE). *J. Open Innov. Technol. Mark. Complex.* 2021, 7, 45. <https://doi.org/10.3390/joitmc7010045>
- Cherian, Jacob; Jacob, Jolly; Qureshi, Rubina; Gaikar, Vilas. 2020. "Relationship between Entry Grades and Attrition Trends in the Context of Higher Education: Implication for Open Innovation of Education Policy" MDPI, Switzerland, *Journal of Open Innovation Technology, Market and Complexity*, Vol- 6, Issue- 4: 199. (Scopus Indexed-SJR-Q. 1, Cite Score-4.7) <https://www.mdpi.com/2199-8531/6/4/199>.
- Chinoracký R., Čorejová T. Impact of digital technologies on labor market and the transport sector // *Transportation Research Procedia*, 2019, No. 40, pp. 994-1001. DOI: 10.1016/j.trpro.2019.07.139
- COVID-19 and Higher education: today and tomorrow. UNESCO. 2020. [Electronic resource] // Access mode: <https://iau-aiu.net/Covid-19-Higher-Education-challenges-and-responses> (date of request: 27.01.2021).
- Dvořák, M., Rovný, P., Grebennikova, V., Faminskaya, M. Economic impacts of Covid-19 on the labor market and human capital // *Terra Economicus*, 2020, No 18(4), pp. 78-96. DOI: 10.18522/2073-6606-2020-18-4-78-96
- Experts have assessed the impact of the coronavirus on the global labor market. 29.04.2020. [Electronic resource]. / Access mode: <https://ria.ru/20200429/1570746746.html> (accessed: 08.06.2020). (In Russian).
- Gemelas J., Davison J., Keltner C. Inequities in Employment by Race, Ethnicity, and Sector During COVID-19 // *Journal of racial and ethnic health disparities*, 2021. DOI: 10.1007/s40615-021-00963-3
- How coronavirus has hit employment in G7 economies. 2020. May. [Electronic resource] // Access mode: <https://www.weforum.org/agenda/2020/05/coronavirus-unemployment-jobs-work-impact-g7-pandemic/>
- How COVID-19 is Impacting Prospective International Students Across the Globe. *QS Report*. 2020. [Electronic resource] // Access mode: <https://www.qs.com/portfolio-items/how-covid-19-is-impacting-prospective-international-students-across-the-globe/> (date of request: 20.09.2020).
- ILO Bulletin: COVID-19 and the world of work*. Updated estimates and analysis.

2020. Issue 2. April 7, 2020. [Electronic resource]. // Access mode: https://www.ilo.org/wcmsp5/groups/public/---europe/---ro-geneva/---sro-moscow/documents/briefingnote/wcms_742254.pdf (date of request: 17.10.2020). (In Russian).
- Koop Avery. *Visualizing How COVID-19 Impacted Global Wages*. 2021. February 2021. [Electronic resource] // Access mode: <https://www.visualcapitalist.com/visualizing-how-covid-19-has-impacted-global-wages/>
- Kozlova O.A., Karmakulova A.V. Problems and prospects of development of flexible forms of employment of the population in the northern region. // *Economy of the region*. 2013. No. 2 (34), pp. 27-34. (In Russian).
- Lola I.S., Bakeev M. Digital transformation in manufacturing: drivers, barriers, and benefits basic research program working papers. // *Basic research program working papers series: science, technology and innovation*. 2020. WP BRP 107/STI/2020, -18pp.
- Monitor: COVID-19 and the world of work*. Seventh edition Updated estimates and analysis / ILO:publishing. [Electronic resource] // Access mode: https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/briefingnote/wcms_767028.pdf (date of request: 10.03.2021).
- Moretti Enrico, and Per Thulin. Local Multipliers and Human Capital in the United States and Sweden. // *Industrial and Corporate Change*. 2013. V. 22. No 1, pp. 339-362.
- Nasher M. *Gender equality during the COVID-19 pandemic*. 15.03.2021. [Electronic resource]. // Access mode: <https://www.un.org/ru/coronavirus/gender-equality-time-covid-19> (accessed 12.03.2021). (In Russian).
- Novozhenina O.P., Grebnyak O.V., Afanasyev V.A. *Digital inequality in the context of a pandemic*. // The second December socio-political readings "How do you live, Russia?". Russian Social State and Civil Society in 2020: Implementation of National projects in the Context of Post-Pandemic Reality: proceedings of the scientific and Practical conference (Moscow, December 10, 2020) / Ed. by O. P. Novozhenin; FNISTC RAS, Moscow: FNISTC RAS, 2020. - 328 p. [Electronic resource] // Access mode: <http://испи.рф/product/dekchteniya-2> DOI 10.19181/sbornik.978-5-89697-341-6. 2020 ISBN 978-5-89697-341-6, pp. 63-71. (In Russian).
- Popova S.M. Hidden exploitation of users of digital platforms as the norm of the technomir: to the formulation of the problem for social research. // *Conflictology/notabene*. 2020. No. 2, p. 11-24. p. 20 (In Russian).
- Power K. The COVID-19 pandemic has increased the care burden of women and families // *Sustainability: Science, Practice and Policy*. 2020. no 16(1), pp. 67-73. <https://doi.org/10.1080/15487733.2020.1776561>
- Raifman J., Bor J., Venkataramani A. *Association Between Receipt of Unemployment Insurance and Food Insecurity Among People Who Lost Employment During the COVID-19 Pandemic in the United States* // *Jama network open*, 2021. No 4 (1), pp. 1-13.
- Rating of Russian regions by the level of unemployment*. 15.03.2021. [Electronic resource]. // Access mode: <https://ria.ru/20210315/bezrabotitsa-1601181760.html?in=t> (accessed 15.03.2021). (In Russian).
- Redda, E.H., Gaikar Vilas, B., Tedla, B.A. (2021). E-Commerce Companies, Online

- Shopping and Customer's Satisfaction: A Comparative Study of Covid-19 Lockdown in India. *Journal of Management Information and Decision Sciences*, 24(S6), 1-17. <https://www.abacademies.org/articles/ecommerce-companies-online-shopping-and-customers-satisfaction-a-comparative-study-of-covid19-lockdown-in-india.pdf>
- Riazantsev S. V., Vazirov Z. K., Garibova F. M. "Stuck on the borders" between Russia and the Motherland: migrants from Central Asian countries during the covid-19 pandemic // *Scientific review*. Series 1: Economics and Law. 2020. № 3, c. 45-58.
- Rosstat reported 800 thousand new unemployed in non-working April. 2020. [Electronic resource]. // Access Mode: <https://www.rbc.ru/economics/26/05/2020/5ecd298c9a79473f80719596?fromtmg=1>. (accessed: 08.06.2020). (In Russian).
- Salary statistics in Russia. // GorodRabota.ru. 2021.[Electronic resource] // Access mode: <https://gorodrabot.ru/salary?l=%D0%A0%D0%BE%D1%81%D1%81%D0%B8%D1%8F#salary-statistics-chart-item-4> (accessed 10.03.2021). (In Russian).
- Schwab K. *The Fourth Industrial Revolution* / K. Schwab.- M.: Eksmo", 2016 (Top Business Awards), 138 pp. (In Russian).
- Sinitsyn Evgeny V., Tolmachev Alexander V., Ovchinnikov Alexander S. Socio-economic factors in the spread of SARS-COV-2 across Russian regions. *R-Economy*. // *Electronic Scientific Economic Journal*. 2020. V. 6. № 3. DOI: <https://doi.org/10.15826/recon.2020.6.3.011>
- Sologubova G.S. On the issue of digitalization of the economy and problems of the labor market. // *Digital Economy*. 2018. No. 2 (2), pp. 50-62. DOI: 10.34706/DE-2018-02-05 (In Russian).
- Starostina Yu. *Rosstat has measured Russia's "invisible" economy. Which industries are the deepest in the shadows*. 29.08.2019. [Electronic resource]. // Access mode: <https://www.rbc.ru/economics/29/08/2019/5d651ed89a79474a0d725030> (accessed: 07.09.2019). (In Russian).
- Tagarov B. Zh. The influence of statistical discrimination on the behavior of workers in the labor market with asymmetric information. // *Labor Economics*. 2019. No. 2. [Electronic resource]. // Access mode: <https://cyberleninka.ru/article/n/vliyanie-statisticheskoy-diskriminatsii-na-povedenie-rabotnikov-na-rynke-truda-s-asimmetrichnoy-informatsiei> (accessed 15.03.2021). (In Russian).
- Tedla, B. A., & Gaikar Vilas B. (2022). An essence of leadership, its styles: A review and personal account commentary. *International Journal of Health Sciences*, 6(S2), 175–183. <https://doi.org/10.53730/ijhs.v6nS2.5083>
- Tedla, B.A., Gaikar Vilas, Redda E.H. (2021). The Nature and Ambiguous Role of Secondary School Department Heads in the Eritrean Educational Context. *Journal of Management Information and Decision Sciences*, 24(S6), 1- 15. <https://www.abacademies.org/articles/the-nature-and-ambiguous-role-of-secondary-school-department-heads-in-the-eritrean-educational-context.pdf>
- The labor market has changed in a few weeks. *How the coronavirus affected the personnel issue*. 2020. [Electronic resource] // Access mode: <https://klops.ru/comments/2020-03-23/210492-kuriery-smm-schiki-buhgaltery-kakie-professiistali-vostrebovany-vo-vremya-koronavirusa> (accessed 10.03.2021). (In Russian).

- The labor market will grow after the pandemic/*All-Russian Center for The Study of Public Opinion*. 2021.[Electronic resource] // Access mode: <https://wciom.ru/analytical-reviews/analiticheskii-obzor/rynok-truda-posle-pandemii-budet-rasti> (accessed 10.03.2021)
- The World Bank. 2016. *World Development Report 2016 "Digital Dividends"*. Review. World Bank, Washington, DC. License: Creative Commons Attribution CC BY 3.0 IGO. [Electronic resource]. // Access mode: <https://openknowledge.worldbank.org/bitstream/handle/10986/23347/210671RuSum.pdf> (accessed: 03.03.2021). (In Russian).
- The World Bank's 2020 country classifications explained*. 2020. [Electronic resource] // Access mode: <https://www.weforum.org/agenda/2020/08/world-bank-2020-classifications-low-high-income-countries/>
- Timokhina A.A. Labor market after the coronavirus pandemic. // *Trends in the development of science and education*. 2020. No. 63-4, p. 97-102. p. 101. (In Russian).
- Vicky McKeever. *The coronavirus is expected to have cost 400 million jobs in the second quarter, UN labor agency estimates*. Jun 30, 2020. [Electronic resource] // Access mode: <https://www.cnbc.com/2020/06/30/coronavirus-expected-to-cost-400-million-jobs-in-the-second-quarter.html> (date of request: 15.03.2021).
- Watermeyer R., Crick T., Knight C., Goodall J. COVID-19 and digital disruption in UK universities: afflictions and affordances of emergency online migration. // *Higher Education*, 2021, No 81(3), pp. 623-641. <https://doi.org/10.1007/s10734-020-00561-y>
- Xiaolei Zhang, Renjun Ma and Lin Wang. Predicting turning point, duration and attack rate of COVID-19 outbreaks in major Western countries.// *Chaos, Solitons & Fractals*. 2020. Vol.135: 109829, doi: 10.1016/j.chaos.2020.109829
- Zubarevich N.V. *Regional projection of coronacrisis in Russia. Risks for industrial regions*. 2020. // Source: Opening the project/Open lecture: "The impact of the pandemic on the regional economy: first estimates and forecasts". [Electronic resource]. // Access Mode: <https://www.youtube.com/watch?v=kTeplgskjhY> (accessed: 19.05.2020). (In Russian).