

Actual Problems of Higher Education in Russia

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Abstract—The development of the knowledge economy in the modern world largely depends on the quality of training of specialists with modern knowledge, skills, and skills to work in accordance with the qualifications and specialties obtained in an educational institution. And on the state of the system of personnel training, the formation of human capital, its influence on the socio-economic development of the country largely depends.

For the quality of training of highly qualified personnel, the compliance of their competencies to new requirements, the higher education system is responsible. This article is a study of the current state, current issues and ways to improve the system of higher education in Russia. In the article, the authors attempted to investigate the accumulated problems in the training of highly qualified specialists, to identify new priorities for the Russian higher education institution, to formulate the main paradigms of the development of the higher education system for the knowledge economy. The purpose of the study is not only to analyze the positive aspects and shortcomings in the training of personnel in the universities of the Russian Federation, but also to formulate scientifically based recommendations on the modernization of state policy in this area. The state policy in the field of higher education, as an important component of social policy, should be formed taking into account new challenges and be conducted in such a way as to maximally facilitate the achievement of national goals and the implementation of the strategic objectives set out in the presidential decree of May 7, 2018.

Keywords—higher education, state policy, modernization, knowledge economy

I. INTRODUCTION

Conceptual basics to the study of the economy of knowledge and the role of higher education in the training of highly qualified professional personnel for the knowledge-based economy were developed by an Austro-American scientist, Fritz Machlup, an American sociologist, D. Bell, Benoit Gaudin. A significant contribution to the theory of the economy based on knowledge and the role of human capital in it was made by Russian scientists L.E.Mindeli L.K. Pipia, M.V. Nonaka, H. Takeuch, J. Dozy. N. Rosenberg, M. Porter, B. Lundvall, R. Nelson, S. Freeman, V.L. Makarov O.N. Minayev and others. So, in the article by L.E.Mindeli and L.K.

Pipia "Conceptual Aspects of Knowledge Economy Formation" foreign experience in studying the main economic trends associated with the production and dissemination of knowledge was summarized, the main aspects of the knowledge economy were revealed: new quality of economic growth, science and innovations, development of network structures, information and communication technologies, high-tech sector services [1].

The works of B.N. Zhiltsova, A.A. Zagainova, A.Y. Livshits, M. Markova, V.E. Komarova, S.L. Kostanyan, E.V. Peshina, T.E. Stepanova, M.V. Fedorov, D.I. Chuprunova, E.A. Yarushkina and others are devoted to theoretical and practical substantiation of the needs of the Russian economy for specialists with higher professional education and scientific personnel, and also to the advantages of knowledge economy. So, in the articles by Zagainova A.A. "The main problems of the educational services market in modern Russia" (2013), "Features of the development of the knowledge economy in Russia: theory and practice" (2015), knowledge economy is defined as a type of economy in which "knowledge and information become the main factors of production" [2]. The methodological foundations of knowledge economy are developed in the works of such authors as A.V. Barysheva, A.V. Buzgalin, S.Yu. Glazyev, V.I. Inozemtsev, G.B. Kleiner, V.L. Makarov, B.Z. Milner, L.E. Mindeli, E.V. Pilipenko, E.V. Popov, A.I. Tatarkin and others. Thus, in the monograph "Microeconomics of Knowledge" and a number of his articles, Professor G. B. Kleiner calls the fundamental features of the knowledge economy: 1) knowledge becomes a full-fledged commodity; 2) any manufactured product carries unique knowledge; 3) knowledge becomes one of the main factors of production along with labor and capital [3]. Economists E.V. Peshina and M.V. Fedorov classify knowledge as a factor in the competitiveness of a modern enterprise. Practice confirms this conclusion: with the introduction of innovations based on knowledge, the so-called "know-how", into production, the company is able to create goods with new qualities that their competitors in the market do not have [4]. Human capital becomes the determining factor in the emergence and development of knowledge economy [5].

The new paradigm of higher education in Russia should be aimed at the intellectual elite, which will constitute the core of

the educational potential of society. It is the class of intellectuals should become the Foundation for the formation of the workforce of the new formation, capable to work in conditions of intellectualization and Informatization job functions. Class of intellectuals in the knowledge economy is the guarantor of development of intellectual potential of the state, the key to social progress and a driving force of innovative development.

II. PURPOSE AND QUESTIONS OF RESEARCH

The purpose of this study is to examine the problems that Russia must solve in order for its economy to become a knowledge economy. Based on this goal, the authors attempted to justify the new priorities of state policy in the field of higher education.

In this regard, this study poses the following main questions.

1. To determine the role and place of the higher education system in the formation of human capital and development the economy of knowledge.
2. To analyze the reasons for its low competitiveness compared with the leading countries of the world.
3. To investigate the effectiveness of public administration of higher education in the country.

The study uses the following methods.

1. A comparative method that allows you to compare the system of higher education in Russia, the level and quality of training with developed countries.
2. The method of historicism in combination with the comparative method allows us to show a significant difference in state policy in relation to higher education under socialism and under modern Russian capitalism.
3. The system and structural-functional approaches allow us to form a holistic view of the higher education system in our country, its achievements and shortcomings, mistakes and miscalculations made in 2000–2018.
4. The institutional approach allows analyzing the influence of various state institutions on the formation of policies in the field of higher education.

The possibilities of the evolutionary development of the world community and individual states in the 21st century are inextricably linked with the flexibility and adaptability of higher education to global trends, due to the orientation of the education system to the needs of the information society. The transformation of knowledge into a strategic resource for the development of all spheres of society's activity. The economy of developed countries increasingly relies on knowledge, on human capital as a factor in the growth of labor productivity and economic growth. In this connection, the requirements for general education and professional training of the labor force are increasing, and transformation processes in the educational sphere are intensifying.

In the global world, countries compete for human capital, for the most educated, energetic, and creative people. The

United States has been importing just such people for many decades in a row, attracting scientists and highly qualified specialists from different countries. To this end, the administration attracted just such immigrants with high wages, comfortable working conditions, etc.

At this time, a large number of representatives of the technical industry arrived in America - as a rule, these were young scientists, accomplished specialists who were sent to work in Silicon Valley, to other enterprises. Such intellectual capital was collected by businessman and billionaire Bill Gates in his firm "Microsoft", known now to the whole world.

In the company of Bill Gates, every fifth employee (more precisely - 22%) is a graduate of a Russian university [6]. One of these intellectuals who received a higher education in Russia, programmer Maxim Kuzovlev, recalling that period, claimed that he was offered a job in the US in 1997, but he thought that better times would come in Russia. But having been in New York, he called San Francisco and agreed to work for an American company [7]. This intellectual step was forced by objective circumstances: in the 1990s, Russian programmers did not have adequate work, and if in some places they did, then without adequate payment and conditions.

In California, according to some sources, almost ten thousand programmers are now working, having left Russia in search of a better life.

At the same time, the countries from which specialists are leaking suffer very significant economic, cultural, and sometimes political damage, and, on the contrary, countries that receive and provide immigrant specialists acquire huge and cheap intellectual capital.

In Russia, in contrast to the developed countries of the world, the trend of steady growth in the quantitative volumes of training specialists with higher education did not become a decisive factor in the innovative development of the national economy.

It is extremely important to resolve the contradictions of the development of the educational potential of society in higher education is to justify the conceptual foundations of its formation, aimed at introducing qualitatively new in structure and content methods of state regulation of higher education. The importance of such conceptual foundations for the reform of higher education is due to the need to overcome the inconsistency of state educational policy and public education requirements. In this regard, the determination of the goals, principles, and priority directions of the state educational policy, aimed at overcoming the negative trends in the development of the educational potential of the society, and creating conditions for its advanced development, acquires particular relevance.

In January 2019, the outflow of human capital was announced by researchers at the Institute of Demography of the HSE. They argue that more and more people with higher education are leaving Russia because of the economic crisis and dissatisfaction with the authorities. Russian official statistics do not register these processes, but according to foreign migration statistics, it is known that about 100 thousand people leave Russia annually. Currently, about 2.7

million immigrants from Russia live abroad, of whom 1.5 million have Russian citizenship. This data was recently confirmed by the Deputy Prime Minister of the Russian Government, O. Yu. Golodets: according to her, over one and a half million well-educated Russians are currently working abroad, contributing to the development of the economy of potential competitors.

The Russian Academy of Sciences (RAS) is also concerned about the increase in the outflow of highly qualified specialists from Russia) due to insufficiently effective state policy in this area. For example, N. Dolgushkin, the chief scientific secretary of the Presidium of the Russian Academy of Sciences, cited the following data: from 2013 to 2016, the number of valuable personnel who left the country more than doubled. If in 2013, 20 thousand highly qualified specialists left Russia; by 2016 this number had risen to 44 thousand. As a result, there was a reduction in the number of scientists in scientific institutes, where over the past three years their number has decreased from 69,500 to 67,000 people. At the same time, the share of doctors of science decreased from 13.8 to 13 percent, and the share of candidates - from 31.7 to 30 percent [8].

This trend, called brain drain, has already caused and continues to cause great damage to the human capital of the Russian Federation. Since 1990, the number of researchers in Russia has decreased by 2.7 times; since 2000, the number of personnel engaged in research and development has decreased by an average of 1.3 percent over the year. At the same time, the number of scientists in the EU countries and in the USA increased by 2-3%, in Brazil, South Korea and China - by 7-10% [8].

Another equally important problem, largely related to the problem of brain drain, is that persons who have received higher education in Russia cannot find a worthy use of their knowledge at home. As a result, a significant part of graduates of higher education institutions, including those who have received higher education at the expense of state subsidies, does not work in the specialty indicated in the diploma of graduation from the university. Minister of Education and Science of the Russian Federation A.A. Fursenko admitted that after graduating from pedagogical universities, only 5-7% of graduates go to work in school, and the rest are looking for work in more prestigious or well-paid industries [9, p. 111]. As a result, graduates are forced to retrain for other professions and work in another field. Every year the question of why university graduates do not work in their specialty becomes more and more tangible, the problem has grown so much that many applicants and students perceive the university only as a way to get a diploma. And this process does not stop in Russia, despite the public speeches of the country's leadership.

Among the main reasons that graduates with a higher education do not get a job in their specialty, let's name two. The first reason is that Russian businessmen are reluctant to accept personnel who have no practical experience in their company, and capitalist Russia has refused to plan for distribution to enterprises and organizations, as was the case in the USSR. Due to massive failures to young and inexperienced

graduates of universities in our country, unemployment is constantly growing, reaching 50% in some regions.

The second reason is that young specialists have big ambitions instead of practical work experience, and they do not want to receive low wages. It should be noted here that in Russia, in comparison with the United States, the countries of the European Union, other developed countries, wages are several times lower. So, School teacher in Germany earns between 38 300 to 51 500 euros a year, and the monthly income of the School teacher in France reaches 3000 euros which according to Central Bank rate of the Russian Federation exceeds 200000 rubles. The salary of teachers of higher educational institutions abroad is also many times higher than in the Russian Federation occupying the same social status. So, professors and associate professors in higher educational institutions of Germany receive on average 4650 euros and when converted into rubles exceed 300 thousand. Young teachers are contented with the modest 2800 euros. In the USA and Singapore professors of universities receive 48-54 thousand dollars a year, the highest paid have 90-100 thousand dollars annually or over 500 000 rubles a month. The highest paid teachers are in Luxembourg [10].

Their average annual income is between 80 to 100 000 euros, or more than 600 thousand rubles a month. For comparison: the average salary of a school teacher in the first year of work in certain regions of Russia, for example, in Altai and the North Caucasus, does not exceed 20 thousand rubles per month (less than \$ 300) [11]. The university professor's salary does not reach European level either. So, one of the authors of this article, Doctor of Historical Sciences, professor at a state university (Full Professor) receives a salary of 38,700 rubles per month, or less than \$ 600. It seems that these actions of those in power are contrary to the constitutional provision of a social state, which is obliged to create conditions for a decent life.

An example for the Russian authorities is the payment of professorial work at Harvard University, which occupies the top positions in all world rankings. The average income of a full-time professor in only one academic year (9 months) was \$ 198,400 [12]. When translated into Russian money, the Harvard professor received at least 1,432,888 rubles a month in Russian money. From these data it follows that the Russian professor today receives only 1/37 of the salary of his American colleague. At the same time, the academic load of a Russian professor is 2-3 times more. The Taylor System was invented in the USA, and it is used today in Russia.

In accordance with the May decrees of President V. Putin, the salary of a state university professor should be 200% higher than the average salary in the region. Now the average salary in the Belgorod region, where one of the authors of this article works as a professor, according to official data of the Federal State Statistics Service (Rosstat), is 31163 rubles [13]. It is not difficult to calculate that 200% of this number is 62326 rubles. The difference or how much the state does not pay the professor every month, ignoring the presidential decree, amounts to 23626 rubles (283512 rubles year-on-year). If we calculate the percentage, the government and the Ministry of

Finance failed to fulfill the professor's salary increase of at least 38% that is, more than a third.

Under Soviet power, the professor's salary was only 50 rubles less than the salary of the minister. For comparison: in 2016, the salary of Finance Minister Anton Siluanov was 1730000 rubles per month [14], which is 44 times more than the professor's salary. And the head of the state corporation Rosneft, I.I. Sechin got an official salary that reached payments of various bonuses, 1 million rubles a day, including weekends and holidays [15 p. 35], twice the annual professorial salary. This is how capitalist Russia today assesses the work of an official and a professor differently.

The conclusion from these facts suggests a simple one: with such remuneration of teachers and professors it is difficult to expect from them a full return in the transfer of knowledge to their students, high results in science, and patriotism. Therefore, it is difficult to reproach those doctors and candidates of science who left in different years and continue to leave Russia in search of better conditions for work and rest. In October 2009, scientists, who left Russia in the early 1990s and made a successful career abroad, wrote an open letter to the President and the Prime Minister, in which they had already drawn political attention to the plight of basic science in the country. "Due to the age structure of scientific and pedagogical personnel, Russia has 5-7 years left for qualified scientists and teachers of the older generation to prepare a new generation for science, education and high-tech industries. If in these terms the youth in the scientific and educational sphere cannot be attracted, then plans to build an innovative economy will have to be forgotten", scientists V. Putin and D. Medvedev warned. Due to the fact that both V. Putin and D. Medvedev, being in turn the presidents, did not take due organizational, financial and other measures, in order to change the situation, at least 200 thousand scientists left Russia [16].

It is appropriate to note here, among the scientists who were forced to leave our country, there were quite a few talented researchers, who later gained world fame for their discoveries and great contribution to science. In 2003, Vitaly Ginzburg and Alexey Abrikosov (who accepted American citizenship in 1999) were awarded the Nobel Prize for fundamental work on the theory of superconductors and superfluid liquids. Should also be called Konstantin Novoselov and Andrei Heim, the Nobel Prize winners in physics in 2010. After emigrating first to the Netherlands, then to the UK and having received all the conditions for work and comfortable rest, they discovered a new allotropic modification of carbon —graphene, which is a single layer of carbon atoms [17].

There is no absolutely accurate information about the scale of the real "brain drain" from Russia. This is due to the fact that many Russian scientists do not formally emigrate abroad, but leave for work under a contract, although the temporary status of such work often develops into a permanent one. Viktor Kalinushkin, chairman of the trade union of scientific workers of Russia, for example, believes that over the past ten years, 500 to 800 thousand Russian scientists have found work abroad. Western estimates are more modest - a maximum of 200 thousand. According to Professor Ushkalov, in the 90s the

number of scientists and specialists who went abroad from defense research institutes and enterprises of the military-industrial complex is at least 70 thousand people. Only for the period 1991-1996, from the All-Russian Research Institute of Experimental Physics (Arzamas-16), which is the leading Russian center for nuclear research, more than 5,000 specialists have left the border. In 1992-1993 from NPO Impulse, which specializes in the production of guidance systems, electro-optical and other electronic equipment, mainly for military purposes, 1,800 scientists and engineers have left abroad. In ten years (from the mid-80s to the mid-90s), the Russian Scientific Center of Virology and Biotechnology ("Vector"), which also deals with developments in the field of biological weapons, left 3,500 people. The main reason is a sharp reduction in government spending on research and development. The salary level of scientists in 2002 averaged 60–100 dollars a month. Today, it is already \$ 1,000, but it is still not enough: for example, in the USA, the average salary of a research worker is \$ 5-7 thousand [16].

With such a massive brain drain from Russia, it is difficult to count on the country's significant successes in breakthrough scientific, technological and economic development, as President V. Putin dreams of. For the same reason, there are no visible results in the transition of the country from the raw material to the innovative way of development, to the knowledge economy. Therefore, Russia lags even behind South Korea in nominal GDP, which is 3 times smaller than the population, but the overall quality of human capital is much higher, the creation of which V. Putin's team did not worry about in time. There are no tangible changes in this direction today. In a huge country, there are no three universities that, in well-known world rankings, would occupy prestigious places in the TOP-10 or even TOP-50.

The third problem directly related to the higher education system is the gradual aging of university science and university professors. The proportion of older people in universities and institutes is increasing year by year. This trend has the following reasons. First, the influx of young scientists in teaching work is not large due to the low salary of not only the assistant professor, but even of the professor, whose salary is almost half the average salary of the bus driver. Secondly, teachers of the retirement (65 years for men and 60 years for women) are reluctant to vacate their positions because they go to the category of poor people by switching to a meager pension and losing their job. Maybe our government would have to learn from the experience of Ukraine, where every employee of science and education is paid 80% of the monthly salary for retirement. And in tsarist Russia, for 25 years of service, a Russian professor received 100% of his salary [9, p. 113]. So earlier in Russia the work of those who formed new knowledge and passed it on to students was appreciated.

The total number of doctors of science employed in the sector of higher education and the sector of research and development is about 59 thousand and candidates of science - 210 thousand people. Thus, cadres of the highest scientific qualification constitute only 0.4 percent in relation to the average annual number of people employed in the Russian economy, but they play an extremely important role in the

development of the whole society. But the first problem, which, as they say, is obvious, is the growth of the average age of teachers and researchers. The average age of the Russian doctor of science is 61 years; the candidate of science is 52 years. The best for the system of higher education and science is the age of a doctor of science - 50 years, and a candidate of science - 40. It is during this period that a person, due to his physiological characteristics, shows the greatest efficiency and effectiveness in scientific activity, while maintaining high adaptive abilities to innovate in research and development [18].

Analyzing the shortcomings, it is impossible not to say that in higher education today, serious changes are finally taking place, which directly determine how the profile of competencies of current students and graduate students will be formed, to what extent the state will be provided with the right specialists. The last three years, university science has undergone a qualitative transformation, becoming a competitive player in the technology market. The departure from linearity in learning, the lack of alternatives in the curriculum, minimalism in the research component and other fundamental changes are enshrined in law.

The disproportion between qualitative and quantitative training of specialists and the need of the Russian economy for them is gradually being overcome. The legislation in the field of state regulation of the system of higher professional education is being improved, and the adoption of important regulatory acts in the State Duma is preceded, as a rule, by an expert assessment of leading universities. So it was, for example, with the federal law "On Education" in 2012 [18]. According to Mr. Strihanov, Chairman of the State Duma Committee on Education, the level of material and technical support of universities has increased significantly in recent years. Significantly increased pay. It is worth understanding and the statement of Professor M. Strikhanov, the rector of one of the Russian universities, that "the current low material and technical level serves as a barrier, essentially hinders the onward development of academic science". And further: It is necessary to attract young people - salary, housing, social packages. We need to work more closely with the business, which often shows a striking indifference to science" [19].

III. RESEARCH METHODS

In this study, the following methods were used.

1. The analytical method was used both for analyzing published works on the subject of the grant, and for analyzing the effectiveness of state policy in the field of higher education.

2. The authors used the comparative method to compare the level and quality of higher education in the Russian Federation with education in developed countries to determine the true state with the training of highly qualified professional personnel and the competitiveness of national higher education.

3. The institutional approach applied in the study allowed the authors, firstly, to reveal the role of the government, the Ministry of Higher Education and Science, other public authorities and management in the implementation of state policy in the field of higher education; secondly, to assess the

adequacy of the policy pursued by the state to the modern challenges and needs of the innovative development of Russian society; thirdly, to formulate scientifically based proposals on the implementation of complex tasks formulated by the president in May decrees and the national priority project "Education".

4. The system method was necessary for the team of authors in order for the study to become complex, integral, united by a common idea and not fragmentary.

5. The problem approach is used by the research team, firstly, to identify topical issues of state regulation of higher education; secondly, to assess the real and potential solvability of these problems and, thirdly, to determine the necessary and sufficient resources that the state can direct to the formation of human capital and the development of the knowledge economy.

IV. CONCLUSION

The conducted study allows the authors to draw the following conclusions.

1. The system of higher education requires further improvement, increasing the efficiency of public administration in this area in order to increase the contribution to the improvement of human capital.

2. To achieve the ambitious goals and objectives set by President V. Putin in the decree of May 7, 2018 [20], not only propaganda of its content is required in the media, but also the organizational work of the head of state and government in order to consolidate the efforts of the authorities and management business.

3. To solve the problems of national importance that the higher education system solves every day: strengthening the status of Russia as a world scientific power, expanded reproduction of world-class knowledge, increasing the level of competitiveness of "human capital", etc., more substantial financial injections are needed. And such opportunities appeared in the budget surplus. However, the state prefers to keep over 10 trillion rubles in reserve funds, allocating a paltry interest to the needs of universities. Everything is relative, including the financing of educational institutions in Russia and the United States or the United Kingdom. Suffice it to say that the budgets of only two American universities, Harvard University and University of Texas System, in 2014 (\$ 61.3 billion) were more than the consolidated budget of the Russian Federation for the entire education system of the country (including school and higher), only \$ 60.7 billion [21]. With such wretched financing, the state is not entitled to demand from Russian universities high world rankings held by universities in the United States and Great Britain, Japan and China.

Thus, the higher education system due to insufficiently effective public administration, poor financing, weak material and technical base does not fully meet the new challenges and is not yet competitive enough in the global education markets. This is evidenced not only by virtually all known world rankings, but also by the number of foreign students studying at Russian universities and institutes. Nevertheless, the authors

are confident that the system of higher education in Russia has a great potential and a successful future. It is only necessary to work better in this direction, and consolidated: from a simple teacher to the head of state. Then the results will be more significant.

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