

## ТЕХНОЛОГИЧЕСКИЙ УНИВЕРСИТЕТ

# SCIENCE, CULTURE AND YOUTH

Сборник трудов по материалам VII Международной студенческой научно-практической конференции

## 25 марта 2022

Шрифты предоставлены компанией «ПараТайп»

Science, Culture and Youth. Сборник трудов S40 по материалам VII Международной студенческой научно-практической конференции (25 марта 2022 г.). — [б. м.] : Издательские решения, 2022. — 610 с. ISBN 978-5-0056-5545-5

> Сборник трудов по материалам VII Международной студенческой научно-прак-

> тической конференции «Science, Culture and Youth» (Королев, «МГОТУ», 25 марта 2022 г.), организованной кафедрой иностранных языков ГБОУ ВО МО «Технологический университет». В сборнике представлены доклады участников по 4 секциям: «Актуальные проблемы современности», «Роль иностранного языка в жизни и профессии», «Инновационное развитие технических, естественных наук» и «Мировые тенденции развития научной мысли».

> > УДК 004 ББК 84

18+) В соответствии с ФЗ от 29.12.2010 №436-ФЗ

ISBN 978-5-0056-5545-5

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### Соколов А. Е. Innovative approaches to us higher education financing

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The result of the study is the discovery of the main trends in improving the system of financing higher education in the United States, its structure, forms and internal objections.

Keywords: financing, education, innovation

The innovation sector is now becoming the main factor in improving the market economy. The main component of the innovation process is becoming a modern university. US institutions are a brilliant example of successful interaction of all components of innovative improvement: science, higher education, business and the state. Consequently, the American skill may be suitable for the Russian Federation.

The USA has made one of the most large-scale higher education systems in the modern world. Last but not least, the triumph of improving higher education depends on the effectiveness of its funding system. The study of the structure, forms, and trends of improving the system of financing higher education in the United States seems to be in demand due to the active formation of the domestic system of financing higher education and the need for skeptical application of the corresponding foreign skill. The purpose of the work is to study the main forms, mechanisms, tendencies and results of financing higher education in the USA at the present stage.

Materials and methods. The implementation of the tasks was achieved through a review of official statistics on the structure of sources of funding for higher education in the United States, the amount of grant aid to students and student loans, tuition costs and access to support facilities in higher education institutions; materials of the latest scientific studies in the United States on optimizing higher school funding.

**Results.** The result of the study is the discovery of the main trends in improving the system of financing higher education in the United States, its structure, forms and internal objections. The policy of the United States of America on financing higher education seems to be extremely ambivalent and unsystematic in real time, having significant differences at the federal and state levels, in certain areas of higher education. The increase in tuition fees, the general costs of students for education and accommodation, the growth in the volume of student loans and debt on them and the number of defaults, the decrease in the costs of most universities for training show negative and alarming tendencies of the state of higher education financing in the newest USA. In order to solve the existing problematic tasks, it seems necessary to increase the role of the federal government in streamlining the system of financing higher education and implementing interbudgetary regulation in this area; the increasing role of gratuitous grant aid in the structure of financial assistance to low-income students; clear legislative regulation of not only public, but also private student loan programs; optimization of the taxation system in the field of higher education to stimulate private investment in this area.

One of the most important tasks facing our country is to build an effective and accessible system of higher education. The main condition for solving this fundamental task is to optimize the financing system of higher education. In this regard, the study of the current system of financing higher education in the USA at the present stage has an undoubted demand, scientific and utilitarian importance. The USA has made an extremely difficult, differentiated system of financing both universities of higher education and naturally students and their parents. Due to the decentralized nature of North American federalism, the powers in this area largely belong not only to federal government agencies, but also to the states. The importance of legal regulation of the financing of higher education is emphasized by the fact that the most important law in this area – the Law on Higher Education of one thousand nine hundred and Sixty-five – is mostly devoted to financial aspects. [3]

The structure and volume of funding for higher education in the United States differ in variability and scale. Data analysis shows that the statistics of the costs of higher education in the United States throughout the twentieth century demonstrates a steady growth trend. However, the dynamics of changes in the share of education costs in GDP has a different character. From this point of view, the peak of education financing as a whole is noted in the mid-70s of the twentieth century (in 1974 it was 6.7%, and in 1975 - 6.8%). The excess of these indicators begins only in 2000 (6.9% of GDP) with peak values in 2009-2010. (7.6 and 7.5%, respectively) and a decrease to 7.1% in 2013 (total costs - \$ 1.2 trillion). Expenditures on higher education demonstrate steady growth both in absolute terms (\$38,903 million in 1975, 190,476 in 1995, 353,577 in 2005. 512,000 in 2013) and in proportion to GDP (2.3% in 1975, 2.5% — in 1995, 2.7% in 2005, 3.1% – in 2013). The share of higher education costs in total education costs also tended to increase: if in 1980 it was 37.8%, then by 2014 it was more than 40%.

In the USA, the share of state funding for higher education remains one of the lowest among the developed countries of the world. At the same time, the funding structure is much different for different types of universities. Thus, the system of sources of funding for public universities of higher education includes the following sources: state governments -2.7%, tuition fees -22.8%, the federal

government – 16.4%, investments and donations – 15.3%, medical activity – 10.7%, auxiliary activity – 7.5%, municipal authorities – 6.6% [2, figure seventeen]. The sources of financing of private unpaid universities of higher education differ significantly: tuition fees -32.5%, educational activity, investments and other – 26.5%, the federal government – 11.7%, private donations, grants and contracts – 11.1%, medical activity – 9.4%, auxiliary activity -7.9%, state and municipal authorities – 1%. Finally, the structure of financing of private fee-paying higher education institutions is obviously dominated by income from tuition fees: tuition fees – 90.7%, the federal government – 4.4%, educational activity, investment and other – 2.5%, auxiliary activity – 2%, state and municipal authorities – 0.4%. Thus, in public universities, the share of state funding is 45.7% (moreover, if the main source of funding remains the state budgets, then in relation to private educational institutions, its share is significantly lower: 12.7 and 4.8%, respectively, for non-profit and commercial universities) [2].

NIS USA includes more than 10 research centers, laboratories within corporations, research centers at universities, government research centers that generate innovative proposals for thousands of small knowledge-intensive companies. All this reflects the national specifics of the functioning of the system in America [4].

Global competition and the economic crisis of recent years have demanded a proper response from national economies. Currently, the cluster approach has become such an effective response. It is one of the tools in creating a system of clear interaction between the state, business, science and education. The cluster approach is a new management technology that makes it possible to increase the competitiveness of both an individual region or industry and the state as a whole [5].

Innovation clusters differ significantly from traditional industrial analogues. One of the essential characteristics is the close relationship not only between firms, their suppliers and customers, but also interaction with large research centers and universities that generate innovative knowledge and thereby form a high educational level of the region. Thus, it is possible to coordinate investments in new products, as well as its implementation on the market using new technologies.

A relatively new form of institutionalization at the regional level in the United States is the «institutes of cooperation», which includes representatives of local governments, universities, industrial groups and research institutes. The main tasks of these structures are to support and coordinate the innovative development of a particular region. The leading role in this bundle is assigned, according to US law, to universities, the results of whose research activities are introduced into innovative production. An important principle of interaction within the framework of «institutes of cooperation» is the principle of balancing the interests of science and the business community, which consists in the fact that, on the one hand, the financing of the university directly depends on the success of scientific research, and on the other - does not interfere with the independent implementation of the educational function of the university.

Already in his first speech to the US Congress as President, Barack Obama stressed the need to use cluster approach as an innovative strategy for the prosperity of the nation. Obama placed special emphasis on the interaction between research centers, universities and business, seeing this as the key to the successful development of the country's regions. As a practical step, President Obama proposed allocating \$100 billion in 2010 for the innovative development of regional clusters in order to increase the competitiveness of the United States [6]. At the same time, President Obama pays special attention to the so-called «human factor», which means significant social spending by the state on education, healthcare, pensions, etc. In 2012, these expenditures amounted to about \$2.42 trillion, or 65% of all federal spending. The share of spending on education (including higher education), as well as on health care annually accounts for more than 25% of GDP in the United States. According to this indicator, the United States is significantly ahead of other developed countries with 7. Obama identified education as one of the main areas of investment in order to ensure the growth of the American economy and recalled that the most important milestones in the development of American statehood are related to the development of the education system. By 2020, according to the President, the United States should become the world leader in the proportion of citizens with higher education [2].

#### **References:**

1. Richard, C. Atkinson Research Universities: Core of the US science and technology system / Richard C. Atkinson, William A. Blanpied // Technology in Society. – 2008. –  $N^{\circ}30$ .

2. Financing Your Education / USA Government. USA.gov. - 2013. - May 16.

3. The Obama – Biden Plan / Change Gov. The office of the President – Elect.

4. Ryhtik, M.I. The national innovation system of the USA: the history of formation, political practice, development strategies

5. Mirolyubova, T.V. Foreign experience in the development of innovative infrastructure of universities in regional innovation systems

6. Azgaldov, G.G. Intellectual property, innovations and qualimetry / G.G. Azgaldov, A.B. Kostin // Economic strategies.