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# Х А Б А Р Ш Ы С Ы

# ВЕСТНИК

НАЦИОНАЛЬНОЙ АКАДЕМИИ НАУК
РЕСПУБЛИКИ КАЗАХСТАН

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# THE ROLE AND PLACE OF SCIENCE IN THE TECHNOLOGICAL AND SOCIO-ECONOMIC DEVELOPMENT OF COUNTRIES WITH DIFFERENT SCIENTIFIC POTENTIAL

**Abstract.** This article examines the role of science in modern society. The main research methods were generalization, systematization and economic and statistical method. The statistical base of the study was the data of the statistics Committee of the Ministry of national economy of the Republic of Kazakhstan for the period from 2010 to 2018 years. Based on the analysis of research by domestic and foreign authors, it was determined that science and education are the most important factors and priorities for the development of modern society, especially in developed countries. Based on a comparative analysis of R&D financing and assessment of the scientific potential of Kazakhstan, the crisis state of science in Kazakhstan's society is shown. It was revealed that the main causes of the crisis are insufficient funding, the loss of a large number of qualified technical personnel and the lack of necessary interaction between science and production. The results of the study may be of interest to government authorities in the field of science.

**Keywords:** science, potential, R&D, science financing, knowledge-based economy.

**Introduction.** The nature of research activities, the degree of its influence on the economic development of society has undergone significant changes in various historical periods. Historical analysis shows that the view of research activities and its impact on society in general and on the economy in particular has changed from complete denial in the Middle Ages to the introduction into the rank of state policy at present.

Along with intensive scientific and technological progress in the 20th century, the views of economists on scientific, technological and innovative activities evolved. Since these views are present in one form or another in the modern understanding of scientific and innovative activities, let us consider the main ones.

Contemporary economic and political debate revolves around understanding the reasons for the economic success of some countries, based on technological change and the strategic levers that must be used to increase the wealth of nations [1]. The special role of science and innovation in the transition from a resource model of economics to a knowledge-based economy as a dominant resource is described in a number of theories and concepts (table 1).

**Literature review.** Science and innovation as a decisive factor in economics are studied in their works by E.Avdokushin, T.Ismailov, Yu.Knyazev, I.Materov, A.Porokhovskiy, L.Frolova, I.Shevchenko.

Noteworthy, in our opinion, is the methodological approach to the typology of the knowledge society developed by A.Rakitov [2]. It is based on one criterion – a certain system of social, economic and functional-regional differences due to levels of development. With this in mind, the author proposes the following classification of countries of the world system:

1) commodity donor countries that rely on the production and sale of *raw materials,* especially *irreplaceable natural resources*;

2) countries that rely on *natural resource*s, manufactured goods and services produced through *imported technologies*;

3) countries living and developing through the production of *goods, services and advanced high-productivity technologies*;

4) countries living through *scientific knowledge, knowledge-intensive, innovative and high technologies*, as well as through goods and services of the *highest quality* - world scientific and technological leaders.

Table 1 – Basic theories and concepts of the knowledge-based economy

| Authors | Theories and concepts | Proceedings |
|---|---|---|
| 1 | 2 | 3 |
| D. Bell | The theory of «post-industrial society» | «The Coming of Post-Industrial Society: A Venture in Social Forecasting» (1973). |
| J. Schumpeter | The theory of «innovation processes» | «Theory of Economic Development» (1912) |
| F. Hayek | The theory of «scattered knowledge" | «Economics and Knowledge» (1936), «The Use of Knowledge in Society» (1945) |
| I. Nonaka, H. Takeuchi | The concept of a «knowledge carrier» | «The knowledge-creating company: How Japanese companies create the dynamics of innovation», 2003 |
| D. Teece | The concept of «dynamic abilities» | «Dynamic Capabilities and Strategic Management» (2003) |
| G. Becker | The theory of «human capital» | «Human Capital» (1964) |
| Yu. Hayashi, F. Machlup, A. Toffler | The theory of the «information society» | «Future Shock» (1970), «The Third Wave» (1980) and « Metamorphoses of power» (1990). |
| M. Porter | The theory of «industrial clusters» | «The Competitive Advantage of Nations» (1990) |
| C.Freeman, B.A.Lundvall, R. Nelson | The concept of "national innovation systems" | «Technical Change and Economic Theory» (1987) |
| Note - compiled by the authors | | |

The countries of the fourth group have the greatest military, political and financial power and ensure a high level of well-being for citizens. They pursue effective environmental policies and maintain a relatively stable world order. Their society is usually called a post-industrial, informational or *knowledge-based society*. The basis of their financial and military influence is a huge amount of accumulated and created knowledge in all areas of social activity. It follows that in the modern world, science is the foundation of technological development, sustainable economic growth, and spiritual modernization.

A knowledge-based society becomes such only when universities, research centers, research organizations, which create new knowledge, primarily scientific knowledge, take the leading place in it. In our opinion, this approach is more justified, since the leadership of developed countries such as the USA, Japan, OECD in the knowledge industry is provided by national scientific laboratories, corporate research units, universities. The main generators of knowledge in the EU countries are national state scientific laboratories and universities. Currently, more than half of all scientists are concentrated in the USA, Great Britain, Germany and France. The share of universities in R&D activities (Research and development activities) ranges from 25% in Europe to 15% in Japan.

Different strategies for propagating, protecting, and assigning new ideas pose particular challenges for economists who want to measure models of innovation. Patents may not always be good indicators for assessing countries' innovation performance. Since there is no international patent office, patent protection is reserved to national jurisdictions. The US and Europe have variously defined the patentability of new life forms, resulting in different patent registries in these jurisdictions, even if the results of innovation are the same. Registration fees, including transaction costs, are much higher at the European patent office than in the US, which partly explains why the number of patents filed in Europe is lower than in the US. In addition, half of patent applications in the US Patent Office are filed by residents of countries other than the United States. Therefore, an attempt to assess and compare the innovative intensity of countries based on patent analysis does not always lead to correct results [3]. In addition, considering only state investment in research leads to an underestimation of the true level of social investment in basic research, since the state is not the only source of funding for basic research. It should also be noted that universities are engaged not only in basic research, but also conduct a large number of applied research in the field of materials science, computer science, pathology, oncology and engineering [4].

World economic development is characterized by an increase in the separation of highly developed countries from the rest of the world. This is due to the fact that the US and Western European countries have entered the stage of post-industrial development, acquired and use unlimited opportunities of the main inexhaustible resource of economic development-scientific knowledge and information. In a sense, these countries have become self-sufficient, independent of the rest of the world and imports from them. Their economic development is characterized by an increase in the influence of non-production factors, the contribution of technological changes, research and development. It is generally recognized that countries are sharply polarized by the level of socio-economic development. At the turn of the 21st century, the United States, the European Union and Japan accounted for 62% of global GNP, 80% of global trade flows, 85% of global investment, 97% of global intellectual potential, 90% of production of high-tech goods [5].

If in his work "New Atlantis" Bacon says that science can improve the economy and standard of living of society, also science, technology, politics, industry and religion are closely intertwined [6]. Stefan claims that science is one of the sources of economic growth. In particular, science supports technological innovation and has a relationship with economic growth and other socio-economic forces [7].

Romer and Lukas argue that economic growth depends on investment in research and education, i.e. the theory of endogenous growth has an impact on the current economic policies of both industrialized and developing countries, since investment in higher education, as well as in R&D by firms and government research organizations, is vital for improving new technologies, productivity and economic growth within national innovation systems [8].

According to some researchers, public financing has a side effect on private investment in R&D [9]. In particular, Grossman and Helpman believe that R&D side effects are an important source of growth [10].

And Amendola et al. present a well documented evidence that R&D has an important effect on productivity growth and also on competitiveness of countries [11].

Coccia confirms that high economic performance in countries with low public R&D financing associated with high investment in research by private enterprises (for example, in the UK, USA, Germany, etc.). Private firms are able to invest much better than governments, politicians and bureaucrats in increasing employment, economic growth and the welfare of nations [12].

According to the 2016 Global Innovation Index, Kazakhstan ranks 79th (out of 100) in terms of R&D intensity (Cornell University, INSEAD and WIPO, 2016).

Let's start with an indicator characterizing the place of science in the economy and its contribution to GDP, to the generalized indicator of products (goods, services) produced in Kazakhstan for a year. This indicator is the share of R&D costs in GDP, or research intensity (here it is necessary to understand, that science financing is the allocated funds, and R&D costs are the use of funds to pay for intellectual capital in creating value added, as well as current costs associated with the material support of the scientific and technical process in general).

Today, technology leaders maintain the GDP research intensity indicator at 2.7-4.3%. The value of this indicator equal to 1% or less is considered critical for the country's scientific and technological security. Despite significant efforts, in Kazakhstan, science expenditures amounted to 0.13% of GDP, which, in turn, is 1.5 orders of magnitude less than in the Russian Federation. All EAEU countries are in the range of 0.11-0.65%, with the exception of Russia, which experienced a sharp increase in its R&D intensity, reaching 1.1% in 2017. In Kazakhstan, from the National Science Report for 2017 published in 2018, domestic R&D costs in% of GDP were: 2015 - 0.17%, 2016 - 0.11%, 2017 - 0.13%. This, frankly speaking, is infinitely far from 2-4% of GDP in developed countries, that is, more than six times below the critical level (figure 1).

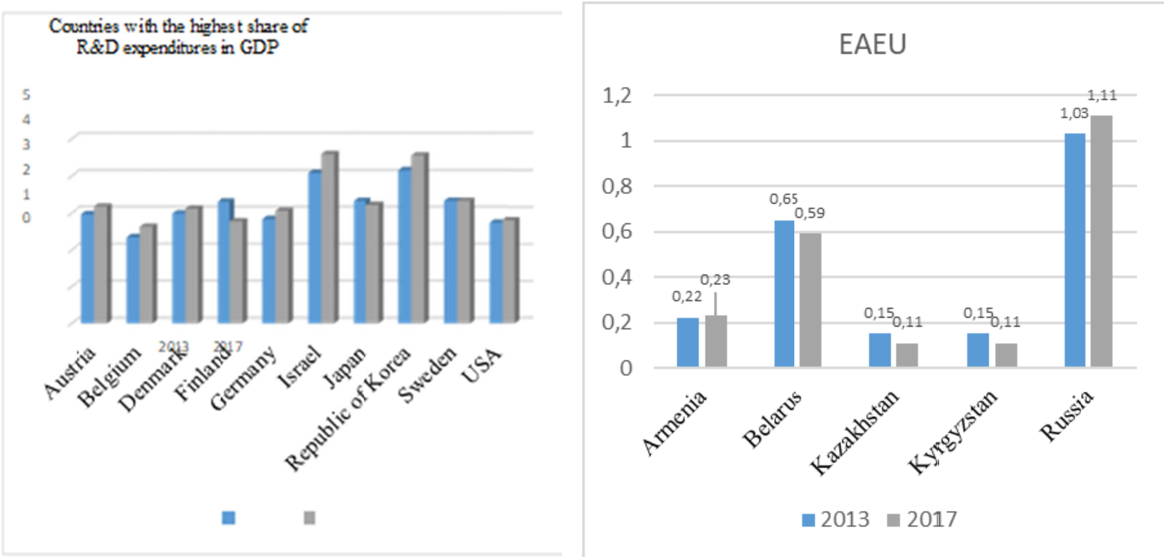


Figure 1 – Gross domestic expenditure on research and development, % of GDP

In innovation transformation, countries distinguish two models of innovation: linear and "model of multiple sources of innovation" [13]. If the linear model involves the introduction of advanced techniques and technologies based on applied research, the latter is aimed at developing innovations not only in the field of applied research, but also in all areas of economic activity (fundamental research).

According to UNESCO research statistics, the structure of funding for various types of research and R&D is quite heterogeneous across countries. For example, in countries such as Germany, Bulgaria, Croatia, Latvia, Argentina, and Italy, the R&D sector is more focused on applied science. The volume of state funding of fundamental research in the structure of expenditures on research and development, in contrast to applied research and experimental development, has a smaller share. And countries such as China, Israel, Japan, Denmark, South Korea, Great Britain invest most of all in experimental development [14].

And the cost of applied research and development (R&D) all these years, and in all previous years, clearly lagged behind the country's economic development. In 2005, expenditures on them amounted to only 0.29% of GDP, and according to international experts, they should be at least one percent in order to keep things on an even keel [15].

In Kazakhstan, a slight increase in R&D financing is mainly due to applied types of work and development. Contributions to fundamental works are insignificant. And in the US, on the contrary, R&D investments are aimed at improving the fundamental research underlying all innovation (figure 2).

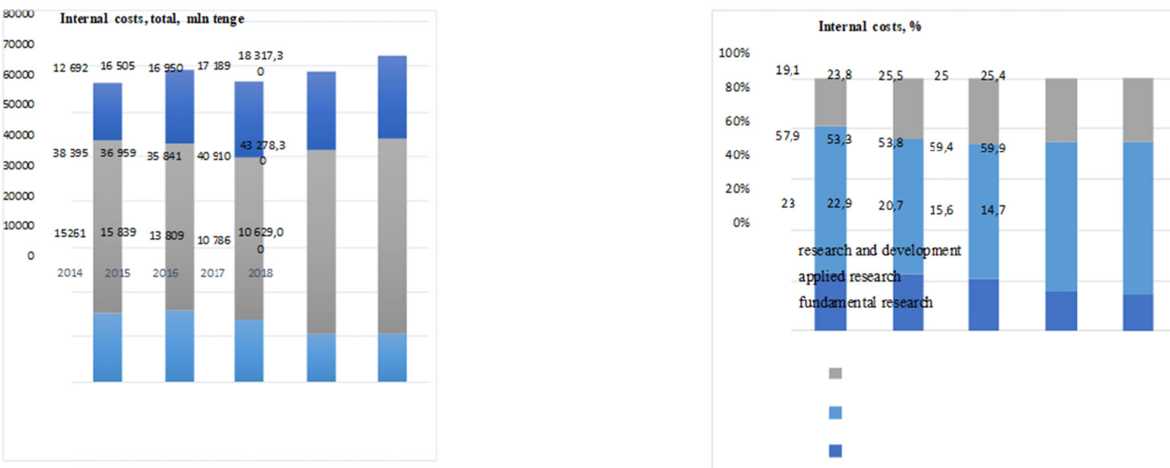


Figure 2 – Internal R&D expenditures by type of research and development

Differences in the volumes and shares of certain types of research institutes in the implementation of domestic R&D indicate different profiles of national innovation systems. In Kazakhstan, all R&D sectors have been steadily increasing their research activities since 2000. This trend has resumed at an accelerated pace since about 2010, when the first shock of the global financial crisis was overcome and major reforms of the innovation system were launched. The latest available data (for 2014 and 2015), supported by unofficial data for 2016, indicate that this growth in resources invested in R&D has stalled due to a less favorable global macroeconomic environment and, more recently, public financial tensions related to falling commodity prices.

Although the respective weights of the executive sectors fluctuated considerably during this period, some general trends over the past 15 years or so can be distinguished: higher education institutions (universities) have become relatively more prominent as R&D organizations in line with international trends. This trend was reflected in the development of public research institutes, which emerged in the Soviet era as the only organizations that carry out scientific research. The share of the business sector has remained fairly stable in recent years, peaking at 52% in 2011. In 2015, the business sector performed about 40% of R&D, while universities and professionals performed 19% and 29% of R&D, respectively (table 2).

Table 2 – Main indices of the human resource potential of science in the Republic of Kazakhstan in 2010-2018

| Index | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|
| **Personnel engaged in research and development, thousand people** | | | | | | | | | |
| Number of research and development personnel *Including:* | 17021 | 18003 | 20404 | 23712 | 25793 | 24735 | 22985 | 22081 | 22378 |
| - researchers Of them: | 10870 | 11488 | 13494 | 17195 | 18930 | 18454 | 17421 | 17205 | 17454 |
| *Doctor of Science* | 1347 | - | 1065 | 1688 | 2006 | 1821 | 1828 | 1818 | - |
| *PhD* | 59 | 95 | 131 | 218 | 330 | 431 | 456 | 589 | 856 |
| *candidates of Science* | 3041 | 3286 | 3629 | 4915 | 5254 | 5119 | 4726 | 4541 | 4360 |
| *profile doctors* | - | 1 486 | 719 | 605 | 596 | 549 | 493 | 354 | - |
| Technicians | 1 078 | 1102 | 1310 | 3586 | 3 882 | 3 692 | 3 326 | 2 797 | 2 836 |
| Other personnel | 2 319 | 2 558 | 2 179 | 2931 | 2 981 | 2 589 | 2 238 | 2 079 | 2 088 |
| **Personnel engaged in research and development, by sectors of performance, thousand people** | | | | | | | | | |
| State | 6 557 | 5 909 | 4 921 | 5 516 | 7 608 | 7 157 | 7 643 | 7 574 | 7 998 |
| Entrepreneurial | 3 749 | 5 164 | 4 718 | 5 036 | 5 786 | 5 258 | 4 222 | 3 934 | 3 852 |
| WTO | 5 232 | 5 516 | 9 405 | 11 828 | 10 961 | 10 623 | 9 791 | 9 203 | 8 808 |
| Non-profit organizations | 1 483 | 1 414 | 1 360 | 1 332 | 1 438 | 1 697 | 1 329 | 1 370 | 1 720 |
| | | | | | | | | | |
| State | 125 | 115 | 100 | 98 | 112 | 106 | 102 | 104 | 96 |
| Private property | 296 | 294 | 240 | 236 | 270 | 276 | 272 | 269 | 275 |
| Property of other states, their legal entities and citizens | 3 | 3 | 5 | 7 | 10 | 8 | 9 | 13 | 13 |
| Source: compiled by the author using data from the Statistics Committee [16] | | | | | | | | | |

The new model of the science system provides for the stimulation of the private sector, which independently places orders for scientific products. At the same time, only programs corresponding to priority research areas will be financed. Structural transformations should be based on the introduction of innovative technology, major scientific ideas and developments. It is urgent to complete the missing industrial links with high added value, based on the accelerated development and implementation of innovative technologies. Research and innovation programs are scattered, the subjects of ownership are different. The share of science-intensive, innovative products of domestic production remains extremely low: according to the Science Foundation of the Republic of Kazakhstan, it is only 1.1% of Kazakhstan's GDP. But, as it is known, this share is a generalizing indicator of the effectiveness of science, technology and innovation. For comparison, in the countries of the European Union this figure is 35%, the USA - 25%, Japan - 11%, Singapore - 7%, South Korea - 4%, China - 2%. One of the main reasons for this situation is that the programs of scientific institutions and innovative projects are not interconnected in the

Republic. Scientific organizations carry out research and development on their own programs. At the expense of state programs and internal resources, enterprises ensure the introduction of technological innovations at their own expenses [17].

In addition, all leading countries in science policy have a clear vector of transition to a new economic, scientific and technological order. The organizational component is at a high level. State programs and legislative acts for the formation of the knowledge economy are implemented systematically and in a planned manner, in particular [18]:

– Great Britain: 2001 - Science and Innovation Strategy Action Plan; 2004 - long-term investment program in the field of science and innovation (2004–2014); 2007 - Strategy of Intellectual Entrepreneurship, etc .;

– France: 1999 - Law on Innovation; 2002 - Innovation plan; 2005 - National program of action for fundamental changes in the country's innovation environment (scientific and technological development); 2006 - Law on the Poles of Competitiveness (66 poles at the global level).

- USA-The America COMPETES Act, which was passed in 2007 to create opportunities for significant development of America's advantages in technology, education, and science.

– China -the Program of medium- and long-term development of science and technology for 1990-2020, the 863 program-development of high-tech, program Fakel-development and commercialization of knowledge-intensive technologies based on modern production facilities, program Iskra - introduction of high technologies at the township and village enterprises, program Ascent -conducting priority fundamental research.

The government of the Republic of Kazakhstan has undertaken bold reforms to achieve the ambitious goals set for research and innovation at the highest political level over the past decade, a strong commitment was expressed at the highest political level to develop a new model of development based on innovation, and the recent slowdown in growth has strengthened the resolve of the authorities work towards diversifying the economy. The priority that the President and government of Kazakhstan attach to strengthening the country's innovation system is confirmed by significant efforts to develop a regulatory, strategic and programmatic framework for science, technology and innovation policy. Over the past few years, legislation has been revised and developed to cover all stages of research and innovation, from financing to implementation and commercialization of research results. A number of challenges remain in the implementation of these laws, leading to a degree of additional uncertainty faced by public and private innovation actors. This, for example, reduced the impact of the 2012 amendment to the law "On subsoil and subsoil use." Such problems will require rapid diagnosis and action to resolve them. The government has embarked on implementation of multi-year comprehensive development strategies such as the Kazakhstan 2050 Strategy. These are bold initiatives that serve as road maps for government reform over the long term. Although initially focused on economic and social issues, they quickly embraced a wider range of activities, including research and innovation policy, which became a priority for the nation. Highlighted scientific and innovative strategies, such as the concept of innovative development of Kazakhstan until 2020 and the State program for the development of education and science of the Republic of Kazakhstan for 2016-2019, complement the overall development strategies. Although the reform process began shortly after independence, important legal acts and most of the changes in the science, technology and innovation system have only recently taken place. The law "On science", which provides the legal basis for research activities carried out at universities and research institutes, was adopted only in 2011. Even more recent is the Law «On Commercialization of Scientific and Technical Results», which provides autonomy and incentives for universities to commercialize scientific research; it was adopted at the end of 2015 [17, p. 37]. The institutions concerned are still in the process of adapting to these new rules. In this regard, Table 3 presents the SWOT analysis of the scientific and innovative system of Kazakhstan.

Table 3 - SWOT-analysis of the scientific and innovative system of Kazakhstan

| Strengths | Weaknesses |
|---|---|
| – Rich natural resources;<br>– A growing young population with international experience;<br>– A genuine commitment to improving and expanding the science, technology and innovation system;<br>– Comprehensive strategic plans and government programs to support economic development and innovation;<br>– Many new legal and policy initiatives and reforms to support R&D activities; | – Insufficient quality of education and insufficient supply of skilled labour;<br>– Low attractiveness of a scientific career;<br>– Low quality of research in international comparison;<br>– Continuing dominance of the “linear model of innovation” in public research;<br>– Lack of interactive links between research institutes and commercial firms;<br>– Low business demand for new knowledge and research results;<br>– Low research and innovation potential of domestic businesses, especially small and medium-sized enterprises (SMEs);<br>– Low involvement of large state-owned companies in innovative activities and new directions;<br>– Weak competition and high barriers to entry into many industries;<br>– Low level of integration into global value chains; lack of entrepreneurship, management skills and venture capital;<br>– Lack of horizontal policy coordination of the problem of implementation of regulations and support measures;<br>– Lack of funding at the general and project levels;<br>– A large number of innovation policy instruments that cover very few enterprises; |
| **Opportunities** | **Threats** |
| – Raising awareness of the potential benefits of innovation and strengthening innovation capacity within firms;<br>– To succeed in directing oil and gas revenues to R&D, including in other sectors (e.g. manufacturing);<br>– To establish ties with foreign companies in Kazakhstan and learn from them;<br>– Shifting production and trade towards more knowledge-intensive goods/services; increasing the involvement of domestic SMEs in more innovative strategies;<br>– Take advantage of the Silk Road initiative;<br>– Using universities as providers of innovative services for domestic companies. | – Unfavorable macroeconomic environment, excessive dependence on the oil and gas sector;<br>– The increase in "brain drain»;<br>– Reduction in the number of graduates of higher education institutions and a small number of incomplete doctoral theses;<br>– Increasing competition, especially from other Asian economies;<br>– Unrealistic or ill-fitting program goals;<br>– Lack of communication and coordination between the subjects of the innovation system;<br>– The trend towards "hyperactive" policies (too ambitious initiatives, too many programs, rapid changes). |

Taking into account the SWOT analysis outlined in Table 3 and the strategic objectives to be met by innovation policies, this review identified a number of key issues and policy recommendations. In particular:

- consolidation in legislation of norms aimed at solving social problems;
- approval of a new program of fundamental scientific research.
- adoption of long-term strategies for conducting research and technological development by state authorities, state funds that finance R&D, as well as state corporations of a technological profile;
- launching the preparation of sectoral, cross-sectoral forecasts and programs (strategies) of scientific and technological development;
- transition to a new system for assessing the effectiveness of strategies and government programs in the field of scientific and technological development from the standpoint of assessing not only the expended resources, but also their socially significant final effect.

**Conclusion.** At the same time, when qualitatively new tasks of industrial and innovative development and Kazakhstan's entry into the list of 50 competitive countries are being solved, the state should play a crucial role in defining and implementing a new scientific and technological policy and effectively solving the problems of catching-up development. In this regard, it is necessary to overcome the minimalist approach in the development of institutional reforms in the field of science and scientific management, especially in the ratio of basic and applied research, as well as in major priority blocks of scientific research.

In our country, the scientific aspects of the components of the national economic system are not sufficiently taken into account when forecasting economic and social development. Today, according to the World Bank, the national wealth of developed countries is only 5% natural resources, 18% - material, manufactured product, and the main link - 77% - is knowledge and the ability to dispose of them. Training of specialized staff and qualified managers for knowledge management is needed [14, p. 4].

It makes no sense to compare the quality of life in Kazakhstan, as in the CIS, with European standards: neither in terms of student scholarships, nor in terms of wages for science workers and teachers, nor in terms of their pensions, nor in general in terms of spending on education, science, and healthcare. In terms of achieving a new quality of life close to European standards, it is necessary to develop special national programs in line with a socially oriented market economy based on modern social democratic ideas. The main contribution in solving the problem should be made by the state by creating conditions for the normal life of members of society, who are capable of serious innovation. Ways to achieve this: general dynamic social policy and special national programs, grants and mortgage lending, support for non-state knowledge-intensive firms at the expense of the budget. This is our competitive advantage in solving important problems of industrial and innovative modernization of Kazakhstan and entering the league of fifty competitive countries of the world.

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**ҒЫЛЫМНЫҢ ӘРТҮРЛІ ҒЫЛЫМИ ӘЛЕУЕТКЕ ИЕ ЕЛДЕРДІҢ ӘЛЕУМЕТТІК-ЭКОНОМИКАЛЫҚ ЖӘНЕ ТЕХНОЛОГИЯЛЫҚ ДАМУЫНДАҒЫ РӨЛІ МЕН ОРНЫ**

**Аннотация.** Мақалада қазіргі қоғамдағы ғылымның рөлі зерттелген. Зерттеуде жалпылау, жүйелеу және экономикалық-статистикалық әдістер қолданылды. Зерттеудің статистикалық базасы ретінде Қазақстан Республикасы Ұлттық экономика министрлігі Статистика комитетінің 2010-2018 жылдар аралығындағы деректері алынды. Отандық және шетелдік авторлардың зерттеулеріне талдау жасау негізінде ғылым мен білім қазіргі қоғамның, әсіресе, дамыған елдердің дамуындағы маңызды факторлар мен басымдық болып саналатындығы анықталды. ҒЗТКЖ қаржыландыруды салыстырмалы талдау және Қазақстанның ғылыми әлеуетін бағалау негізінде Қазақстан қоғамындағы ғылымның дағдарыстық жағдайы көрсетілген. Дағдарыстың негізгі себептері ретінде қаржыландырудың және көптеген білікті техникалық кадрлардың жетіспеушілігі, ғылым мен өндірістің қажетті өзара ықпалдастығының жоқтығы анықталды. Зерттеу нәтижелеріне ғылым саласындағы басқару органдары мүдделі болуы мүмкін.

**Түйін сөздер:** ғылым, әлеует, ҒЗТКЖ, ғылымды қаржыландыру.

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**РОЛЬ И МЕСТО НАУКИ В ТЕХНОЛОГИЧЕСКОМ И СОЦИАЛЬНО-ЭКОНОМИЧЕСКОМ РАЗВИТИИ СТРАН С РАЗНЫМ НАУЧНЫМ ПОТЕНЦИАЛОМ**

**Аннотация.** В данной статье рассматривается роль науки в современном обществе. Основными методами исследования были обобщение, систематизация и экономико-статистический метод. Статистической базой исследования послужили данные Комитета статистики Министерства национальной экономики Республики Казахстан за период с 2010 по 2018 годы. На основе анализа исследований отечественных и зарубежных авторов было определено, что наука и образование являются важнейшими факторами и приоритетами развития современного общества, особенно в развитых странах. На основе сравнительного анализа финансирования НИОКР и оценки научного потенциала Казахстана показано кризисное состояние науки в казахстанском обществе. Выявлено, что основными причинами кризиса являются недостаточное финансирование, потеря большого количества квалифицированных технических кадров и отсутствие необходимого взаимодействия науки и производства. Результаты исследования могут представлять интерес для государственных органов в области науки.

**Ключевые слова:** наука, потенциал, НИОКР, финансирование науки.

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