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# ABSTRACTS

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V. M. Golovatyuk

## Transformation of Euro-Integration Capacities of the National Economy

Investment attractiveness of the innovation sector of the Ukrainian economy in comparison with EU member countries is studied by data of Global Competitiveness Index (GCI) (2009–2016) and its factor components, and Summary Innovation Index of the European Innovation Scoreboard (2010–2014). Although the position of Ukraine by integral GCI and its factor components has upward tendency in 2009–2016, the Ukrainian economy looks rather backward if compared with the economies of EU member countries by GCI and SII alike. By the innovativeness of the economy Ukraine is located on the distant periphery from the EU countries that are innovation leaders. Yet, the GCI estimates for the socio-economic environment in Ukraine in 2011–2016 fit well into the respective segments of estimates for EU member countries. It follows that Ukraine, when integrating in the European socio-economic and R&D and innovation area, cannot be considered as a generator of uncertainties or threats, and cannot, therefore, be a source for worsening of its investment attractiveness. The study shows that to catch up with the global trend, the socio-economic environment of Ukraine urgently needs formulation of a new paradigm for science & technology and innovation policy, which would be focused on promoting innovative efforts in all the population strata and increase in its social mass.

The article continues the study devoted to specifics of mechanisms for integration of Ukraine in the socio-economic environment of EU, analyzed in the article “Innovativeness of the Ukrainian Economy in the Context of European Integration”.

**Keywords:** innovation-driven development, investment attractiveness, R&D and innovation policy, socio-economic environment, Global Competitiveness Index, factor component, social capacities of innovation-driven development.

I. V. Kozlovskiy

## Comparative Analysis of Black Sea Countries by European Innovation Scoreboard

The innovation and science & technology performance of Black Sea countries is evaluated in comparison with EU member countries by the methodology of the latest version of the European Innovation Scoreboard 2016. The analysis covers 6 Black Sea countries (Bulgaria, Greece, Romania, Serbia, Turkey, and Ukraine). The comparison is made by Summary Innovation Index (SII) and its eight component indicators of innovation. Weak and strong sides of innovation and science & technology in Black Sea countries are identified in the evaluation. The main comparative advantage of Black Sea countries in the innovation and science & technology context are the relatively high level of human capacities. The performance of Black Sea countries is half of the EU average on SII and its component innovation indicators. Of the six Black Sea countries under analysis, three countries (Greece, Serbia, and Turkey) can be regarded as leaders, and three (Romania, Bulgaria, and Ukraine) as “catching up” countries.

**Keywords:** Black Sea region, science & technology and innovation performance, Summary Innovation Index, research and development, rank of countries.

A. I. Yakovlev

## Evolution of Incentive Systems for Employees and Organizations to Enhance Quality and Competitiveness of New Developments

Analysis of incentive systems to create high quality products is made, with emphasis on material incentives for developers and employees involved in production and implementation of innovations. The necessity for focus on key performance indicators of enterprises and organizations: sales, profitability, ratio of profitability to sales is justified. The need to use complex incentive systems for employees for development, manufacturing and implementation of high-quality and competitive innovations is demonstrated. Advanced domestic practices in this area are generalized. Recommendations for promoting further development of theory and practice on material incentives for employees to enhance quality and scopes of implemented innovations are given. This is a condition for growth of the effectiveness of the national industry.

**Key words:** quality and competitiveness, innovation, incentives, performance, balanced scorecard, motivated system of compensatory payments, summary efficiency indices, penalties for poor quality.

I. A. Bulkin

## Evolution of Researchers' Age Structure in Organizations of the NAS of Ukraine

The article is a contribution in the discussion about methods for optimizing the age structure of researchers in the National Academy of Sciences (NAS) of Ukraine given strict budget constraints. Apart of a statistical analysis of time series on the researchers' age structure, a novel method to assess the age structure is developed by the author and tested on the array of research organizations of the NAS of Ukraine. The method is based on

assessing the ratios of three main age groups of researchers (young researchers, middle aged researchers and old researchers) by two indicators, the ratio of old researchers to young researchers and the ratio of old researchers to middle aged researchers. The first ratio is referred to as the indicator of strategic renovation of an organization, and the second one – as the indicator of stability of an organization. The lower are the indicators' estimates, the better are the prospects for human resources development in the NAS of Ukraine from the age perspective. The possible options of the indicators' estimates are limited by the two quantitative criteria, 1.0 and 1.5. Nine clusters reflecting the possible options of the researchers' age structure are built by combining the two indicators for the three age groups. They are applied for the analysis of researchers' age structure at the aggregate NAS level and in groups of NAS institutes. The analysis is made by data of the State Statistics Service of Ukraine over 2011–2015. Moves of the NAS of Ukraine as a whole and its institutes between the clusters demonstrate a type of evolution in the researchers' age structure depending on the workforce policy pursued by NAS institutes. The analysis shows that apart from the shrinking numbers of researchers in organizations of the NAS of Ukraine, the organizations per se have become more diversified by the researchers' age structure depending on the workforce policy that they pursue: the active one or the outwardly conservative one.

**Keywords:** National Academy of Ukraine, age group, researchers, young researchers, middle aged researchers, old researchers, indicator, cluster; consolidated group of clusters.

L. P. Holovashchenko, L. O. Khomenko, V. P. Bodeko, S. I. Prymachenko

### **Monitoring of Publications in National Media on Problems of R&D and Performance of the NAS of Ukraine, and of the Information Activity of Scientists from the NAS of Ukraine over 2009–2013**

The capabilities of national mass media in fostering the socially significant image of R&D and science & technology activities of the National Academy of Sciences (NAS) Ukraine are assessed by data from the monitoring of publications devoted to R&D in national mass media over 2009–2013. The monitoring methodology is highlighted. Analysis of data is given, related with thematic range of publications in national mass media on R&D problems and activities of the NAS of Ukraine (rating of periodic mass media by number of articles devoted to R&D problems and activities of the NAS of Ukraine, rating of thematic headings by publication in national mass media), information activity of academicians and correspondent members of the NAS of Ukraine in national mass media, characteristics of articles' content. The divisions of the NAS of Ukraine with the highest information activity in national mass media are defined by monitoring data.

**Keywords:** monitoring, national mass media, National Academy of Sciences of Ukraine, information activity, academicians of the NAS of Ukraine, correspondent members of the NAS of Ukraine.

A. N. Glybova

### **The Priority of Creating Magnetron Generator of High Frequency Vibrations**

Review of source is made to find out the priority in the idea development of the source for magnetron high-frequency electric vibrations (magnetron generator). Priority ideas and developments of A. Hull, D. Rozhanskiy, A. Zacek, A. Slutskin, D. Steinberg, H. Yagi, and K. Okabe are discussed.

**Keywords:** magnetron, magnetic field, magnetron generator, high-frequency vibrations, electric vibrations, electromagnetic vibrations, magnetron vibrations, three-electrode valve.

L. F. Kavunenko, T. M. Velenteychik

### **Anniversary Dates of Kiev Studies of Science**

The articles contains information on anniversary dates of G. M. Dobrov Institute for Scientific and Technological Potential and Science History Studies of the NAS of Ukraine. Recollections about Dobrov's book "Science about Science" are given; the professional development path of the team headed by Dobrov is outlined; results produced by Kiev science researchers over many years are shown.

**Keywords:** anniversary dates, G. M. Dobrov, science studies, science and technology potential, international cooperation.

A. A. Slonimskiy, V. A. Karelina, I. N. Shary

### **40th Anniversary of Science Studies in Belarus**

The article is devoted to history and development of the school of science Studies in Minsk. The role of the school's founder G. Nesvetailov is discussed. Main research activities and achievements of the school are outlined. Evidence is given the experience of Belorussian science studies school was relevant to the purposes of statehood building in the Republic of Belarus.

**Keywords:** school of science Studies in Belarus, applied science of science, sociology of science, main achievements.