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The scientific potential of Volyn Region

Potapowa A., Pogrebskij T., Golub G., Głuszko S. **Potencjał naukowy obwodu wołyńskiego**. Uogólniono podejścia naukowe dotyczące interpretacji struktury potencjału naukowego. Omówiono specyfikę kształtowania się bazy zasobów potencjału naukowego obwodu oraz przeprowadzono jej kompleksową analizę. Scharakteryzowano przestrzenne rozmieszczenie instytucji edukacyjnych obwodu wołyńskiego. Zwrócono uwagę na główne problemy rozwoju potencjału naukowego obwodu wołyńskiego i zaproponowano drogi ich rozwiązania.

Потапова А., Погребский Т., Голуб Г., Глушко С. **Научный потенциал Волынской области**. Обобщены научные подходы к трактовке структуры научного потенциала. Рассмотрена специфика формирования ресурсной базы научного потенциала региона и проведено ее комплексный анализ. Охарактеризовано территориальное размещение учебных заведений Волынской области. Определены основные проблемы развития научного потенциала Волынской области и предложены пути их решения.

Потапова А., Погребський Т., Голуб Г., Глушко С. **Науковий потенціал Волинської області.** Узагальнено наукові підходи до трактування структури наукового потенціалу. Розглянуто специфіку формування ресурсної бази наукового потенціалу регіону та проведено її комплексний аналіз. Охарактеризовано територіальне розміщення закладів освіти Волинської області. Визначено основні проблеми розвитку наукового потенціалу Волинської області та запропоновано шляхи їх вирішення.

Key words: human potential, scientific potential, structure of scientific potential, resource base of scientific potential, region
Słowa kluczowe: potencjał ludzki, potencjał naukowy, struktura potencjału naukowego, baza zasobów potencjału naukowego, region
Ключевые слова: человеческий потенциал, научный потенциал, структура научного потенциала, ресурсная база научного потенциала, регион
Ключові слова: людський потенціал, науковий потенціал, структура наукового потенціалу, ресурсна база наукового потенціалу, регіон

Abstract

The article summarizes scientific approaches to the interpretation of the scientific potential structure. There are considered formation specifics of the resource base of the scientific potential of the region and its complex analysis is carried out. Also there are characterized the spatial distribution of educational establishments of Volyn region. The main problems of development of scientific potential of Volyn region are determined and the ways of their solution are offered.

Introduction

Actualization of social issues, the need to reform the educational and scientific branches are organically linked with the formation of scientific potential. The need for its advanced development is due to the need to overcome the contradictions between accelerated scientific and technological progress and the inertia of the structure of the economic complex of the region.

Analysis of recent research

Nowadays the study of scientific potential has become especially important, taking into account the orientation of education and science to the development of new branches of economy, inclusion of educational and scientific institutions in the sphere of market relations, and their use of new economic self-financing mechanisms in order to stabilize the financial condition of both the country and the region, in particular. Both economists and economic geographers deal with this issue, for example: O. I. Shabliy, J. B. Oliynyk, M. O. Jaman, E. P. Kachan, O. G. Topchiev, B. V. Hrynov, and others.

The analysis of the works shows the lack of a general approach that determine both the scientific potential and its structure.

Research methodology

There is used a system of methods that includes the following: the study of stocks, statistics, scientific and literary sources: logical and comparatively-spatial, cartographic, mathematical and statistical methods that form the basis of scientific and specific scientific methodology of this problem.

Setting objectives

The purpose of the article is to systematize the resource base components of the region scientific potential, taking into account current trends, identifying the features of their territorial location.

Presentation of the main research material

An important characteristic of the scientific potential is its structure. Its main components are determined by Ukrainian experts. Thus, B. V. Grinyov determines the scientific potential as a totality of scientific, informational, labor and financial resources. Professor E. P. Kachan (Качан, 2011) considers the scientific potential as a system, that consist of material and technical base, scientific personnel, the fund of inventors and discoverers, organizational and managerial structure. We have proposed the following structure of the scientific potential of the region, based on the analytical review of scientific literature that include the following: resource component, personnel component, fund of inventors and discoveries (Джаман, 2014; Потапова, Красноподьська, 2016).

The resource component is considered as a basis for the formation of scientific potential, includes the necessary resources to ensure – material and technical base. Resource base of the region is represented by general, out-of-school, vocational, higher educational institutions, advanced training institutions, scientific organizations, research institutions, design and research institutes, branch design organizations, research and production centers which exist in the system of the National Academy of Sciences, ministries and state committees.

The basis of the resource base of the scientific potential of the region consists of vocational and technical educational institutions (VTEI) and universities of the I–II level of accreditation, the smallest part of the III–IV level accreditation and research and production centers (fig. 1).

The network of general educational institutions of the region includes 750 units: general educational schools, educational complexes, gymnasiums, colleges, lyceums, boarding

schools for children with developmental disabilities. There is the largest number of general educational institutions in Gorokhiv, Kovel, Manevychi and Kamin-Kashirsky districts. The Shatsk district has the smallest number of institutions (fig. 2).

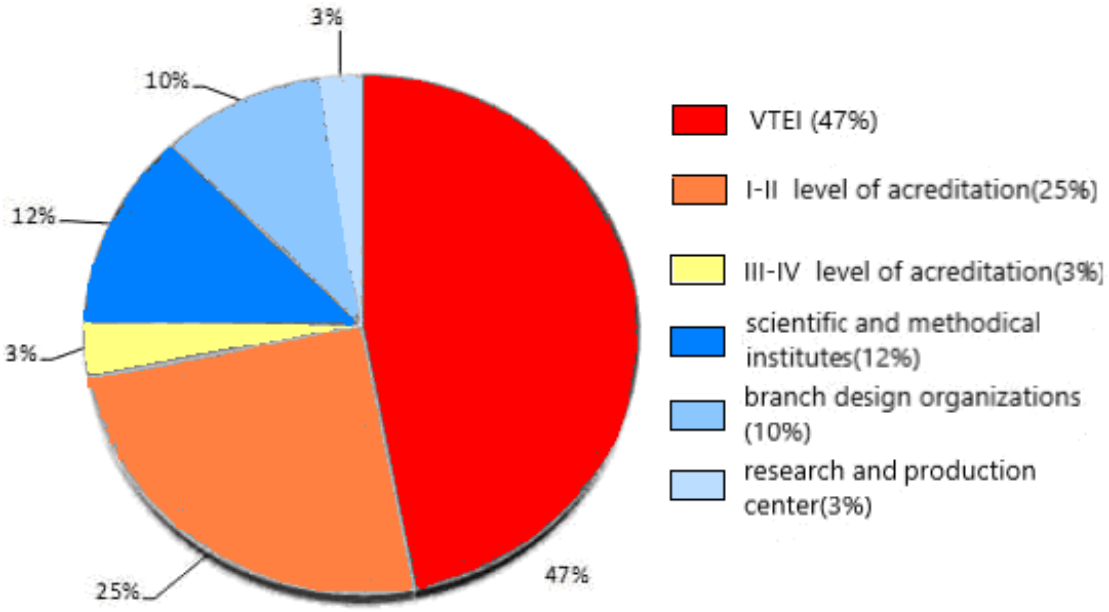

Fig. 1. The resource base structure of the Volyn region scientific potential
Рис. 1. Структура ресурсної бази наукового потенціалу Волинської області
Рис. 1. Структура ресурсной базы научного потенциала Волынской области

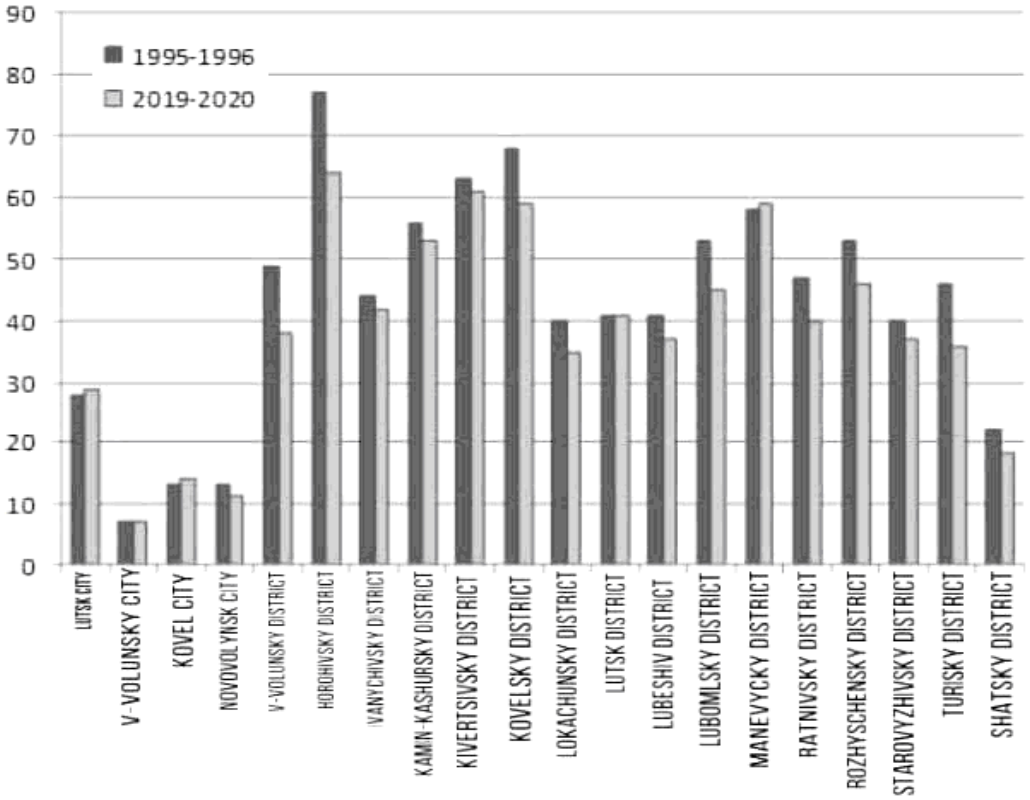

Fig. 2. General educational institutions in the cities and districts of Volyn region
Рис. 2. Загальноосвітні навчальні заклади у містах і районах Волинської області
Рис. 2. Общеобразовательные научные учреждения в городах и районах Волынской области

There are 63 out-of-school educational institutions in the region, which are mainly located in cities and administrative centers of districts. They include 22 institutions: houses of schoolchildren and creativity, centers and palaces of student youth; 6 stations of young technicians; 5 stations of young naturalists; 8 stations for young tourists; 1 center of aesthetic education; 20 CYSS; 1 Small Academy of Sciences (*Головне управління*…, 2021).

There are 5 scientific and vocation facilities in the region, that conduct labor and professional training for students (institutions are located in the cities of Kamin-Kashirsk, Volodymyr-Volynsk, Novovolynsk, Ratno, Lutsk) (*Статистичний щорічник*…, 2019).

The network of vocational education of the Volyn region consists of 19 educational institutions of the state form of ownership, (17 vocational and technical educational institutions (VTEI), which are located in the operational management of education and 2 educational institutions, which are structural subdivisions of higher educational institutions (HEIs).

Vocational schools are located in Lutsk (3), Kovel (3), Novovolynsk (2), Volodymyr-Volynsk, Kamin-Kashirsk, Kolka, Lokachi, Luboml, Manevychi, Bevych, Ovcha.

There are 7 III–IV level International Accreditations universities that includes 4 institutes, 2 universities, 1 akademiya (Lutsk humanitarian University, Volyn Institute of Postgraduate Pedagogical Education, Lutsk Biotechnical Institute International Scientific and Technical University named after Academician Yuri Bugay, Lutsk Institute of Human Development of the Open International University of Human Development "Ukraine", Lesya Ukrainka Volyn National University, Lutsk National Technical University and the Academy of Recreational Technologies and Law. All higher education institutions are located in Lutsk, which has led to a large influx of applicants from all regions of the Volyn region and other regions of Ukraine. The only two national universities of the IV level of accreditation in the region are located in Lutsk: Volyn National University named after Lesya Ukrainka and Lutsk National Technical University. That's why we can say that Lutsk performs the main scientific and educational functions in the region.

Most of the institutions were established from 1945 to 1990. The largest amount of I–II level of accreditation institutions and vocational schools (19) were established during this period and they are functioning today. Lesya Ukrainka Volyn National University, Lutsk Pedagogical College, Volodymyr-Volynsk Agrotechnical College and Volyn Orthodox Theological Academy are the oldest institutions in the region. The institutions of the modern period include the following: academy of Recreational Technologies and Law, Monada Medical College, Volodymyr-Volynsky Medical and Technical College (*Волинська область*…, 2021).

The 32 higher educational institutions of all levels of accreditation worked in the Volyn region in the 2019–2020 academic year. Among them, 31 branch institutions, 1 educational institution (classical university – Lesya Ukrainka University).

The process of private institutions forming took place during the period of gaining Ukraine's independence. Private institutions in the Volyn region make up about 50%, as well as state institutions takes.

Todays, these institutions prepare bachelors in the following areas: informatics and computing, pedagogical education, socio-political sciences, economy and entrepreneurship, geodesy and land management, construction and architecture, management and administration, law, natural sciences, agriculture and forestry, sphere of service, transport and its infrastructure, physical education, sports and human health.

In 2020, 10 organizations and enterprises were engaged in scientific and scientific-technical activities in the Volyn region: 5 specialized branch design, design and engineering and scientific-methodical institutes, 4 branches of scientific design and design-research, 4 branch design, 2 research and production associations (1.5% of the number in the country, 70.0% of which are in Lutsk) (table 1).

The activity of the scientific potential of the Volyn region is directed to the needs of the region (*Головне управління…*, 2021; KRASNOPOLSKAYA et al., 2019).

Table 1. Dynamics of scientific base and scientific potential in Volyn region*
Tabela 1. Dynamika bazy naukowej i potencjału naukowego w obwodzie wołyńskim
Таблица 1. *Динамика научной базы и научного потенциала Волынской области*

Years	Institution of higher education I–II l. of ac.	Institution of higher education III–IV l. of ac.	Scientific and methodical institutes	Sectoral design organizations	Research and production center
1990–1991	15	1	9	6	2
1995–1996	15	2	9	4	2
2000–2001	15	3	9	4	2
2005–2006	14	4	7	4	2
2010–2011	11	4	7	4	2
2012–2013	11	4	6	5	1
2013–2014	10	3	6	5	1
2014–2015	10	4	5	4	1
2015–2016	10	4	5	4	1
2019–2020	10	3	5	4	1

* Compiled with using the materials of the Main Department of Statistics in the Volyn region (*Головне управління…*, 2021)

As we can see, there is a dangerous tendency towards the decline of "great" science and the desire to obtain short-term benefits at any cost. In fact, there is a simple "Re-use" of the potential that was accumulated by the country in previous periods, because without fundamental discoveries, regional industry can only hope for a temporary reduction in the situation at the expense of improving or pseudo-innovations.

Conclusions

After the research, there was established, that the resource base structure of the region scientific potential, which allows to generate new knowledge, increase labor productivity, develop production, apply the latest technology. It is the primary basis for the formation of personnel of scientific potential and affects the efficiency of production. According to the results of the research, an uneven distribution of the resource base on the territory of the region was revealed. The socio-geographical position of the region, production and economic and economic conditions are important factors influencing the formation and territorial distribution of scientific potential. That is why further research will be aimed to solve a whole range of problems related to the resource base, personnel, funding and logistics of science. As strategic landmarks, reconstruction of region scientific potential as well as the country, should be a residual awareness of priority branches, which, in its turn, will make it possible to concentrate the available financial resources on the implementation of innovative mechanical engineering, based on energy and resource-saving technologies, diversification of the non-productive sphere (development of transport, tourist, educational, cultural and recreational services). The creation of programs to promote the development of domestic innovative business structures, which, having formed significant financial resources, would be able to carry out a larger impact. At the regional level, it is advisable to create a database of inventions that would eliminate duplication of scientific

research by different organizations and would help minimize the cost of research. Also it's important to improve the existing patent and legal framework and resume activities related to the creation of business platforms in the form of technology parks and business incubators.

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