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## COMPREHENSIVE METHODOLOGICAL APPROACH TO ESTIMATING THE RESEARCH COMPONENT INFLUENCE ON THE INFORMATION ECONOMY DEVELOPMENT

**Purpose.** To develop and test a comprehensive methodological approach to assessing the impact of the research component on the development of the information economy based on the combination of statistical, index and cluster methods of analysis.

**Methodology.** In the course of the research, a set of general and special methods of cognition was used: content analysis, logical generalization, quantitative and qualitative comparison, taxonomic and index analysis, cluster analysis, graphical visualization, scientific abstraction and systematization.

**Findings.** It has been established that under the conditions of the national economy informatization, there is a dynamic increase in influence of science and R&D on the socio-economic development of the country. A comprehensive methodological approach to assessing the impact of the research component on the information economy development is suggested; its approbation allowed defining key tendencies and identifying the main problems of implementing the country's scientific potential under conditions of the national economy informatization. The vectors of improvement of regulatory state influence on the processes of information economy development are offered: neutral-encouraging ones (support of positive dynamics of intensive development of research component parameters), stimulating-supportive ones (resource and information support), initiating-mentoring ones (motivation and coordination of development processes).

**Originality.** During the research, a scientific and methodological approach to a comprehensive assessment of the impact of the research component on the information economy development was developed. Unlike the existing ones, this approach involves:

- monitoring of the processes of scientific and technical development of the country – this made it possible to assess the level of conformity of scientific research studies with the requirements of information economy;
- index analysis of the dynamics of the research component of the information economy development – it allowed identifying trends in development of the information economy and its research component;
- cluster analysis and comparison of the rates of development of the research component of the information economy at the regional level – it identified the regional disparities and deepened the differentiation of measures of stimulating and regulatory state influence according to the specifics of the identified clusters within the national economic system.

**Practical value.** The results of the study can be used by practitioners, scientists, government officials (the Ministry of Education and Science of Ukraine and its structural departments, local governments in the fields of education and science) to monitor the development of the information economy, the impact of R&D on the processes of development of this type of economy. They can be applied for the improvement of measures of state regulatory influence on economic subjects in order to intensify scientific and technical development of the country and bring the results of scientific researches in accordance with the relevant needs of the real economy.

**Keywords:** *information economy, research component, R&D, index analysis, cluster analysis, higher education and science*

**Introduction.** The characteristic feature of the current stage of development of the world leading countries is a high degree of dynamism and variability, which is based on rapid scientific and technological progress and prompt implementation of innovations in the production process. The trend of spreading the principles of information economy is steadily becoming a global one, which involves the activation of intellectual resources, innovation, scientific and technological development, the practice of implementing modern information and communication technologies in the activities of economic entities.

The development of the information economy in the country is largely based on scientific achievements and the results of higher education institutions activity. The reason is that it is universities and research institutes that provide training of personnel for the information economy, conduct research, generate innovation, and implement innovative projects.

**Literature review.** The methodological basis for the study on information economy is disclosed in the publications of Porat Mark U. (1977), Masuda Y. (1983), Bell D. (1999). The descriptors and features of information economy development are specified in the papers by Hrynkevych S., et al. [1] and Shkarlet S., et al. [2, 3]. Nowadays researchers study various aspects of digitalization at different economic levels. Modern scientists pay a lot of attention to the identification of main factors of countries' economic dynamic in the conditions of information economy [4, 5]. Kwilinski A. studies the specific of information economy influence on enterprises development [6, 7]. It should be noted that the informatization causes transformation not only at the entrepreneurial level but also at the mega level [8] and meso-economic level [9].

Numerous research publications are aimed at the substantiation of the role of higher education in development of the information economy [10, 11]. At the same time, some scientists study the influence of digitalization on the higher education development [12, 13] and describe the promising develop-

ment directions of universities within the conditions of economy's informatization [14, 15]. Such a point of view is reasonable because today's higher educational institutions are entities able to generate knowledge, innovations and to transfer them to industry. Conducting the research, the higher educational institutions create new ideas, invention, information and communication technologies, which enhance the information economy development [16, 17].

**Unsolved aspects of the problem.** The scientific achievements of these scientists are undoubtedly important for shaping the theoretical foundations of the information economy. However, the issues of comprehensive study of factors and identification of patterns of information economy development remain open. The methodological toolkit of estimation of information economy components, as well as the analytical characterization of the influence of the research component on the dynamics of the information economy needs improvement.

**The purpose** of the article is to develop and test a comprehensive methodological approach to assessing the impact of the research component on the development of the information economy based on the combination of statistical, index and cluster methods of analysis.

**Methods.** In the course of research, a set of general scientific and special methods of cognition were used:

- content analysis – to critically evaluate approaches to interpreting the essence of the information economy;
- logical generalization – for structural components of information economy development;
- quantitative and qualitative comparisons – for the study of the mutual influence of science (research activity) and information economy;
- taxonomic and index analysis – to build an integral indicator of the impact of the research component on the information economy development;
- cluster analysis – to carry out the mesoeconomic evaluation of the research component of information economy development;
- graphic visualization – for visual display of information;
- scientific abstraction and systematization – to substantiate suggestions for improving the directions of state regulation of the development of information economy based on the intensification of scientific, technical and research activities of economic entities.

A complex three-block methodological approach has been developed for the study, which involves combining statistical, index, and cluster methods of analysis:

*I block* – application of the statistical analysis method – for estimation of initial level of influence of research component on processes of information economy development;

*II block* – application of the index analysis method – to identify the trend of information economy development, namely the influence of the research component on its dynamics;

*III block* – application of the clustering method – to deepen the results obtained in the previous stages by conducting a mesoeconomic analysis on the research component of the information economy.

The next step of the methodology is to carry out systematic analysis in order to summarize and scientifically elaborate the obtained results of statistical, index and cluster analysis.

The methodological approach offered by the authors in this article to assess the impact of research activity of economic entities on the information economy development is characterized by complexity, while the existing approaches are aimed primarily at monitoring the development level of information society and only partially integrate economic aspects. Using such methodological approach will allow evaluating the level of information economy development at the national level; identifying the development features of the research component of the information economy; identifying problematic issues ("bottlenecks") and formulating scientifically grounded recommendations for intensifying the processes of transition of the national economy to functioning on the informatization principle, on the basis of intensification of scientific and technical, innovative activity in the country.

**Results. Results of the index analysis.** When selecting the partial indicators of the research component index, we proceeded, firstly, from the position of their influence on the dynamics of component values; secondly, from the availability of official statistics on them (at least in the last 15 years). The following groups of indicators were included in the research component index structure (Table 1):

1) general indicators characterizing scientific and research organizations (the number of organizations performing scientific research studies and developments; proportion of the higher education sector among such organizations);

2) indicators characterizing the staffing of scientific and research activity (the number of scientists; the number of doctors and candidates of sciences in economics);

3) indicators characterizing the financial aspects of scientific and research activity (the amount of expenditure on scientific research studies and developments; the share of the higher education sector in their funding; the share of the volume of research performed in the country's GDP).

The developed methodological approach involves the use of Saati's method, the method of hierarchy analysis that was proposed as early as in the 1970s by the American Mathematician T. Saati. Applying this method allows determining the weight of the impact of each partial indicator on the research component index of information economy development. The essence of T. Saati's method lies in the identification of simple components (or parts) in the system or problem, by which, through a pairwise comparisons, priorities are established gradually. Step by step, it is implemented in the following way:

- 1 – identification of key components of the system;

Table 1

Characteristics of partial indicators of the research component index of information economy development

No	Partial indicators	Symbol	The indicator weight (according to the method of Saati)
1	Number of organizations performing scientific researches and developments	$S_1$	0.08
2	Number of scientists	$S_2$	0.10
3	Expenditure on implementation of scientific researches and developments	$S_3$	0.15
4	The share of volume of performed scientific and technical works in GDP	$S_4$	0.15
5	Higher education sector share among organizations implementing scientific researches and developments	$S_5$	0.14
6	Higher education sector share in funding scientific researches and developments	$S_6$	0.12
7	Number of Doctors of Sciences in Economics in Ukraine	$S_7$	0.14
8	Number of Candidates of Sciences in Economics in Ukraine	$S_8$	0.12

2 – determining how to monitor, test, and evaluate the components;

3 – forming the method of application of the solution, including evaluation of its quality;

4 – cyclical review and reassessment of the process – to ensure full coverage of the characteristics and system/problem components relevant to achieving the goal.

The implementation of the Saati method requires the introduction of a law of hierarchical continuity, whereby elements of each level are compared with those of a higher level. The obtained results of such comparison are placed in two matrices:

a) to compare the relative importance of the criteria according to the objective;

b) to assess the relative importance of alternatives for each of the second level of criteria.

Now, we turn to the analysis and interpretation of the results obtained during the validation of the proposed methodological approach to assessing the impact of the research component on the development of the information economy. At the stage of determining the weight of each partial indicator in the research component, a matrix of pairwise comparisons (Table 2) and a calculation table for determining the weighting coefficients (the results of the calculations are summarized in columns 5 and 6 of Table 1) were constructed.

Using the weights coefficients obtained, we constructed the formula of the research component index of information economy

$$I_{sc} = 0.08S_1 + 0.1S_2 + 0.15S_3 + 0.15S_4 + 0.14S_5 + 0.12S_6 + 0.14S_7 + 0.12S_8,$$

where  $I_{sc}$  is the index of research component of information economy.

For the implementation of the standardization procedure, a calculation table (Table 3) was generated, the data of which formed the basis of the normalization of the indicators of the research component – Table 4.

Therefore, in the end, we come to determining the point forecast of partial indicators (Table 5), as well as the dynamics of the research component index, including its predictive values. The results of the calculations are presented in Fig. 1.

The dynamics of the index of the information economy's research component demonstrates steady growth. An exception is the decline in this indicator in 2011 – this tendency is caused by the global financial and economic crisis of 2008–2009, which led to total savings, including the decreasing in the R&D expenditure. The significant decline in the period 2014–2015 was mainly caused by the aggravation of the geopolitical situation and the beginning of hostilities in eastern Ukraine. This led to deepening socio-economic problems in the country, the reorientation of financial resources for military purposes.

The increase in the values of the research component index is achieved if the state support for R&D in the country is strengthened. It means the R&D investment, remuneration and financial incentives for scientists as well as necessity of development of a coherent strategic vision for the information economy. Such type of economy includes the effective R&D activity as an integral part, in our opinion. Simple quantitative increase of indicators is not enough; the intensification of the information economy requires qualitative R&D, and their transfer and commercialization in industry.

The dynamics and changes in research component are reflected in the parameters of innovative activity in the country [18, 19]. Such a connection is justified, since the R&D results make the basis for national economy's innovative development. Accordingly, the decline in the R&D effectiveness affects negatively the parameters of innovative activity. It ultimately leads to the slowing down the information economy development.

**Results of cluster analysis.** The initial step in cluster analysis is the selection of multiple variables to evaluate the sampling objects. The implementation of the cluster analysis method involves normalizing the values of the variables, calculating the degree of homogeneity of the sampled objects. Researchers should determine the number of clusters and calculate the initial centres of the clusters [20]. In our study, grouping the region by the parameters of the research component of information economy, we distinguished three clusters (Table 6).

Further steps of the methodology involve the selection of the closest cluster for each object, correction of the clusters' structure, and checking them on the basis of the criterion of stopping the algorithm. The iteration calculations made it pos-

Table 2

Matrix of paired comparisons for constructing a hierarchy of indicators by the degree of influence on the research component of information economy development

Indicator	$S_1$	$S_2$	$S_3$	$S_4$	$S_5$	$S_6$	$S_7$	$S_8$
$S_1$	<b>1</b>	0.25	0.25	1	1	0.5	2	1
$S_2$	4	<b>1</b>	0.1667	0.25	0.3333333	1	1	1
$S_3$	4	6	<b>1</b>	0.3333333	0.3333333	0.5	1	0.3333
$S_4$	1	4	3	<b>1</b>	0.5	1	0.2	1
$S_5$	1	3	3	2	<b>1</b>	0.5	1	1
$S_6$	2	1	2	1	2	<b>1</b>	0.5	1
$S_7$	0.5	1	1	5	1	2	<b>1</b>	1
$S_8$	1	1	3	1	1	1	1	<b>1</b>

Table 3

The calculation table for determining the index of the research component of information economy development

Indicator	$S_1$	$S_2$	$S_3$	$S_4$	$S_5$	$S_6$	$S_7$	$S_8$
$\bar{x}_j$	205.10	17164.62	3527.02	0.19	1.97	1.12	2684.57	11307.85
$S_j$	1285.47	88948.35	7245.47	0.91	13.26	5.80	14217.04	78646.11

Table 4

Normalized values of indicators for determining the research component index of information economy development

Year	$S_1$	$S_2$	$S_3$	$S_4$	$S_5$	$S_6$	$S_7$	$S_8$
2001	0.94	1.42	-1.65	1.06	-1.54	-1.70	-1.35	-1.59
2002	0.93	1.08	-1.45	1.06	-1.39	-1.52	-1.20	-1.41
2003	0.98	0.93	-1.25	1.76	-1.24	-1.35	-1.10	-1.26
2004	1.07	1.03	-1.05	1.49	-1.09	-1.17	-0.98	-1.13
2005	1.09	0.96	-0.81	0.95	-0.95	-0.99	-0.82	-0.92
2006	0.81	0.66	-0.59	0.36	-0.69	0.09	-0.64	-0.60
2007	0.58	0.46	-0.31	0.09	-0.29	0.99	-0.51	-0.39
2008	0.45	0.30	0.22	-0.07	-0.03	1.08	-0.30	-0.08
2009	0.27	0.20	0.16	0.20	0.12	0.63	-0.13	0.22
2010	0.09	0.04	0.24	-0.07	0.22	0.63	0.07	0.47
2011	-0.15	-0.23	0.36	-0.66	0.37	0.72	0.25	0.56
2012	-0.38	-0.40	0.62	-0.61	0.68	0.99	0.51	0.83
2013	-0.69	-0.65	0.85	-0.61	1.24	0.27	0.83	1.01
2014	-1.40	-1.14	0.64	-1.20	1.29	-0.09	0.70	0.67
2015	-1.50	-1.46	1.07	-1.47	1.08	-0.36	1.13	0.94
2016	-1.53	-1.47	1.21	-1.24	1.24	0.45	1.55	1.21
2017	-1.57	-1.72	1.74	-1.01	0.98	1.35	1.98	1.46
2018	-1.61	-1.7	1.85	-0.85	0.79	1.46	2.08	1.53

Table 5

Point forecast to determine the forecast partial indicators of the index of the information economy research component

Year	$S_1$	$S_2$	$S_3$	$S_4$	$S_5$	$S_6$	$S_7$	$S_8$
2019	878	51 849	510.39	1	16	8	20 818	97 963
2020	836	48 078	533.28	1	16	8	21 458	99 360
2021	793	44 306	556.16	1	16	8	22 098	100 756
2022	751	40 535	579.05	1	16	8	22 738	102 152

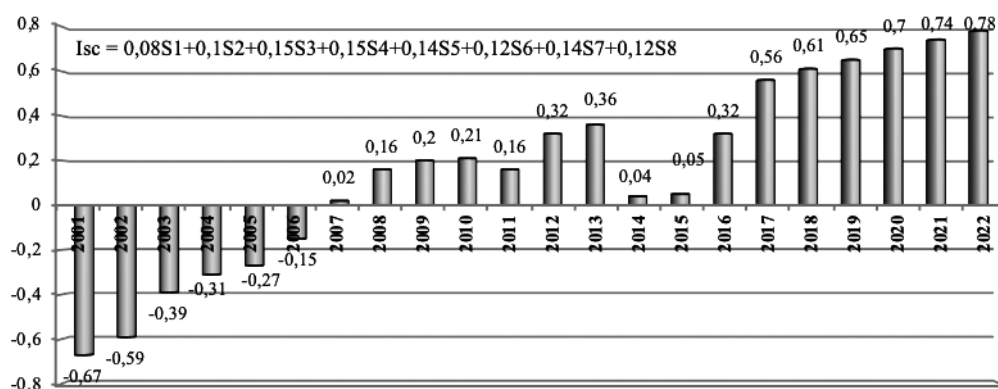


Fig. 1. Dynamics of index values of the research component of information economy

Table 6

Average values of indicators by clusters in terms of components

Cluster	Average value of $Sr_1$	Average value of $Sr_2$	Average value of $Sr_3$	Average value of $Sr_4$	Average value of $Sr_5$	Average value of $Sr_6$	Average value of $Sr_7$	Average value of $Sr_8$
1	18	636	132	15	26	72	66	222
2	149	9988	2399	334	466	1193	1140	3658
3	65	4613	1314	96	82	857	426	1250

sible to cluster the regions of Ukraine by the research component of information economy development – Table 7.

In order to deepen the analysis within the research component, we distinguished three parameters through which the clustering of regions of Ukraine was visualized (Fig. 2). The use of the graphical method allowed positioning the regions of Ukraine in three-dimensional space of features in accordance with the tempo of transformation of partial indicators of the research component.

Analysing the clustering results we could come to the following conclusions. *Cluster 1* is the most numerous one since it includes 88 % of all analysed objects. Regions within this cluster demonstrate the oscillatory dynamics of analysed indicators. Regions' economies have a significant intellectual and scientific potential (a number of research institutions, and powerful polytechnic higher education institutions). Nevertheless, all regions of the country included in cluster 1 (namely 21 oblasts) could be characterized as regions with low development level of research component of information economy. The reasons of this tendency are:

- problems in management at the regional and local level (at the level of educational and research institutions and their departments);
- lack of support of initiatives of researchers and innovators (entities as well as persons);
- low level of commercialization of universities' R&D;
- insufficient motivation of scientists and innovators (also the innovative active entrepreneurs);
- mostly theorized nature of R&D, their low correlating to the urgent needs of business enterprise sector, government sector, or civil society.

*Cluster 2* is very specific because it includes only one region (Kharkiv) with the intensive tempo of parameters of the information economy's research component. This region was added to cluster 2 because of some objective reasons: firstly, it

has nearly 150 effectively functioning R&D organizations; secondly, nearly 10 thousand persons are the staff of these organizations; thirdly, powerful higher education institutions are located in Kharkiv region (they concentrate the region's intellectual potential, and conduct qualitative applied research); fourthly, it has one of the highest level of R&D financing.

*Cluster 3* (Lviv region, Dnipropetrovsk region) is the cluster of regions with average level of research component development. The synchronization of stakeholders' interests (government, business, universities, and civil society) could enhance the scientific, technological, and innovative development of both regions. Establishing a long-term partnership of stakeholders can create sustainable conditions for activating the information economy at both regional and state levels. The promising directions of development of such partnership are increasing the R&D efficiency and commercialization of universities' R&D in industry.

**Results of system analysis.** Significant barriers in information economy development arise from disruption or, in some cases, complete lack of effective communication of scientists with entrepreneurs. A complete innovative process does not end with the generation of a non-standard creative idea, but must continue with patenting inventions and reaching the stage of commercialization of innovations. Statistics and reports show that the higher education sector has been consistently demonstrating the leading position in terms of patenting R&D results in recent years. Nowadays it is becoming urgent to implement the world best practices in the organization of relations for the protection of inventors' copyrights. At present, the Ukrainian realities show considerable gaps in this matter – despite the existence of the legislation on protection of intellectual property and copyright, in practice its provisions are not fully respected, and the facts of their violation are sometimes difficult to prove. Under such conditions, the tempo of the information economy development in Ukraine is slowing down, as the latter is strongly based on intellectual resources, the cost-effective use of which involves estab-

Table 7

Clustering results of Ukrainian regions on research component of information economy

Cluster	Cluster description	Regions
1 (includes 21 region)	Low level of development of the research component parameters	Sumy, Ternopil, Kherson, Khmelnytskyi, Rivne, Cherkasy, Zhytomyr, Zaporizhzhia, Ivano-Frankivsk, Kyiv, Kirovohrad, Luhansk, Transcarpathian, Mykolaiv, Odesa, Poltava, Chernivtsi, Chernihiv, Vinnytsia, Volyn, Donetsk
2 (includes 1 region)	Intensive development of the research component parameters	Kharkiv region
3 (includes 2 regions)	Average development level of the research component parameters	Lviv, and Dnipropetrovsk regions

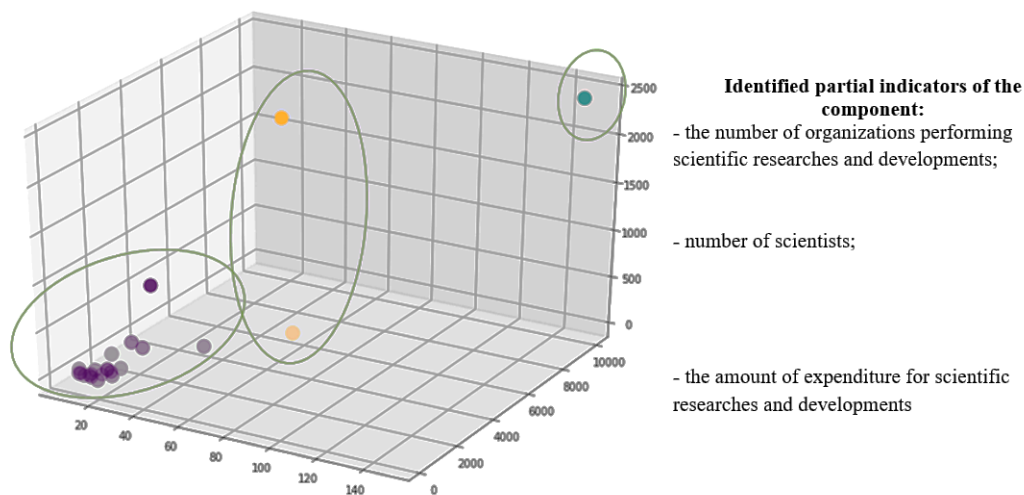


Fig. 2. Visualization of clustering results by individual parameters of research component of information economy



lishing legitimate relations of the rights transfer for commercial use of patented inventions and innovations.

Statistics positively characterize the attitude of the higher education sector to patenting issues, but they reflect only quantitative parameters. Often, patenting is considered by academic staff solely as an element of reporting and/or a tool for raising their own ranking position within the university. The dynamics of the number of patents and parameters of their commercialization in industry is taken into account during the ranking of world universities. So the quantitative aspect of patenting influences the competitive position of universities at the global educational and scientific area. Instead, the qualitative aspect of R&D results is problematic for Ukrainian universities. In particular, it is connected with the low rate of R&D commercialization. The underdeveloped dialogue between representatives of the higher education and business sectors makes this problem even more complicated. The problem lies precisely in the fact that entrepreneurs in the vast majority of cases remain insufficiently informed about the latest inventions made by national scientists. This causes a break in the chain of innovation process, leads to a slowdown in the innovative development of the national economy.

Activation of the information economy requires deliberate targeted state regulation and assistance (Fig. 3).

Based on the results of the study, we have specified the measures of state regulatory influence:

- 1) neutral-encouraging character – to regions with intensive development;
- 2) stimulating character – to perspective territories with average development level;
- 3) mentoring character – to regions with low development level of information economy and its research component.

**Conclusions.** To sum up, we can draw the following conclusions. The country's current scientific and technical potential in promoting the development of the information economy is clearly greater than the results that are actually being demonstrated at the current stage by research institutes and higher education institutions. This problem can be caused by insufficient motivation of innovative activity of scientific personnel; limited funding; outdated material and technical base, and so on. As a strategic vector is advisable to determine the transfor-

mation of domestic universities into centres of innovations and technology transfer in all sectors of the economy, because it is the sphere of innovation, scientific and research, educational activity of universities and research institutes, in our opinion, that has the main lever of their positive impact on the development of national economy on the informatization principle.

Strategic guidelines for state support of the regions with intensive and dynamic development of the research component of the information economy should be determined as follows: accelerating the pace of commercialization of research results of higher education institutions activity; guaranteeing respect for intellectual property rights; deepening the interaction between universities and business; increasing support for innovatively active economic entities; enhancing the investment attractiveness of the results generated within the higher education and science system; forming a complex information-analytical fund with the inclusion in its structure of the reference apparatus and modern telecommunication networks.

Strategic development vectors of prospective regions with average rates of development of the research component of the information economy should aim to create favourable conditions for further continuation of structural changes. It is important to systematically identify (at national and regional levels) the factors that stimulate the development of partial indicators of the research component of the information economy. It is extremely important for this group of regions of the country to attract investment for infrastructure development – information, innovation, research.

The conducted calculations showed that the largest number of regions of the country was added to the cluster of problematic regions with a low level of development of the research component of the information economy. Such regional distribution fully reflects the complex socio-economic situation in the country, which is difficult for the medium and long term forecasting. The group of problematic regions needs the utmost attention from the public sector. In our opinion, special emphasis should be placed on the intensification of development of the fields of science and education, namely: harmonization of the activity of research institutes and higher education institutions with the inquiries from the business sector, bringing it in line with the smart

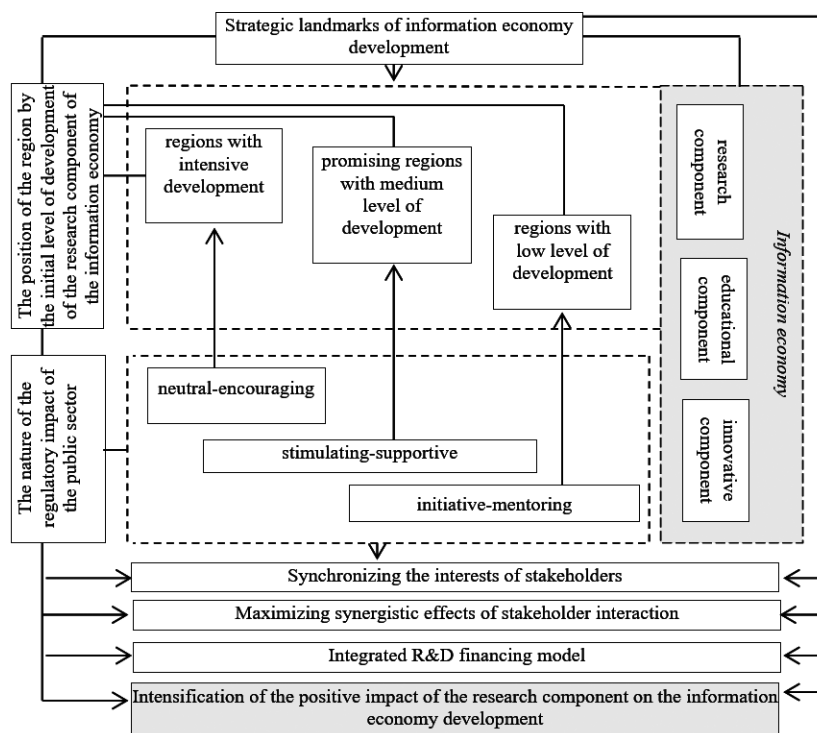


Fig. 3. Scheme of taking into account the results of regional clustering in strategic directions of stimulating the information economy development

specialization of the regions; investing in updating the material and technical base of educational and research institutions; increasing the pace of implementation of the latest information and communication technologies; helping to increase the level of innovative activity of business; development of students' skills in working with modern information technologies, development of information literacy of the population, and others.

Implementation of the directions of state regulatory influence proposed in the article will allow intensifying the positive influence of the research component on the processes of information economy development both in the regions and in the country as a whole. This requires the development of a holistic strategic approach to state regulation of the development of scientific and technical, educational activities in the country.

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## Комплексний методичний підхід до оцінювання впливу дослідницької компоненти на розвиток інформаційної економіки

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**Мета.** Розробити та апробувати комплексний методичний підхід до оцінювання впливу дослідницької компоненти на розвиток інформаційної економіки на основі комбінування статистичного, індексного, кластерного методів аналізу.

**Методика.** У ході дослідження використана сукупність загальнонаукових і спеціальних методів пізнання: контент-аналізу, логічного узагальнення, кількісного та якісного порівняння, таксономічного та індексного аналізу, кластерного аналізу, графічної візуалізації, наукового абстрагування й систематизації.

**Результати.** Встановлено, що в умовах інформатизації національної економіки відбувається динамічне зростання впливу науки та НДДКР на соціально-економічний розвиток країни. Запропоновано комплексний методичний підхід до оцінки впливу дослідницької компоненти на розвиток інформаційної економіки, апробація якого дозволила виявити ключові тенденції та ідентифікувати основні проблеми реалізації наукового потенціалу країни в умовах інформатизації національної економіки. Запропоновані вектори вдосконалення регулюючого державного впливу на процеси розвитку інформаційної економіки: нейтрально-заохочувальний (підтримка позитивної динаміки інтенсивного розвитку параметрів дослідницької компоненти), стимулюючо-забезпечувальний (ресурсна та інформаційна підтримка), ініціально-менторський (мотивація та координація процесів розвитку).

**Наукова новизна.** У ході дослідження розроблено науково-методичний підхід до комплексного оцінювання впливу дослідницької компоненти на розвиток інформаційної економіки. На відміну від існуючих, такий підхід включає:

- моніторинг процесів науково-технічного розвитку країни — це дало змогу оцінити рівень відповідності наукових досліджень запитам інформаційної економіки;
- індексний аналіз динаміки дослідницької компоненти розвитку інформаційної економіки — це дозволило виявити тенденції розвитку інформаційної економіки та її дослідницької складової зокрема;
- кластерний аналіз і порівняння темпів розвитку дослідницької компоненти інформаційної економіки на регіональному рівні — це виявило існування регіональних диспропорцій і поглибило диференціацію заходів стимулюючого й регулятивного державного впливу відповідно до специфіки виокремлених кластерів у межах національної економічної системи.

**Практична значимість.** Результати дослідження можуть бути використані практиками, науковцями, представниками влади (Міністерства освіти й науки України та його структурних департаментів, органів місцевого самоврядування у сферах освіти та науки) для здійснення моніторингу розвитку інформаційної економіки, впливу НДДКР на процеси розвитку такого типу економіки. Можливе застосування для удосконалення заходів державного регулюючого впливу на економічних суб'єктів задля інтенсифікації науково-технічного розвитку країни та приведення результатів наукових досліджень у відповідність до актуальних запитів реального сектору економіки.

**Ключові слова:** інформаційна економіка, дослідницька компонента, НДДКР, індексний аналіз, кластерний аналіз, вища освіта та наука

### **Комплексный методический подход к оценке влияния исследовательской компоненты на развитие информационной экономики**

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**Цель.** Разработать и апробировать комплексный методический подход к оценке влияния исследовательской компоненты на развитие информационной экономики на основе комбинирования статистического, индексного, кластерного методов анализа.

**Методика.** В ходе исследования использована совокупность общенаучных и специальных методов познания: контент-анализа, логического обобщения, количественного и качественного сравнения, таксономического и индексного анализа, кластерного анализа, графической визуализации, научного абстрагирования и систематизации.

**Результаты.** Установлено, что в условиях информатизации национальной экономики происходит динамичный рост влияния науки и НИОКР на социально-экономическое развитие страны. Предложен комплексный методический подход к оценке влияния исследовательской компоненты на развитие информационной экономики, апробация которого позволила выявить ключевые тенденции и идентифицировать основные проблемы реализации научного потенциала страны в условиях информатизации национальной экономики. Предложены векторы совершенствования регулирующего государственного влияния на процессы развития информационной экономики: нейтрально-поощрительный (поддержка положительной динамики интенсивного развития параметров исследовательской компоненты), стимулирующие-обеспечительный (ресурсная и информационная поддержка), иницирующе-менторский (мотивация и координация процессов развития).

**Научная новизна.** В ходе исследования разработан научно-методический подход к комплексной оценке воздействия исследовательской компоненты на развитие информационной экономики. В отличие от существующих, такой подход включает:

- мониторинг процессов научно-технического развития страны — это позволило оценить уровень соответствия научных исследований запросам информационной экономики;
- индексный анализ динамики исследовательской компоненты развития информационной экономики — это позволило выявить тенденции развития информационной экономики и охарактеризовать качество ее исследовательской составляющей;
- кластерный анализ и сравнение темпов развития исследовательской компоненты информационной экономики на мезорегиональном уровне — это доказало наличие региональных диспропорций и углубило дифференциацию мер стимулирующего и регулятивного государственного воздействия в соответствии со спецификой выделенных кластеров в рамках национальной экономической системы.

**Практическая значимость.** Результаты исследования могут быть использованы практиками, учеными, представителями власти (Министерства образования и науки Украины и его структурных департаментов, органов местного самоуправления в сферах образования и науки) для осуществления мониторинга развития информационной экономики, влияния НИОКР на процессы развития такого типа экономики. Возможно применение для совершенствования мер государственного регулирующего воздействия на экономические субъекты для интенсификации научно-технического развития страны и приведения результатов научных исследований в соответствие актуальным запросам реального сектора экономики.

**Ключевые слова:** информационная экономика, исследовательская компонента, НИОКР, индексный анализ, кластерный анализ, высшее образование и наука

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