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EDITOR: Olimpia NEAGU

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„REGIONAL SUSTAINABLE DEVELOPMENT - THROUGH
COMPETITIVENESS, INNOVATION AND HUMAN CAPITAL“**

6-9 November 2019, Carei, Romania



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CONTENT

THE SAVING AND LOAN-ENGAGING BEHAVIOUR OF ROMANIAN HOUSEHOLDS AND COMPANIES: DEVELOPMENTS AT REGIONAL AND COUNTY LEVELS AFTER THE ACCESSION TO THE EU Marioara IORDAN, Mihaela-Nona CHILIAN, Gabriela CIURARIU.....	11
THE SYSTEM OF METHODOICAL AND ORGANIZATIONAL SUPPORT FOR MONITORING THE COMPETITIVENESS OF REGIONS IN CURRENT CONDITIONS Viktoriiia BONDARENKO, Oleksandr BUTUSOV, Oksana KUREI, Vasyl FEDURTSIA	29
THE BRANCHES OF ECONOMY DEVELOPMENT REGULATION ON THE BASIS OF HARMONIZATION APPROACH Iryna SHTULER, Vitalyi SHERZANOV, Volodymyr ANDRYSHYN.....	45
ANALYSIS OF INTERNATIONAL COMPETITIVENESS AND INNOVATION INDICATORS Aleksandra TOŠOVIĆ-STEVAŃOVIĆ, Vladimir RISTANOVIĆ, Milan GAVRILOVIĆ.....	53
THE POTENTIAL OF BIOECONOMY IN COVASNA COUNTY Carmen Beatrice PĂUNA, Marioara IORDAN, Raluca-Ioana IORGULESCU, Tiberiu DIACONESCU.....	67
MISMATCH BETWEEN EDUCATION AND LABOUR MARKET NEEDS - CASE OF ROMANIA Mariana BĂLAN.....	86
THE FDI, HUMAN CAPITAL AND INNOVATIVE CAPABILITY AS FACTORS OF DEVELOPMENT AT REGIONAL LEVEL IN ROMANIA Elena PELINESCU.....	89
ASYMMETRIES OF THE LINK BETWEEN THE REGIONAL HIGHLY SKILLED HUMAN CAPITAL, R&D INVESTMENT, ECONOMIC GROWTH AND KNOWLEDGE-INTENSIVE EMPLOYMENT IN THE EUROPEAN UNION Olimpia NEAGU.....	94

STUDY ON THE CLASSIFICATION OF THE DEVELOPMENT REGIONS OF ROMANIA USING THE EUROPEAN REGIONAL COMPETITIVENESS INDEX

Mircea Constantin TEODORU, Andrada POP.....104

DOES QUANTITATIVE ANALYSIS CHANGE THE RANKING OF CHAMBER OF COMMERCE, INDUSTRY AND AGRICULTURE?

Maria-Lenuța CIUPAC-ULICI, Ioan Alin NISTOR, Isabella LUCUȚ-CAPRAȘ.....113

ROLE OF SOCIAL ENTERPRISES IN RURAL DEVELOPMENT. CASE - STUDY: NORTH-EAST REGION OF ROMANIA

Alexandru Costin CÎRSTEA, Mihai DORNEANU, Andrada POP.....125

ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS

Alin Titus PÎRCĂLAB.....138

COULD BE HUMAN CAPITAL LEVEL RELATED TO THE LIVING COSTS AND STANDARDS? A COMPARATIVE ANALYSIS IN ROMANIA AND UKRAINE

Olimpia NEAGU, Ivan VOVKANICH.....150

MIGRATION CRISIS IN EUROPE: A PERSPECTIVE OF UKRAINE AND ROMANIA

Vitalyi Ivanovych, ANDREIKO.....160

SECURITY DIMENSION OF CROSS-BORDER COOPERATION IN CENTRAL AND EASTERN EUROPE

Ihor TODOROV, Natalya TODOROVA.....171

DEVELOPING OF THE CROSSING OF THE UKRAINIAN-ROMANIAN BORDER (ON THE EXAMPLE OF UKRAINIAN-SLOVAK CHECKPOINTS)

Mykhailo SHELEMBА.....192

PRESERVATION AND CONSERVATION OF NATURAL AND CULTURAL HERITAGE THROUGH CROSS-BORDER COOPERATION

Nicoleta LAȘAN.....205

THREATS AND POSSIBILITIES OF DEVELOPMENT OF FOREST ECONOMIC COMPLEX OF MOUNTAIN REGION OF CARPATHIANS

Wassilj TSCHERLENIAK, Daniel Aleksander TSCHERLENIAK, Ivan CHERLENIAK.....213

EVOLUTION OF SME LENDING IN THE ROMANIAN BANKING SYSTEM Radu POP, Maria-Lenuța CIUPAC-ULICI, Raul BURDEA.....	224
DEVELOPMENT OF MANAGEMENT CAPACITIES WITH THE AID OF INCREASED REALITY Alin Titus PÎRCĂLAB.....	235
EFFICIENCING THE COMPANY ACTIVITY BY CHANGING THE ORGANIZATIONAL CULTURE Anca Leontina PAPP (MARINESCU), Liliana TODOR.....	243
THE DIRECT FOREIGN DIRECT INVESTMENT AND ITS IMPACT ON ROMANIA'S ECONOMIC GROWTH Mirela HALMI, Andrada POP.....	248
STRATEGIES TO MOTIVATE HUMAN CAPITAL Ioana Florentina CHIȘ.....	253
ACCOUNTING BETWEEN CHALLENGE AND REALITY Claudia TOTH, Angela CRIȘAN.....	258
SPECIAL MANIFESTATION OF CHEMICAL HORMESIS Elisabeta ATYIM, Gyongy OSSER, Paul ATYIM.....	264
THE COMPUTERIZATION OF EDUCATION BETWEEN NECESSITY AND EFFICIENCY Simona MACARIE.....	281
THE IMPORTANCE OF EFFECTIVE COMMUNICATION BETWEEN THE RECORDS SERVICES OF PEOPLE AND CITIZENS Ionel TORJA.....	288
THE QUALITY OF EDUCATION IN THE MODERN SOCIETY Horea Sebastian MACARIE.....	300
THE COMPARATIVE APPROACH REGARDING THE INTEGRATION OF DISTANCE LEARNING GRADUATES IN THE LABOUR MARKET Anca Leontina PAPP (MARINESCU), Radu POP.....	307
GLOBAL BUSINESS DEVELOPMENT USING 5G TECHNOLOGY Flavius Ilie RĂDAC.....	311

THE SYSTEM OF METHODOLOGICAL AND ORGANIZATIONAL SUPPORT FOR MONITORING THE COMPETITIVENESS OF REGIONS IN CURRENT CONDITIONS

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Abstract

The methodological and organizational support of the system of monitoring the region competitiveness in modern conditions is substantiated. It is determined that the monitoring of the regions competitiveness is a comprehensive, purposely organized system of targeted continuous observation, accumulation, storage, transmission and preparation of information on the improvement of the competitiveness of the regions for the analysis and decision-making. The objectives of monitoring the competitiveness of the region are substantiated, namely: the continuous observation; the ongoing analysis; the timely detection of changes; the prevention of negative trends; the assessment of the effectiveness and the completeness of the implementation of regional competitiveness policy; the assessment of the of methods, organizational structures and management processes of the regional and sub-regional authorities; the generation of proposals in the form of typical solutions sets aimed at eliminating negative trends and phenomena in the socio-economic development of regions and their competitiveness.

The defined main stages of monitoring the competitiveness of the regions are as follows: the list of monitoring indicators determining, the provision, collection and processing of indicators monitoring the competitiveness of the region, the calculation of the integral indicator, the regions rankings, the typical decision-making.

Key words: competitiveness, region, monitoring, indicator.

J.E.L. CODES: R1, R5, R11, R58

1. Introduction

In current conditions, regional socio-economic development is accompanied by increased competition from the regions to create a favorable environment for doing business and improving the quality of life. Market conditions and European integration

process have changed the understanding of regional policy being implemented at national and regional levels. However, despite the transformation processes and reforms taking place in Ukraine, there is still considerable differentiation in the state and pace of economic development of the regions.

Therefore, increasing the level of regional development and, consequently, the competitiveness of regions, has become an extremely important task for the authorities and local governments in Ukraine in recent years. For this purpose, budget decentralization is being carried out, regional development strategies are being developed, funds for financing regional projects are being formed, and the urgent need to build regional policy based on unity and validity is updated. In such circumstances, the issue of multilateral systematic, comprehensive monitoring and assessment of the competitiveness of regions, taking into account current trends in regional and state policy, and as a result, - making effective management decisions by authorities of different levels to enhance regional development, which formulate the purpose of the scientific article, become relevant.

The article is devoted to the substantiation of the methodological and organizational support of the system of monitoring the region competitiveness, considering the results of Ukrainian regions monitoring. To achieve the purpose of the research, the following objectives were identified: (1) to form the goals of regional competitiveness monitoring; (2) to determine the opportunities and create a subject-object model of the information-analytical system for monitoring the competitiveness of regions; (3) to develop stages and indicators to monitor the competitiveness of the regions.

2. Literature review

The basics of diagnosis and monitoring of regional competitiveness are widely outlined in the works of J.Huovari, A.Kangasharju & Alanen A. (2000), V.Vasilenko, O.Anafonenko & V.Dubyakov. (2008), P.Annoni, L.Dijkstra & N.Gargano (2016), V. Artemenko (2006), O.Stasyuk & I.Bevz (2012), L. Dijekstra (2011), I. Zhurba (2005), J.Konings & L.Marcolin (2011), V.Reutov (2006), R.Huggins, H.Izushi & P.Thompson (2013). However, despite the considerable number of publications, the scientific achievements devoted to the system of monitoring of regional competitiveness can be characterized as fragmented, non-systematic, in some cases irrelevant due to reforms in Ukraine and not brought to the level of practical use. The need to continue research in the field of regional competitiveness monitoring system, based on a combination of best scientific experience, transformational realities affecting the regions of Ukraine, determined the purpose and objectives of the article.

3. Methodology and Data

In order to achieve the objectives identified in the article, the following general scientific and specific methods of research were used: logical analysis and synthesis, comparative analysis, scientific abstraction, structural and logical analysis.

Legal and regulatory documents of the Verkhovna Rada of Ukraine, the Cabinet of Ministers of Ukraine, official materials of the State Statistics Service of Ukraine, the Ministry of Finance of Ukraine, reviews and ratings of international organizations, scientific works of domestic and foreign scientists, including materials of periodicals, monographs, reports, proceedings of scientific and practical conferences, Internet resources, materials of personal researches of the authors were used for data research.

4. Results

For the purpose of the study effectuation, the monitoring of the region competitiveness signifies a comprehensive, specially organized system of targeted continuous observation, accumulation, storage, transmission and preparation of information for the analysis and decision-making on the improvement of the competitiveness of the regions.

Herewith the purpose of the system of monitoring the regions competitiveness is to control the socio-economic development of regions and to promptly provide regional and sub-regional authorities with the information on the competitiveness of regions for the implementation of information interaction between central, regional and sub-regional authorities, as well as for the management and decision-making on the competitiveness of the regions.

Based on a review of sources (Poburko, 2006; Kohut, & Rochchin, 1995; Rose, & Pevalin, 2003; Montrone, & Perchinunno, 2013; Krapivin, & Shutko, 2012; Altman, 1979) the goals of monitoring the competitiveness of a region can be defined as follows:

- continuous monitoring of the socio-economic development of the regions and their competitiveness and obtaining prompt information on these issues;
- ongoing (current) analysis of the information on indicators of the regions socio-economic development and competitiveness, which are formed by regional and sub-regional authorities along with independent organizations and the public;
- timely identification of changes occurring in the socio-economic development of regions and their competitiveness, and the factors that contributed to these changes;
 - prevention of negative trends that may have a negative impact on the socio-economic development of regions and their competitiveness;
 - evaluation of the effectiveness and completeness of the implementation of socio-economic development policy and competitiveness of the state and regions;
 - assessment of the effectiveness of methods, organizational structures and management processes of the regional and sub-regional authorities;
 - development of proposals for a set of typical solutions aimed at eliminating negative tendencies and phenomena in the socio-economic development of regions and their competitiveness, as well as determining the feasibility of the participation of central authorities in assisting regional and sub-regional authorities.

It is important to monitor the competitiveness of regions by developing an appropriate information and analytical system, which should be based on economically

sound, mathematically correct and applied methods of assessing the socio-economic development and competitiveness of regions. It should also be simple and universal in its implementation. This implies that its implementation should be carried out using the technical means available in regional and sub-regional authorities, based on standard software products.

The information to be used in such an information-analytical system must be reliable and accessible. Such information should be accounted for by methods that ensure the adequacy of results of the current situation assessment. The quality of the system should be evaluated based on expert and mathematical analysis due to the results of the current situation assessment in regions.

Based on the analysis of the approaches (Gladij, Dolishnij, Pysarenko, & Yankiv, 1998; Zaitseva, Antonov, & Seryogin, 2003; Kaplya, & Kashparov, 2013; Kurdyukov, 2013; Shogenova, & Karmokova, 2014; Bunchikov, & Jeryomin, 2012) the capabilities of the information-analytical system for monitoring the competitiveness of regions include:

- 1) conducting the analysis of the regional competitiveness;
- 2) forming an integrated assessment of the competitiveness of the regions;
- 3) ranking the regions in accordance with the integrated assessment of their competitiveness;
- 4) formulating typical decisions based on information about regional competitiveness.

Regional competitiveness monitoring can be carried out within:

- public authorities, whose functions include socio-political and socio-economic monitoring in regions;
- sector ministries and agencies;
- regional executive authorities as well as local self-government bodies;
- scientific and research institutions;
- analytical centers and independent public organizations.

The advantages of monitoring within the state institutions are as follows: prompt access to information; the information accumulation in time; close communication between those collecting the information and those providing and using it.

At the same time, the latter point may be a disadvantage of monitoring within the state institutions as it may contribute to partiality and falsification of the monitoring results.

In turn the results of monitoring within the framework of independent institutions may lead to a failure in obtaining timely statistical information, lobbying the interests of certain political forces, etc.

In this context, it is important to organize a competitiveness monitoring system based on the collaboration of state and independent institutions with active involvement of the public. For this purpose, it is advisable to set up in each region a "regional competitiveness monitoring working group", which will be entrusted with the monitoring function within the specific region. This working group should include representatives of the departments of regional state administrations (Table 1), scientific and research institutes, independent organizations.

Table 1. List of the working group participants on monitoring the competitiveness of the regions

№	Department
1	Department of Agricultural Development
2	Department of Environment and Natural Resources
3	Department of Economic Development and Trade
4	Department of Infrastructure, Development and Maintenance of a Network of Public Roads of Local Importance and Housing
5	Department of Business Information and Communication
6	Department of Education
7	Healthcare Department
8	Department of Social Welfare
9	Department of Finance
10	Department of Foreign Economic Relations, Investments and Cross-Border Cooperation
11	Capital Construction Department
12	Department of Culture
13	Youth and Sports Department
14	Department of Planning and Architecture
15	Office of Civil Defense
16	Non-Governmental Organizations

Source: authors' view

The position of a monitoring specialist should also be created, which will have the functions of accumulating and processing operational data (short-term monitoring):

- monitoring of regional competitiveness - data collection, accumulation and processing;
- development of recommendations for draft regulatory acts on the issues of monitoring the competitiveness of regions;
- preparation of analytical materials for prompt informing of central and regional bodies of executive power on the main tendencies of the regional competitiveness;
- developing proposals for a list of key indicators that are used to monitor the competitiveness of regions, identifying key factors that affect the competitiveness of regions.

The main functions of the «working group» entities on monitoring the competitiveness of the regions include the following:

- development of proposals for improvement of the regional statistics system;
- informational interaction on the issues of monitoring the competitiveness of regions between regional and sub-regional bodies of executive power;
- carrying out analytical work in the field of competitiveness of regions, conducting analysis of tendencies in the socio-economic development of regions and their competitiveness;

- participation in the preparation and holding of conferences, seminars and other actions on the competitiveness of regions, the provision of information and consultative work on the preparation and conduct of such events;
- development of proposals on the promulgation of information about the competitiveness of the regions.

The general algorithm for monitoring the competitiveness of regions can be formulated in stages aimed at solving the main problems (Fig. 1).

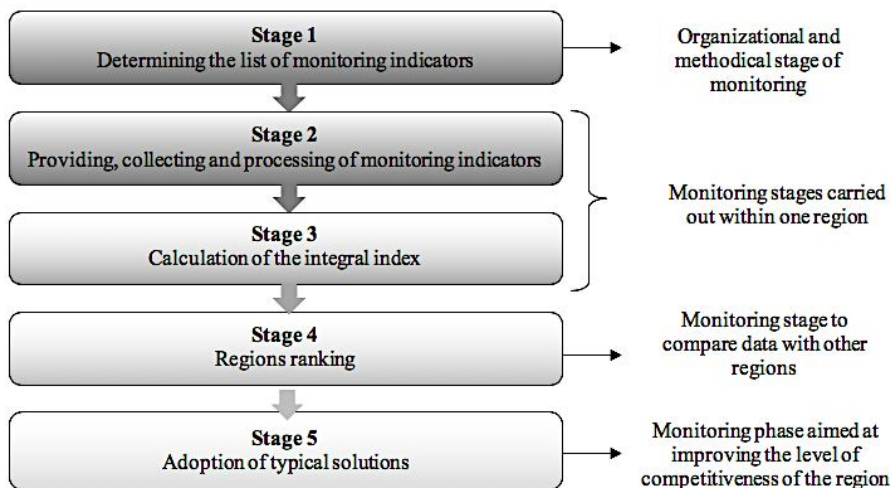


Figure 1. Stages of monitoring the competitiveness of Regions

Source: author's view

Stage 1. Determining the list of monitoring indicators

The list of regional competitiveness monitoring indicators should be the result of negotiations between the entities of the working group on regional competitiveness monitoring in each of the regions.

It should comply with principles presented in Table 2.

Table 2. Principles of indicators selection for monitoring the competitiveness of regions

№	Principle	Definition of the principle
1	Principle of diversification	Provides an opportunity to evaluate the region in various directions of socio-economic development
2	Principle of specificity	Envisages inclusion in the list of only those indicators of the socio-economic development of the regions which can improve the competitiveness of the regions
3	Principle of versatility	Ensures the universality of measuring the competitiveness of regions and the ability to rank regions
4	Principle of dynamism	Ensures maximum adaptation to the socio-economic conditions of development of the Ukrainian economy

5	Principle of unambiguousness	Assumes that the list of indicators should provide a clear and consistent assessment
6	Principle of integrality	Aims that the developed list should include indicators that can be combined into the integral indicator
7	Principle of optimization	Provides management decision-making to improve the socio-economic development of regions
8	Principle of relevance	Considers current trends of socio-economic development of the country combined with globalization challenges
9	Principle of impartiality	Ensures that indicators are calculated based on independent observations and surveys

Source: based on (Romanyuk, 2014; Malinovskaya, & Nagaslaeva, 2014; Artemenko, 1995; Artemenko, 2006; Shevyakov, & Kleiner, 1998; Morozov, & Kosolapov, 2002; Lendiel, M., Vynnytsky, B., & Rateichak, Y. 2007)

The list of monitoring indicators should be divided into six groups of indicators that characterize: regions infrastructure and accessibility, human capital development, economic efficiency of production potential, openness of the region, management of the region, innovativeness.

Stage 2. Providing, collecting and processing of monitoring indicators.

After the stage of determining the list of indicators comes the stage of submission, collection and processing of monitoring indicators.

The basic principles of this stage should include the following:

- ensuring the single entry of information within the place of its formation, sharing and its repeated use;
- minimizing duplication of the functional tasks of collecting, providing and processing monitoring indicators;
- unification and standardization of functions of monitoring indicators collection, provision and processing.

The process of collecting and processing data on monitoring should include the following aspects: determining the frequency of data providing, collection and processing, determining the executants and controllers responsible for delivering, collecting and processing data.

The function of determining the frequency of monitoring indicators submission, collection and processing, as well as the determination of the responsible contractors and controllers, should be entrusted to the members of the established working group for monitoring the regions competitiveness.

Participants in the Regional Competitiveness Monitoring Working Group develop and send requests to responsible contractors for the provision of data that provides the primary information needed to perform regional competitiveness monitoring.

The verification of the received data is carried out by horizontal and vertical reviews:

- 1) horizontal verification refers to the dynamics' analysis of indicators on their correspondence, namely: in the case of any significant deviations, such data should be clarified and explained;

2) vertical verification refers to arithmetic audit of indicators reflecting the sum of other indicators, or those determined by calculation based on the indicators obtained.

The indicators processing includes the transformation of the data, obtained from the responsible executives, into the units necessary for the calculation of the integral indicator, the frequency and so on.

Indicators obtained from responsible data providers are the subject to detailed analysis identifying the deficiencies and errors that may adversely affect the results of the regional competitiveness monitoring. The processing and verification of primary data is carried out by the Working Groups for Monitoring the Competitiveness of Regions.

The deficiencies and errors include: late submission of data, complete or partial lack of data, incorrect filling of templates, such as unprinted characters, errors in bit, lack of unit of measure, entering in templates erroneous data, for example, relating to other periods or indicators, incorrect calculation of totals, etc.

If the templates are incorrectly filled in, the representative of the relevant Regional Competitiveness Monitoring Working Group contacts the direct responsible data provider and corrects any deficiencies identified during the verification. In case of changes in the number of indicators due to the improvement of the competitiveness monitoring of regions, the working groups develop new lists of indicators and send them to the relevant executives for data submission.

The responsible for the submission of data executives should be represented by:

- main regional departments of statistics;
- main regional departments of finance;
- independent organizations (Fig. 2).

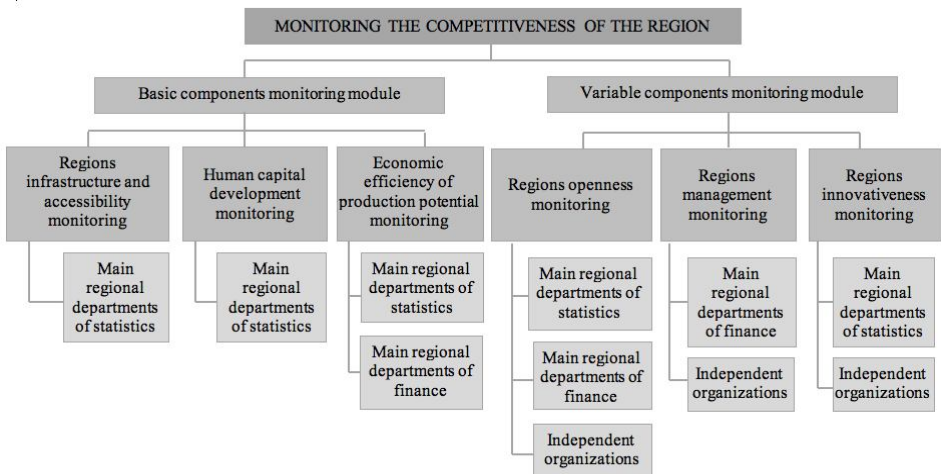


Figure 2. System of information and analytical support of the process of monitoring the competitiveness of the regions by modules

Source: authors' view

It is worth noting that independent organizations should include those developing independent indices and ratings within individual programs and projects. These indices and ratings can be included in the overall integral indicator of the competitiveness of regions. The following programs and projects are proposed to include:

1. Leadership in Economic Governance Program;
2. The project «Transparent, Financially Sound and Competitive Municipalities in Ukraine»;
3. Project «Promoting the Transparency of Government: Monitoring the Websites Openness of Central Executive Bodies, Courts and Local Authorities of Ukraine»;
4. The Transparency, Financial Health and Competitiveness of Municipalities Project;
5. Transparent, Financially Sound and Competitive Local Governments in Ukraine Project.

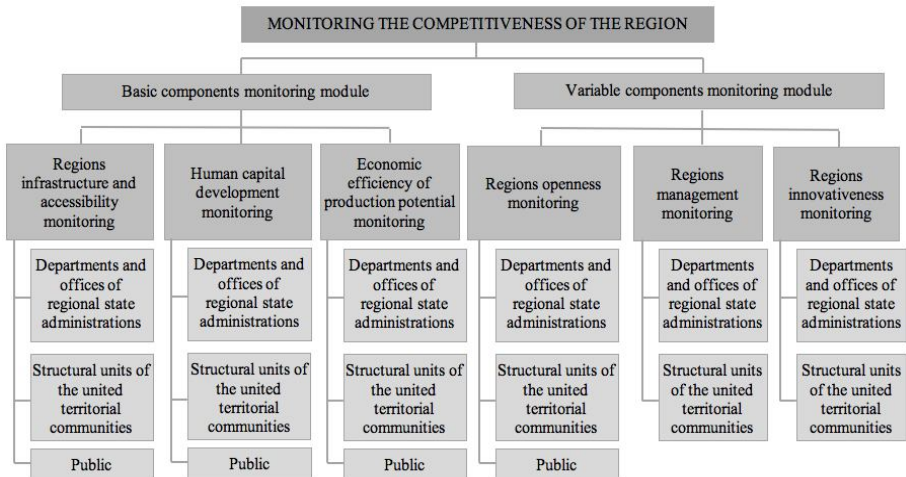


Figure 3. Responsible controllers of the process of monitoring the competitiveness of the regions by modules

Source: authors' view

Responsible controllers should include (Fig. 3):

- departments and offices of regional state administrations;
- structural units of the united territorial communities;
- the public;
- non-governmental organizations.

For greater efficiency and effectiveness of the monitoring, the processes of indicators provision, collection and processing are advisable to carry out during the following periods:

- short-term - monthly monitoring;

- mid-term - quarterly monitoring;
- long-term - annual monitoring.

Monthly and quarterly monitoring does not provide for the calculation of the integrated indicator, regions ranking, and typical decisions formation aimed at improving the level of competitiveness.

The list of indicators for monthly monitoring should include the main indicators of socio-economic development of the regions, which are monthly accumulated and published by the main regional departments of statistics of Ukraine, namely:

- number of registered unemployed at the end of the period (thousand people);
- nominal average monthly wage of one employee (UAH);
- real average monthly wage of one employee (%);
- capital investments (UAH million);
- export of goods (million USA \$);
- import of goods (million USA \$);
- export of services (million USA \$);
- import of services (million USA \$);
- export of goods growth rate;
- import of goods growth rate;
- export of services growth rate;
- import of services growth rate;
- import export coverage.

In order to ensure timely control, it is advisable to introduce the following deadlines for the provision, collection and evaluation of monthly monitoring indicators: submission of data - not later than 15 days after the end of the reporting month; data collection - not later than 15 days after the end of the reporting month; data processing - not later than 30 days after the end of the reporting month.

The list of indicators of the quarterly monitoring should include the main indicators of socio-economic development of regions that are quarterly accumulated and disclosed by the main regional departments of statistics of Ukraine, and the financial indicators of regions that are quarterly accumulated and promulgated by the main regional departments of finance. The indicators identified are as follows:

- number of registered unemployed at the end of the period (thousand people);
- nominal average monthly wage of one employee (UAH);
- real average monthly wage of one employee (%);
- capital investments (UAH million);
- export of goods (million USA \$);
- import of goods (million USA \$);
- export of services (million USA \$);
- import of services (million USA \$);
- export of goods growth rate;
- import of goods growth rate;
- export of services growth rate;
- import of services growth rate;
- import export coverage;
- local budget revenues (excluding transfers from the state budget);

- revenues of local budgets (excluding transfers from the state budget) per person;
- the level of local budget revenues (excluding transfers from the state budget);
- expenditures of local budgets (excluding intergovernmental transfers);
- expenditures of local budgets (excluding intergovernmental transfers) per person;
- the level of expenditures of local budgets (excluding intergovernmental transfers);
- local budget deficit (excluding intergovernmental transfers and transfers from the state budget).

In order to ensure timely control, it is advisable to introduce the following timelines for the provision, collection and evaluation of quarterly monitoring indicators:

- submission of data - not later than 15 days after the end of the reporting quarter;
- data collection - not later than 15 days after the end of the reporting quarter;
- data processing - not later than 30 days after the end of the reporting quarter.

Infrastructure and accessibility of the regions	Human capital	Economic efficiency of production potential	Regions openness	Management of the regions	Regions innovativeness
<p>23 indicators in total:</p> <ol style="list-style-type: none"> 1. Housing per 1 person 2. The level of deterioration of the housing stock 3. Freight traffic by road 4. Density of public roads with a hard surface 5. Number of bus trips per person 6. Departures of passengers by rail 7. Density of railway tracks in public use 8. Goods transported by rail 9. Goods transported by water 10. Passengers carried by water transport per 1000 inhabitants and others. 	<p>27 indicators in total:</p> <ol style="list-style-type: none"> 1. Population natural growth (reduction) ratio 2. Average life expectancy at birth 3. Population density 4. Rations of the migration growth (reduction) of the population within Ukraine 5. Rations of the migration growth (reduction) of the population due to international migration 6. Economically active population aged 15-70 years 7. Demographic burden on the population aged 15-64 per 1000 people 8. Disposable income per person 9. Percentage of the population with average per capita monthly cash income below the subsistence minimum and others. 	<p>16 indicators in total:</p> <ol style="list-style-type: none"> 1. Number of economic entities per 1000 persons 2. Number of business start-ups per 1000 entities 3. Initiated and completed bankruptcy procedures per 1000 business entities 4. Gross regional product per person 5. Gross value added per person 6. Competition level 7. Production in basic prices per entity 8. Gross regional product per employee 9. Local budget revenues including intergovernmental transfers per person 10. Tax revenues to local budgets per person and others. 	<p>5 criteria: business activity; business environment favorability; foreign economic activity; digital openness; political characteristic.</p> <p>13 comprehensive indicators are included in total</p>	<p>3 criteria: regulatory policy; fight against corruption; level of region self-reliance.</p> <p>6 comprehensive indicators are included in total</p>	<p>2 criteria: scientific potential; innovativeness of the region.</p> <p>3 comprehensive indicators are included in total (including suggested by authors: number of STEM staff per thousand of population)</p>

Figure 4. System of criteria and indicators for monitoring the competitiveness of regions

Source: authors' view

In the list of indicators of the annual monitoring it is advisable to include expanded indicators of socio-economic development of regions with annual accumulation and publication by the main regional departments of statistics of Ukraine, expanded financial indicators of regions that are accumulated and published by the main regional departments of finance and assessments of regions accumulated and published annually by independent, public-facing organizations (see Figure 4). The importance of attracting independent ratings and assessments is due to the fact that they are formed on the basis of expert assessments involving the collection of information through contact methods in the form of expert surveys and observations. For example, such institutions often use sociological surveys, questionnaires and interviews to form ratings and indexes.

In order to ensure timely control, it is advisable to introduce the following timelines for the submission, collection and evaluation of the annual monitoring indicators:

- submission of data - not later than April 15 of the following year;
- data collection - not later than April 15 next year;
- data processing - not later than June 1 of the following year.

Stage 3. Calculation of the integral index

At the stage of calculating the integral indicator, the Working Groups for Monitoring the Competitiveness of Regions carry out standardization of indicators, namely the transformation into indexes in the form of the sum of the standardized by the maximum value of attributes, the stepwise grouped indices by groups of indicators are determined, then by each of the criteria, then by each of the components. The integral competitiveness index of each region is then determined as standardized by the maximum value of the sum of the group indices of all components.

Stage 4. Regions ranking

The method of ranking regions is widely used in foreign practice. The selected parameters determine the placing of the region according to each indicator. The total rating of the region is determined by the sum of the region ranks by all parameters. The highest ranking is given to the region receiving the minimum amount of ranks. Therefore, the fourth stage of monitoring the competitiveness of regions is the formation of the regions ranking by their level of competitiveness.

Stage 5. Adoption of typical solutions

An important step in monitoring the competitiveness of regions is to develop typical solutions. The monitoring results can be applied to formulate and adopt decisions aimed to form short-, medium- and long-term programs for improving the relevant components and programs for improving the level of competitiveness of the region.

As shown in Fig. 5, typical decisions should be adopted based on monitoring components but not on the basis of the integral indicator or the regions rating.

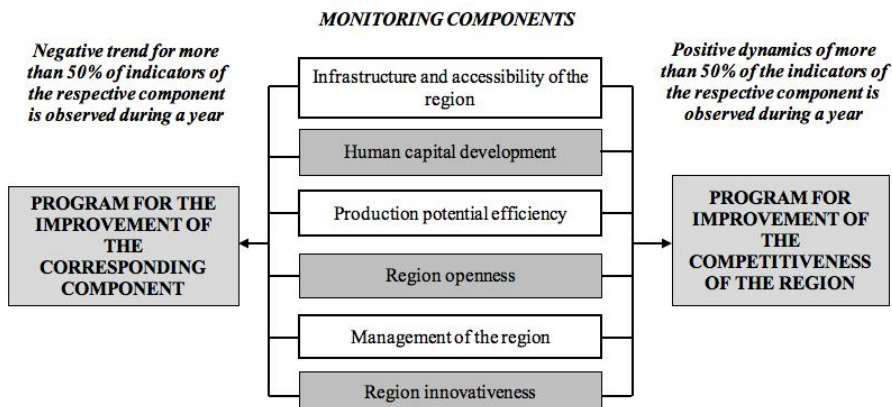


Figure 5. Mechanism of the alternative decisions formation based on the results of monitoring the competitiveness of the region

Source: authors' view

Thus, if there is a negative trend for more than 50% of indicators of the respective component during the year, it is advisable to decide on the elaboration of a program for the development of the corresponding component.

Conversely, if positive dynamics of more than 50% of the indicators of the respective component are observed during the year, it would be advisable to decide on the adoption of such a component as competitively important and to develop on the basis of this component a program for improving the competitiveness of the region.

The implementation of short-, medium- and long-term monitoring of the competitiveness of the regions, applied on the strict observance of the recommendations on the formation of subjects of information and analytical support of the monitoring process, the proposed stages and principles of the monitoring process, the mechanism of formation of alternative decisions based on the results of monitoring allows:

- to create a unique array of data that reflects the socio-economic development of the regions and their competitiveness;
- to identify and eliminate problems of socio-economic development of regions and their competitiveness in a timely manner;
- to develop science-based programs improving the relevant component and programs improving the competitiveness of regions.

5. Conclusions

The elaboration of the methodological and organizational support for the monitoring system of regions competitiveness made it possible to formulate the following conclusions.

Regions competitiveness monitoring is a comprehensive, specially organized system of targeted continuous observation, accumulation, storage, transmission and

preparation of information for the analysis and decision-making on the improvement of the competitiveness of the regions.

The organization of the system of monitoring the competitiveness of regions should be based on the collaboration of state and independent institutions with active involvement of the public.

Methodological and organizational support of the regional monitoring system should be based on the principles of diversification, specificity, versatility, dynamism, unambiguousness, integrality, optimization, relevance, impartiality.

The following stages should be the basis for monitoring the competitiveness of the regions: (1) determining the list of monitoring indicators; (2) providing, collecting and processing of monitoring indicators; (3) calculation of the integral index; (4) regions ranking; (5) adoption of typical solutions.

For the efficiency and effectiveness of the regional competitiveness monitoring, the processes of indicators provision, collection and processing are advisable to carry out during the following periods: short-term – monthly monitoring; mid-term – quarterly monitoring; long-term – annual monitoring. At the same time, monthly and quarterly monitoring does not provide for the calculation of the integrated indicator, regions ranking, and typical decisions formation aimed at improving the level of competitiveness.

An important step in monitoring the competitiveness of regions should be the formulation and adoption of typical solutions (decisions), based on which short, medium and long-term programs for improving the relevant components and programs for improving the level of competitiveness of the region can be formed.

References

1. Altman, S. (1979). Performance monitoring systems for public managers. *Public Administration Review*, 1, Vol. 39, 31-35.
2. Annoni, P., & Dijkstra, L. (2013). *EU Regional Competitiveness Index: RCI 2013*. Luxembourg: Publications Office of the European Union.
3. Annoni, P., Dijkstra, L., & Gargano N. (2016). *EU Regional Competitiveness Index 2016*. Luxembourg: Publications Office of the European Union. 28 p.
4. Artemenko, V.B (1995). Instrumental'ni zasoby ta modeli stvorenniya systemy social'no-ekonomichnogo monitoryngu. *Stanovlennya nacional'noyi ekonomiky Ukrainy*, (dđ.62-64) L`viv: L`vivs`kyj derzhavnyj universytet imeni Ivana Franka. (in Ukr.)
5. Artemenko, V.B. (2006). Indykatory stijkogo social'no-ekonomichnogo rozvytku regioniv. *Regional`na ekonomika*, 2, 90-97 (in Ukr.)
6. Bevz, S. I. (2015). Do pytannya pro sutnist' derzhavnogo regulyuvannya gospodars`koyi diyal`nosti. *Chasopys Kyyivs`kogo universytetu prava*, 3, 114-118. (in Ukr.)
7. Bunchykov, O.N., & Jeryomin, R.V. (2012). Konceptual`naya model` monitoringa social`no-ekonomicheskogo razvitiya regiona. *Vestnik Donskogo gosudarstvennogo agrarnogo universiteta*, 1, 44-48 (in Rus.)
8. Dijkstra, L., Annoni P., & Kozovska, K. (2011). A new European Regional

- Competitiveness Index: theory, methods and findings. *DG Regional Policy Working Papers* WP02/2011.
- 9.Gladij, M.V., Dolishnij M.I., Pysarenko S.M., & Yankiv M.D. (1998). *Regional'nyj menedzhment i monitoryng*. L'viv, NAN Ukrainy. Instytut regional'nyh doslidzhen' (in Ukr.)
- 10.Huggins, R., & Izushi, H. (2007). *European competitiveness index 2006-2007*. Pontypridd: Robert Huggins Associates Ltd. 42 p. Retrieved from <http://www.cforic.org/downloads.php> Accessed 22 August 2019
- 11.Huggins, R., Izushi, H., & Thompson, P. (2013). Regional Competitiveness: Theories and Methodologies for Empirical Analysis. *JCC: The Business and Economics Research Journal*, 6(2), 155-172.
- 12.Huggins, R., & Thompson, P. (2016). *UK Competitiveness Index 2016*. Cardiff: Centre for International Competitiveness
- 13.Huovari, J., Kangasharju, A., & Alanen, A. (2000). Regional competitiveness in Finland. ERSA 40th European Congress, 29th August – 1st September, 2000, 17 p. Retrieved from <http://www.sre.wu-wien.ac.at/ersa/ersaconfs/ersa00/pdf-ersa/pdf/234.pdf> Accessed 12 September 2019
- 14.Kaplya, D.N., & Kashparov, R.V. (2013). Informacyonnyj monitoring v processe strategicheskogo upravleniya social'no-ekonomicheskim razvitiem regiona. *Vestnik Altajskoj gosudarstvennoj pedagogicheskoy akademii*, 17, 19-22. (in Rus.)
- 15.Kogut, A.E., & Roxchin, V.S. (1995). *Informacyonnye osnovy regional'nogo social'no-ekonomicheskogo monitoringa*. SPb.: ISEP RAN. (in Rus.)
- 16.Konings, J., & Marcolin, L. (2011). The competitiveness of regions: a comparison between Belgian and German regions. *Vives.DiscussionPaper*, 16. Retrieved from <https://ssrn.com/abstract=1888167> Accessed 04 September 2019
- 17.Krapivin, V.F., & Shutko, A.M. (2012). Information Technologies for Remote Monitoring of the Environment. *Springer*, V. XXXIV, 498 p.
- 18.Kurdyukov, S.I. (2013). Monitoring ekonomicheskogo razvitiya regiona. *Upravlenie ekonomicheskimi sistemami*, 12 (60), 12-21. (in Rus.)
- 19.Lendiel, M., Vynnytsky, B., & Rateochak, Yu. (2007). *Monitoryng ta ocinyuvannya strategij i program regional'nogo rozvytku v Ukraini*. Kyiv: «K.I.S.». (in Ukr.)
- 20.Malinovskaya, N.A., & Nagaslaeva, I.O. (2014). Issledovanie sistemy monitoringa social'no-ekonomicheskogo razvitiya regiona. *Ekonomika. Sotsyologiya. Menedzhment*, 2, 48-53. (in Rus.)
- 21.Montrone, S., & Perchinunno, P. (Eds.) (2013). Statistical Methods for Spatial Planning and Monitoring. *Springer*, V. IX, 158 p
- 22.Morozov A.O., & Kosolapov, V.L. (2002). *Informacijno-analitychni texnologiyi pidtrymky pryjnyattya rishen' na osnovi regional'nogo social'no-ekonomicheskogo monitoryngu*. Kyiv: Naukova dumka. 229 s. (in Ukr.)
- 23.Poburko, Ya. O. (Red.). (2006). *Monitoryngovi ocinyuvannya skladnyh social'no-ekonomichnyh yavyshh rozvytku regionu*. L'viv: NAN Ukrainy. In-t regional'nyh doslidzhen' (in Ukr.)
- 24.Reutov, V. (2006). Mizhnarodna konkurentospromozhnist' regionu: sutnist', metody ocinyuvannya. *Ekonomika ta derzhava* 4, 52-54. (in Ukr.)

25. Romanyuk, A.V. (2014). Teoreticheskiye osnovy provedeniya monitoringa sostoyaniya i tendenciy razvitiya ekonomiki regiona. *Ekonomika i upravleniye*, 2, 329-338. (in Rus.)

26. Rose, D., & Pevalin, D.J. (Eds.). (2003). *A Researcher's Guide to the National Statistics Socio-economic Classification*. University of Essex: SAGE Publication Ltd, 304 p.

27. Shevyakov, Yu.A., & Kleiner, G.B. (1998). Social'no-ekonomicheskij monitoring: koncepcyya, problemy, perspektivy. *Ekonomika i matematicheskiye metody*, 1, T. 29, 5-13. (in Rus.)

28. Shogenova, M.X., & Karmokova, X.B. (2014). Nauchno-metodologicheskiye osnovy monitoringa i sistemy indikatorov social'no-ekonomicheskogo razvitiya regiona. *Science Time*, 4(4), 316-323. (in Rus.)

29. Snieska, V., & Bruneckienė, J. (2009). Measurement of Lithuanian regions by regional competitiveness index. *Engineering economics*, 1, V.61. 45-57. Retrieved from <http://inzeko.ktu.lt/index.php/EE/article/view/11584/6269> Accessed 22 August 2019

30. Stasyuk, O., & Bevz, I. (2012). Integral'na ocinka konkurentospromozhnosti regioniv Ukrainy. *Ekonomika i prognozuvannya*, 1, 75-86. (in Ukr.)

31. Vasilenko, V., Anafonenko, O., & Dubyakov, V. (2008). *Konkurentosposobnost' regionov: istoki, ochenki i perspektivy*. Doneczk: Yugo-Vostok, Ltd. (in Rus.)

32. Zajtseva, L.M., Antonov, V.V., & Seryogin, S.M. (2003). *Metodologiya kompleksnoyi ocinky rivnya social'no-ekonomichnogo rozvytku oblasti ta yiyi administratyvno-terytorial'nyh odynez'.* Zajceva, L.M. (Red.) Dnipropetrovs'k : DRIDU NADU (in Ukr.)

33. Zhurba, I.Ye. (2005). Konkurentospromozhnist' regionu: sut', metody ocinky, suchasnyj stan. *Ekonomika pidpryyemstva*, 3, 45-49 (in Ukr.)