"Estimate of synthesized capital application in regional development strategy formation"

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	(R) http://www.researcherid.com/rid/D-9305-2019

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
25	1	3

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ESTIMATE OF SYNTHESIZED CAPITAL APPLICATION IN REGIONAL DEVELOPMENT STRATEGY FORMATION

Abstract

The analysis of strategic potential for development strategy aimed at the effective use of synthesized capital is fundamental to solving the urgent problems of increasing the well-being of the population and promoting economic growth. Given the analysis of existing approaches on the principles of consistency and complicity, a system of indicators was developed to assess the components of the region's strategic potential: investment capital, innovation capital, infrastructural capital, entrepreneurial capital, ecological capital has been developed. The author proposed groups of indicators of human capital, intellectual capital and social capital of the synthesized capital that directly affect the identification of territorial capabilities and allow to create an effective development strategy. Using these indicators, it is possible to carry out component-wise and overall assessment of strategic potential in the effective use of synthesized capital of the region. The author's methodology of strategic potential analysis is proposed, which can be used to assess the strategic potential of the region and to determine the effectiveness of using the resource support of socio-economic system. Region's strategic component objective assessment presupposes evaluation in dynamics and under the conditions of capacity buildup. Region's strategic potential development is based on the dynamic evaluation of strategic potential. For the justification of forecast data for groups of indicators of strategic potential for future periods it is possible to use modern software products that allow using methods of econometric analysis to process statistics and predict them based on given sample.

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ОЦІНКА ВИКОРИСТАННЯ СИНТЕЗОВАНОГО КАПІТАЛУ ПРИ ФОРМУВАННІ СТРАТЕГІЇ РОЗВИТКУ РЕГІОНУ

Анотація

Аналіз стратегічного потенціалу для формування стратегії розвитку, що спрямована на ефективне використання синтезованого капіталу має фундаментальне значення для вирішення актуальних проблем підвищення добробуту населення та сприяння економічного зростання. Автором було запропоновано групи показників людського, інтелектуального та соціального капіталів синтезованого капіталу, які прямо впливають на розкриття територіальних можливостей та дозволяють сформувати дієву стратегію розвитку, за допомогою означених показників можна провести покомпонентну та загальну оцінку стратегічного потенціалу при ефективному використанні синтезованого капіталу регіону. За результатами аналізу наявних підходів на принципах послідовності та комплексності розроблено систему показників оцінки складових стратегічного потенціалу регіону: інвестиційний капітал, інноваційний капітал, інфраструктурний капітал, підприємницький капітал та екологічний капітал. Запропонована авторська методика аналізу стратегічного потенціалу, що дозволяє проводити оцінку стратегічного потенціалу регіону та означати ефективність використання ресурсного забезпечення соціально-економічної системи. Об'єктивна оцінка стратегічного потенціалу регіоні передбачає оцінку в динаміці та за умов нарощування. Формування стратегії розвитку регіону базується на динамічній оцінці стратегічного потенціалу, при цьому, для обґрунтування прогнозних даних за групами показників стратегічного потенціалу

INTRODUCTION

Solution of complicated tasks for synthesized capital formation is impossible but for complex analytical research into the conditions and results of the activity in the region. Particular tasks of this analysis are formation of grounding for selection of ways for the region's strategic potential formation and buildup, definition of the total of generalized indicators that enable quantitative estimation of dynamics and main trends in efficient application of synthesized capital in the region's development strategy formation.

The basis for our research is formed by the components of the strategic potential and their calculation techniques because the complexity principle solely enables real evaluation of the aggregate synergetic effect of the components of potential and power of their influence on the resulting value. Definition of regularities of region's strategic potential estimation along with efficient application of synthesized capital will enable not only to form a more objective development strategy, but also form prerequisites for region's strategic development programs quality and feasibility improvement.

1. LITERATURE REVIEW

The structure of synthesized capital in scientific researches has been proposed Gavkalova and Zin (2012), generalized approaches to the definition of human capital, intellectual capital and social capital as components of synthesized capital. The features of synthesized capital formation at the micro level as a means of crisis personnel management of the enterprise are considered Kaynova and Vlasenko (2011). The researcher Gavkalova and Vlasenko (2016) generalized the current approaches to definition of intellectual capital, human capital and social capital as components of synthesized capital.

Gavkalova and Zin (2012) consider capitalization of synthesized capital as the strategic direction of the territorial development in the way of ensuring the sustainability of its social and economic configuration thought modernization.

The approaches to the determination of groups of factors that formed synthesized capital based on analysis on human, intellectual and social components are generalized in publication Vlasenko (2015). The model for determination the factors' influence on synthesized capital by constructing a cognitive model (Vlasenko (2015)) was proposed, which allows determining the scenarios of synthesized capital formation under the environment.

For synthesized capital formation it is necessary: improve labor market regulation with a view to efficient allocation of synthesized capital and reduce the outflow of intellectual component; generation of synthesized capital to restore the competitiveness of production; improving the quality of synthesized capital through the creation of a system supporting the educational and scientific technologies; creation of conditions for capitalization of knowledge; creation of an effective mechanism for synthesized capital formation to ensure the implementation of the state economic policy (Kolupaieva, 2016).

Kolupaieva (2018) determined the peculiarities of formation of synthesized capital at micro, regional and macroeconomic levels, was also formed concept of essence of accumulation of state regulation, use and capitalization of synthesized capital is determined, its features are outlined at different levels of national economy.

The directions of scientific researcher of synthesized capital are at the stage of formation, aspects of synthesized capital in scientific publications aren't considered, which determines the choice of the goal of this researcher.

2. AIMS

The research goal is development of methodology for determine the strategic potential of the region with the impact of components of implementation of the development strategy through the effective use of synthesized capital at the appropriate level of stable development.

3. METHODS

The study proposes the use of methods of econometric analysis of the processing of statistical data that allow for analysis all components, which use for formation and realizing regional development strategy formation to effective use synthesized capital.

Based on the results of existing approaches to the principle of consistency and complexity, developed the system of indicators for estimation the components of synthesized capital, which affect on territorial capacities efficiency and the formation of effective development strategy.

4. RESULTS

The main structural elements of the strategic potential with effective application of synthesized capital are intellectual, social and human components. Particular attention should be paid to the fact that the abovementioned structural elements form part of the whole, thus, certain subgroups of indicators, which must distinguish the degree of synthesized capital application according to a certain structural element, must be formed for its definition and calculation.

Recent years have been characterized by deteriorating public health, which influences the increase of incidence and death rates, decreasing living standards and real incomes of the majority of population as well as lowering aspiration for knowledge and cultural values acquisition. Due to the irregularities of the economic recovery of certain economic sectors, the economic development is accompanied with an increased income inequality of the population, incompliance to the basic standards and low cost of labour at numerous enterprises. Transformation processes in Ukraine are accompanied by a considerable deterioration of the quality and standards of living of the population, which has an inevitable effect on the human potential of every region.

An integral component of strategic potential is intellectual potential. This is the ability to realise the intellectual capacity which is a prerequisite for regional development strategy formation and implementation. The study of intellectual potential demands an emphasis on the subject of research being the system (enterprise, region, country).

As to the intellectual potential of the subject – the system, its formation and development is influenced by the intellectual potential of individuals that this system involves, as well as the state of the system of education, science, culture and the genetic stock of the society in general. The in-depth research into the intellectual potential must be approached as a complex of scientific, technical, cultural and social knowledge represented by the material and technical forms.

Growth of the region's intellectual potential is mainly provided by science, which forms the basis for conducting and implementing research and development processes and provides the region with research workers while forming the science and technical as well as the intellectual potential.

Intellectual potential is a generic factor, which is characterized in complex by its structural elements, namely, physical, educational, scientific and technical, information communication as well as socio-cultural potential, which are stipulated by the peculiarities and development factors of a certain region.

The social component of synthesized capital resulted from the evolution of the society with the purposeful impact of the state and special-purpose regional impact with the account obligatorily taken of the interests of the

population in a territorial unit. Provision of the necessary conditions for the social development of population in the region requires: elimination of destitution and poverty reduction; guarantee of social protection for residents; improvement of the individual's living environment, development of their social activity; provision of equal opportunities for acquiring education, medical assistance and health resumption; formation of the residents' environment-friendly mindset and awareness of their responsibility for sustainable development; provision of access to information concerning sustainable development problems solution, intensification of these components in the curricula of all levels; buildup of the new ethics based on effective economic activity, prudent consumption and healthy lifestyle.

Analysis of the structural components of synthesized potential as a component of the strategic potential for the regional strategy development is provided in Table 1.

Table 1. The approaches to synthesized capital components analysis

Directions of analysis	Indexes
Intellectual	unit weight of intangible assets in the book equity of enterprises in the region; the enterprise goodwill; specified Tobin's Q ratio; correlation of the goodwill and intangible assets; correlation of the goodwill and the sum of capital assets; business relations quality ratio for the region; efficiency of the region's intangible assets; international reputation of the region; educational system maturity; computation and communication system, databases (libraries and electronic systems) in the region.
Human	average life expectancy; natural population increase; education level (share of population acquiring education in primary, secondary and higher education institutions in the total number of the region's population); GRP per capita; unemployment rate; inflation rate; share of population with revenues under the minimum subsistence level; provision of housing; death rate under 1 year; correlation between the revenue of 10% of the highest-yielding and 10% of the lowest-yielding population groups of the region; amount of GDP at purchasing power parity per capita.
Social	accessibility to education and healthcare services as well as social benefits; human development ratio in the region; unemployment rate among citizens in the region; the number of sports and cultural events in the region in relation to the country; unemployment of the population (based on ILO methodology) at the age of 15-70; average monthly gross wage; provision of housing; the number of pre-schooling education institutions; the number of general education institutions; the number of vocational schools; the number of higher education institutions of I-IV levels of accreditation; accessibility to medical services by doctors of all specialties; the number of libraries; the number of clubs; children's recreation facilities; subjects of tourism activity.

Source: compiled on the basis of sources 1-3, 6-8, 12-22, 25 development.

On the basis of research findings, it is possible to group human, intellectual and social potential factors of synthesized capital, which influence building up capacities of the territory and development strategy formation.

These factors enable to conduct component-wise and general assessment of the strategic potential with the effective application of the region's synthesized capital.

On the basis of the methodological developments, the region's strategic potential analysis techniques have been proposed, which encompasses the analysis of the complex of elements necessary to form and implement the development strategy with the effective application of synthesized capital.

The stages of analysis and estimation of the region's potential are presented in Figure 1.

At the first stage, it is necessary to set the aim, the object and directions of the region's strategic potential analysis. The aim of the given analysis is evaluation of the strategic potential of the socio-economic system (region) and definition of the efficiency of resources application. The object of the analysis is the strategic potential, which distinguishes certain capacity of the region able to be sensibly used in the development strategy implementation.
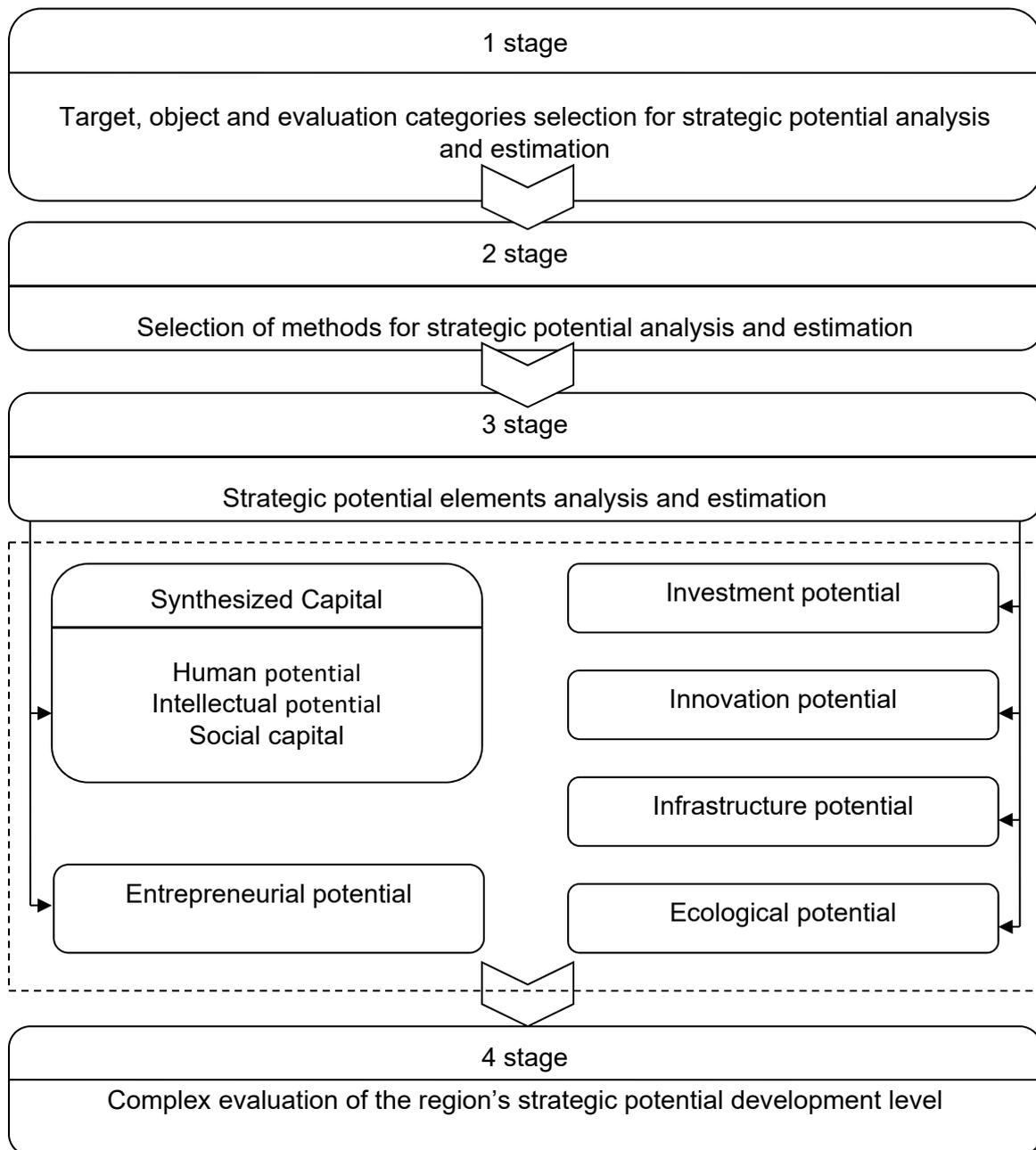

Figure 1. The stages of analysis and estimation of the region's potential

The second stage of the region's strategic potential analysis presupposes analysis methods definition.

The major methods include system analysis methods, induction and deduction methods, the principle of correlation between the general, the particular and the individual, structural method, statistic analysis method, comparison and expert evaluation method, decision making method, tabular analysis method, index method.

The third stage is strategic potential components analysis and estimation. The findings of the available approaches analysis based on the consistency and complexity principle enabled to develop a system of strategic potential components appraisal ratios.

The system of synthesized capital appraisal ratios as a component of the region's strategic potential is presented in Table 2.

Table 2. The system of synthesized capital appraisal ratios as a component of the region's strategic potential

Components SC	Indexes
Human capital	unit weight of the expandable income of the residents of the region in relation to the gross income in the country; the share of population with equivalent monthly monetary income per capita under the minimum subsistence level; unit weight of higher education institutions of the region in relation to the total amount in the country; unit weight of the number of students of higher education institutions in the region in relation to the total number of students in the country; provision of the region's population with middle grade medical staff; staff training (training new professions); staff retraining.
Intellectual capital	unit weight of intangible assets in the book equity of enterprises in the region; the enterprise goodwill; specified Tobin's Q ratio; correlation of the goodwill and the sum of capital assets; correlation of the goodwill and intangible assets; business relations quality ratio; region's intangible assets efficiency; efficiency of goodwill.
Social capital	business activity of residents at the age of 15-70; employed population at the age of 15-70; demand for labour force; impact of unemployed residents on one vacancy; unit weight of registered unemployed residents in relation to the overall number of unemployed residents of the country; staff turnover dynamics; forced part-time employment level.

Source: compiled on the basis of sources 1-3, 6-8, 12-22, 25 development.

The system of the region's strategic potential appraisal ratios is presented in Table 3.

The ecological component is provided by two factors: availability of natural resources and human intervention in the environment.

Table 3. The system of the region's strategic potential appraisal ratios

Components of SC	Indexes
Investment capital	unit weight of exported goods in relation to overall output of the region; unit weight of investment into the region in relation to the total of resources invested in the country; unit weight of investment from neighbouring countries in relation to the total amount of capital investment in the country; unit weight of capital investment in the region in relation to the total amount of capital investment in the country; unit weight of capital investment in the region's residential sector in relation to the total amount of investment in the country residential sector; unit weight of direct investment from the region in the economies of the countries in the world in relation to the total amount of investments of the country; unit weight of the implemented inventions in the production process of business entities in relation to their total quantity in the state; unit weight of utilized innovative product lines in the region in relation to the total amount in the country.
Innovation capital	unit weight of the implemented innovative technological processes in the region including low-waste and resource-saving technologies in relation to the total amount in the country; unit weight of funds allocated in the projects developed by the scientists in the region in relation to the total number of programs funded in the state; unit weight of research conducted in the region in relation to research conducted in the state; unit weight of scientific as well as scientific and technical work done by solely by scientific institutions of the region in relation to the total amount in the region; unit weight of fundamental research conducted by the region in the total amount of research in the state; unit weight of applied research conducted by the region in the total amount in the state; unit weight of scientific and technical developments in the region in relation to the total number in the state; unit weight of scientific and technical services rendered by the region in the total amount in the state; unit weight of technological innovations implemented in the region in relation to the total amount in the state; unit weight of new advanced technological processes implemented in the region in the total amount implemented in the state; unit weight of enterprises in the region that distributed innovative products in relation to the total quantity of enterprises in the country; unit weight the number of performers of scientific as well as scientific and technological work in the region in the total amount of the country; unit weight of new machinery implemented in the region in relation to the total amount in the country.
Infrastructural capital	unit weight of concluded joint operation agreements in the total number of agreements among territorial entities in the country; unit weight of public road mileage in the region in relation to public roads in the country; unit weight of housing accepted into service in the region in the total dwelling pace in the country; unit weight of cargo transported by vehicles in the region in the total amount of cargo transported in the country; unit weight of public road mileage in the region in the total road mileage of the country; unit weight of income made from postal and communication services rendered to the residents of the region in the gross income from this kind of services in the country; unit weight of income made by the service companies in the region to the gross income of the state from the activity of service companies.
Entrepreneurial capital	unit weight of turnover among enterprises in their overall foreign trade turnover; unit weight of transport organizations in the region in their total number in the country; unit weight of the export of the region in the total amount of export in the country; unit weight of import of the region in the total amount of import in the country; unit weight of enterprises established in the region in the total number of the state.
Ecological capital	unit weight of emissions of harmful substances in the total amount emitted in the country; unit weight of ecological disaster consequences remediation groups in the total number of given groups in the country; unit weight of regional programs for pollution problems solution in the total amount of programs in the country; environmental stability ratio for the territory; unit weight sewage emptying in the surface water bodies of the region in the total volume of emptied sewage; unit weight of emissions of pollutants into the atmospheric air by stationary and mobile sources of pollution in relation to the total volume of emissions of pollutants into the atmospheric air by stationary and mobile sources of pollution in the state; unit weight of wastes accumulated in the region in the total amount of wastes accumulated in the country; unit weight of wastes combusted in the region in the total amount of wastes combusted in the country.

The basic indicators of this component are environmental protection indices, the number of projects for efficient resource utilization and industrial waste management.

Complex estimation of strategic potential development level is made using the following formula:

$$SP_{region} = \sum_{j=1}^{n} T_{ij, i=1...m,} \qquad (1)$$

where Tij – refer to fractional strategic potential components for the region.

$$T_{ij} = \frac{1}{t} \sum_{i=1}^{l} k_{ij \times S_{ij}}, \qquad (2)$$

where S_{ij} – refer to the indices of strategic potential component analysis; k_{ij} – weighting impact ratio of the factor on the component of potential (calculation of weightiness of every strategic potential component in the overall structure is made on the basis of factor appraisal by points (by weights method)); t – the number of factors, which characterize the integration potential component.

Region's strategic component objective assessment presupposes evaluation in dynamics and under the conditions of capacity buildup. Region's strategic potential development is based on the dynamic evaluation of strategic potential. Thus, the reserve will be minimum for the regional development.

In calculation by y we refer to the estimated potential of basic periods as t – time period. Thus, $y=f(t)$. Possible capital buildup margin for the region can be estimated with the formula:

$$R = \int_{a}^{b} SP_{region} = \int_{a}^{b} \frac{1}{m} \sum_{i=1}^{l} kij \times S_{ij}, \qquad (3)$$

where a and b are parametric indices of the basic and estimated region's strategic potential.

At the fourth stage of assessment, complex evaluation of strategic potential and its buildup in dynamics must be conducted. STADIA 8.0 software was applied in order to ground the forecast data on the strategic potential factors for further periods, which enables to process statistical data by means of econometric analysis methods and forecast them on the basis of the specified samples. Estimated values of strategic potential can be entered in STADIA 8.0 and linear and exponential correlation of factors can be used to calculate the forecast value of strategic capital.

CONCLUSION

The proposed technique for strategic potential estimation enables to distinguish potential with all its components, which form the basis for development strategy implementation with effective application of synthesized capital and the given level of socio-economic development when defining the margins for raising the living standards of the population in the region.

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