Integrated index of competitiveness as a basis for analysis of management systems for sustainable development of the territory

Halyna Raiko*

Department of Information Technology,
Kherson National Technical University,
Kherson, Ukraine
Email: Raiko_G@i.ua
*Corresponding author

Dmytro Vasylkivskyi

Department of International Economic Relations,
Khmelnytskyi National University,
Khmelnytskyi, Ukraine
Email: vasilkivsky@gmail.com

Natalia Kovalska

Department of Public Administration and Local Government,
Kherson National Technical University,
Kherson, Ukraine
Email: kovalsknatasha@ukr.net

Irina Shvets

Department of Management,
Financial University,
Moscow, Russia
Email: i.y.shvets@gmail.com

Yuriy Shvets

Department of Economy Theory,
Financial University,
Moscow, Russia
Email: goldenfish3000@gmail.com

Serhii Makarenko

Department of Management and Administration,
Kherson State University,
Kherson, Ukraine
Email: makar0684@gmail.com

Nataliia Oliinyk

Department of Economics, Entrepreneurship and Economic Security,
Kherson National Technical University,
Kherson, Ukraine
Email: nat-o@ukr.net

Serhii Rybachok

Department of Management and Administration,
Kherson State University,
Kherson, Ukraine
Email: Rsa@kherson.org

Olha Kravchuk

Department of Higher Mathematics and Computer Applications,
Khmelnytskyi National University,
Khmelnytskyi, Ukraine
Email: kravchukoa2@gmail.com

Vitalii Kovalov

Department of Finance, Accounting and Entrepreneurship,
Kherson State University,
Kherson, Ukraine
Email: fornaz1977@gmail.com

Abstract: The article is devoted to the study of the economic aspects of territorial systems management, taking into account the experience of Ukraine based on the definition of regional competitiveness. An algorithm for calculation of the competitiveness index, which allows assessing qualitatively the advantages and disadvantages of a particular territorial system and affects its development in the future, has been described. A method of calculation the competitiveness index, consisting of five stages, has been developed. It allows a real-time assessment of effectiveness of a territorial system. Promising ways of further research of territorial systems are introduced.

Keywords: territorial system; competitiveness index; factor analysis; strategic management; sustainable development.

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Biographical notes: Halyna Raiko's directions of research are modern information technologies, databases, sustainable development of territories in the context of world processes. She is an Associate Professor at the Department of Information Technology of Kherson National Technical University (PhD). She is the author of many scientific papers, articles, publications in international scientific databases.

Dmytro Vasylkivskyi's research interests include international economic relations as a modern direction of development of the world's leading countries. He is a Professor at the Department of International Economic Relations of Khmelnytskyi National University, Doctor of Sciences. He has articles, textbooks, books and other scientific publications published in foreign journals.

Natalia Kovalska works in the field of public administration and local government in terms of economic factors. She is an Associate Professor at the Department of Public Administration and Local Government of Kherson National Technical (PhD). She has participated many times in scientific conferences and is the author of scientific papers in the field of research.

Irina Shvets investigates modern areas of financial management of international organisations, enterprises and institutions of various levels. She is a Professor at the Department Of Management of Financial University, Doctor of Sciences. She has published many books, articles, and scientific materials of various kinds.

Yuriy Shvets's direction of research is the development of scientific bases for the application of economic theory as a modern factor of effective financial management of enterprises of international organisations. He is an Associate Professor at the Department of Economy Theory of Financial University (PhD). He is the author of many scientific articles and publications in scientific journals.

Serhii Makarenko's perspective area of research is the management of enterprises in the economic sector with the use of modern economic theories and techniques that help increase the efficiency of the industry. He is an Associate Professor at the Department of Management and Administration of Kherson State University (PhD). He has books, articles, and scientific publications published in Ukrainian and foreign journals.

Nataliia Oliinyk is engaged in promising areas of research, such as economic security of organisations using modern cyber security technologies. She is an Assistant Professor at the Department of Economics, Entrepreneurship and Economic Security of Kherson National Technical University (PhD). She has participated in international conferences, and has scientific publications of various kinds.

Serhii Rybachok is engaged in the study of management and administration of enterprises through the prism of the application of economic factors. He is an assistant at the Department of Management and Administration of Kherson State University. He was a participant of international conferences, and has scientific publications and abstracts.

Olha Kravchuk researches modern mathematical and computer theories as components in the economic sector of industry of the world's leading countries. She is a Senior Lecturer at the Department of Higher Mathematics and Computer Applications of Khmelnytskyi National University. She is the author of scientific articles, works, publications, and materials in different scientific journals.

Vitalii Kovalov's research interests include finance and entrepreneurship in general. He works on effective methods of investment in various industries and sectors of the economy. He is an Assistant Professor at the Department of Finance, Accounting and Entrepreneurship of Kherson State University (PhD). He has participated in scientific conferences, is the author of the articles, monographs and works in the field of economy.

1 Introduction

Today in the world a significant role in the functioning of the economy of most countries is played by territories. Territorial systems (TSs) as individual functional and structural elements, they directly take part in the work of the components of the real sectors of the economy (Pecqueur, 2013; Salvati et al., 2014; Comino and Ferretti, 2016). An important feature of the TS is the functional focus on providing favourable living conditions for the territorial community of people, as its main element. This is manifested in the fact that natural-resource and economic subsystems perform the functions of creating the material basis of vital activity, and work directly for the social-service and socio-ecological subsystems (Smentyna and Klevtsevich, 2017; Revko, 2019; Serre, 2015). Their main function is to create and constantly improve the living conditions of people.

There are three main types of system-forming connections for TS: material, migratory and informational (Pashkevich et al., 2013). Material connections are found in the flows (exchange) of matter, products and goods, fixed and working assets between the TS-elements. Technological, industrial and economic, trading and distribution, natural-resource connections become especially widespread (Nizamutdinov and Oreshnikov, 2018). Migration links are revealed in the form of spatial and territorial movements of people: permanent migrations (with a change of permanent place of residence) and commuting migrations (to the place of work, for cultural and domestic purposes). These connections reflect the social side of TS formation. Information connections are a special type of connections based on the exchange of information (data, messages, knowledge) between the elements of the system in general and between the subject and the object of management in particular. An important role in the TS formation is played by indirect (tangible) connections, an example of which may be the use of common service industries (transport networks, facilities) by economic elements, belonging to different industries, use of joint production and construction sites by enterprises, etc.

The introduction of a strategic approach in the TS management at the regional level (Crocco et al., 2011) will allow forming of strategic characteristics that ensure the competitiveness of fixed territories. Strategic management can be considered as a dynamic set of interdependent management processes arising from each other. However, there is a stable feedback and, accordingly, the inverse effect of each process on the others and on their whole set.

These 17 goals in the field of sustainable (balanced) development are approved by the UN General Assembly resolution 'Transformation of our world: agenda for development in the field of sustainable development until 2030' (Kurilov, 2019). At the same time, in a world with accelerated changes, not only risks are arising, but also new opportunities are

opening up for the effective functioning of both the economies of world states and the TS in particular.

Development policy is needed to find and fully use the new opportunities and effective risk management in the long-term period (Yelatskov, 2012). It should be based on a thorough analysis of the current situation and the involvement of all stakeholders. Global trends in combination with the goals of sustainable development, recommended by the UN, form the main development tasks for Ukraine in the context of key fields of economic development.

Under modern conditions, world countries compete with each other for attracting creative people with entrepreneurial talents, which, with increasing globalisation, makes it possible to form qualitatively different financial flows. It is reflected in The Global Competitiveness Index (World Economic Forum), in which fixed indices and indicators have been integrated. Effective economic realisation of Ukraine's creative potential requires the development and implementation of systemic measures (Popadynets, 2015).

World experience in the functioning of various TS is characterised by certain specifics. There are works that take into account the instability of systems (Schvab et al., 2015). They take into account the method of measuring system instability through economic structural and functional changes within urban TSs. The example of the Italian provinces takes into account the vulnerability and resistance of local systems (Graziano and Rizzi, 2016). In Wohlfahrt et al. (2019), the sustainability of bio-economic systems, their complexity and the basis for supporting sustainable development are considered. The experience of Japan (Xing, 2018) takes into account the reform of the territorial tax system and its impact on the foreign currency of multinational corporations. That is, the TS functioning of the world countries take into account many aspects of sustainable development.

At the same time, Ukraine, as a European country, must take into account the world experience concerning TS. Ukraine's development by 2030 embraces such guidelines as the well-being and health of the population, which will be ensured by innovative economic development built on the sustainable use of natural resources. The structure of exports supposes changes aimed at the transition from raw materials and products of primary treatment to the products and services with a high degree of added value. Economic growth will be based on the model of a 'green' economy. Thanks to the energy saving measures and the application of energy efficient practices should significantly reduce the power-intensity of gross domestic product (GDP).

On an average, the increase rate of GDP of Ukraine during 2010–2020 was constantly changing and averaged 3.5% (Gross Domestic Product (GDP) in Ukraine 2020, 2020). At the same time, positive economic and social growth took place under the conditions of formation of a raw material-oriented export model of development in Ukraine, which was based on competitive advantages, which arose largely due to the cheapness of energy and labour resources. This created a certain illusion of the competitiveness of the national economy and the success of the relevant model of competition, leading to delays in overcoming key systemic imbalances and the implementation of structural changes.

The resumption of growth since 2018 took place primarily due to the recovery in foreign markets. In 2018, exports of goods from Ukraine increased by 29.6% (State Statistics Service of Ukraine, http://www.ukrstat.gov.ua), including due to the price factor – by 26.0%. This was ensured by the post-crisis recovery of the world economy. According to the International Monetary Fund (https://www.imf.org/external/index.htm),

the highest positive dynamics in the industry of Ukraine was demonstrated by mechanical engineering, chemical and petrochemical industry and metallurgy.

The slowdown in the rates of the world economy increasing has led to a narrowing of demand in world markets and negatively affected the export-oriented industries of Ukraine (The World Bank, http://www.worldbank.org). The consequences of the armed conflict in the east of the country, uncertainty of development and unfavourable foreign economic conjuncture have become the main factors of the second wave of economic downturn and declining in the production extent, particularly in metallurgy and some export-oriented segments of mechanical engineering. So, the level of GDP in 2014 and 2015 was –6.6% and –9.8%, respectively. Only since 2016, the decline in GDP has stopped and in 2018 amounted to 3.6%.

Today, it is necessary to solve a number of problems that hamper economic growth in Ukraine due to the experience of leading countries. The key in this matter is to create a system of 'drivers' to accelerate economic development and ensure changes in its quality. Effective use of TS and their management can serve as an impulse for further sustainable development of the country.

In this way, the study of economic aspects of TSs management and the development of methodology for calculating their competitiveness index are topical.

2 Materials and methods

Today in the world a significant role in the functioning of the economy of most countries, the study is based on research and calculation of the integrated index of competitiveness of TSs. The methodology of their calculation is based on taking into account the global risks of the world economy. This takes into account the expert assessment of the economic level of development of TSs by experts of the World Economic Forum. The impact on the development of TSs is assessed by the degree of probability and the degree of impact on the world community.

The world experience is taken into account in the development of our own methodology for calculation of the integrated index of competitiveness of the TS. Certain aspects of the work have been taken into consideration (Garcia-Ayllon and Miralles, 2015). Such model of territorial analysis consists of more than 50 indicators implemented in territorial informational systems for the Mediterranean. Also, life cycle indicators (TM-LCA) and factors of normalisation of TSs are taken into account (Sohn et al., 2018; Roibás et al., 2018; Loiseau et al., 2018; Scaringella and Chanaron, 2016). However, the proposed algorithms are based on author's own research and programme approach (Hashem et al., 2018; Abdelhadi et al., 2019; Skadina and Zvirgzdina, 2021).

Integral risks for Ukraine have been identified in the context of global risks. They consist of the following: inefficiency of state administration, critical indicators of debt burden, unavailability of financial resources through the credit mechanism, critical scale and rate of loss of human capital.

The main task of building a successful TS in the context of the deployment of global megatrends is to create a reliable economic system of their functioning. This will ensure a high level of development and strengthening of competitiveness in a globalised world through the achievement of a high quality of life for every inhabitant of the territory.

The process of strategic management of the TS is presented in Figure 1.

Figure 1 The process of strategic management of the TS

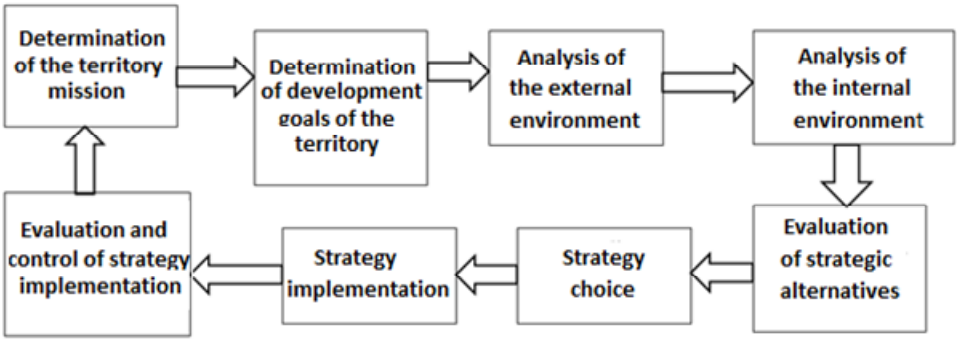
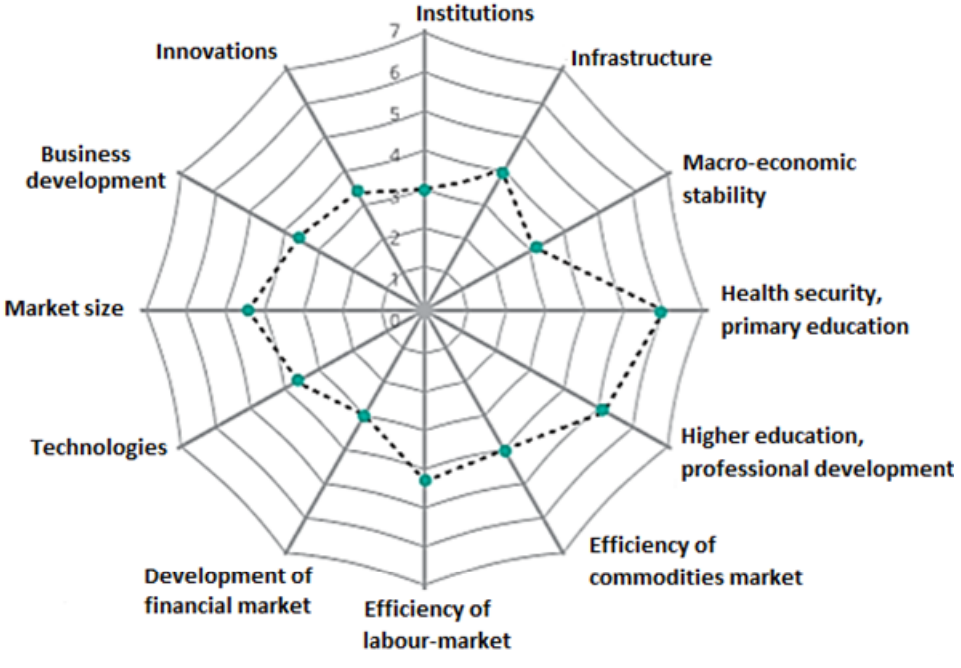


Figure 2 Polygon of Ukraine's competitiveness according to the methodology by the World Economic Forum, 2018–2020 (see online version for colours)



It is established that Ukraine has the weakest positions in terms of the level of institution and financial market development, and macroeconomic stability (Figure 2).

At the same time, the development of competitive advantages that is created in domestic markets is promising. In consideration of the global economic crisis, the domestic market of world countries is beginning to play a significant role in the economic development of the countries and their TSs.

3 Results

According to the research results, this article presents an integrated indicator of the territory competitiveness. The difficulty of determining the essence of the competitiveness of the region is that the spatial organisation of the world economy in a broad sense contains all issues related to: division of labour, location of productive forces, the region's place in the national division of labour, regional differences in economic relations, regional socio-economic and environmental policies and other factors.

Recent research allowed to identify four approaches to determining regional competitiveness: factorial, resource-based, process-based and industrial. An algorithm for calculation the competitiveness index includes four stages of realisation (Figure 3).

As a result of the lack of a single conceptual basis for determining the nature and content of the region's competitiveness, today there is an expansion of a variety of methodological approaches to measuring the level of competitiveness of the region. The developed algorithm for calculation of the competitiveness index allows assessing qualitatively the advantages and disadvantages of a particular area and influence on its development in the future. In the conditions of current global crisis, from an economic point of view, this is a significant advantage. For realisation the algorithm for calculation of the competitiveness index of the territory, an appropriate block diagram has been developed (Figure 4).

Developed methodology of calculation the integrated indicator consists of the following stages.

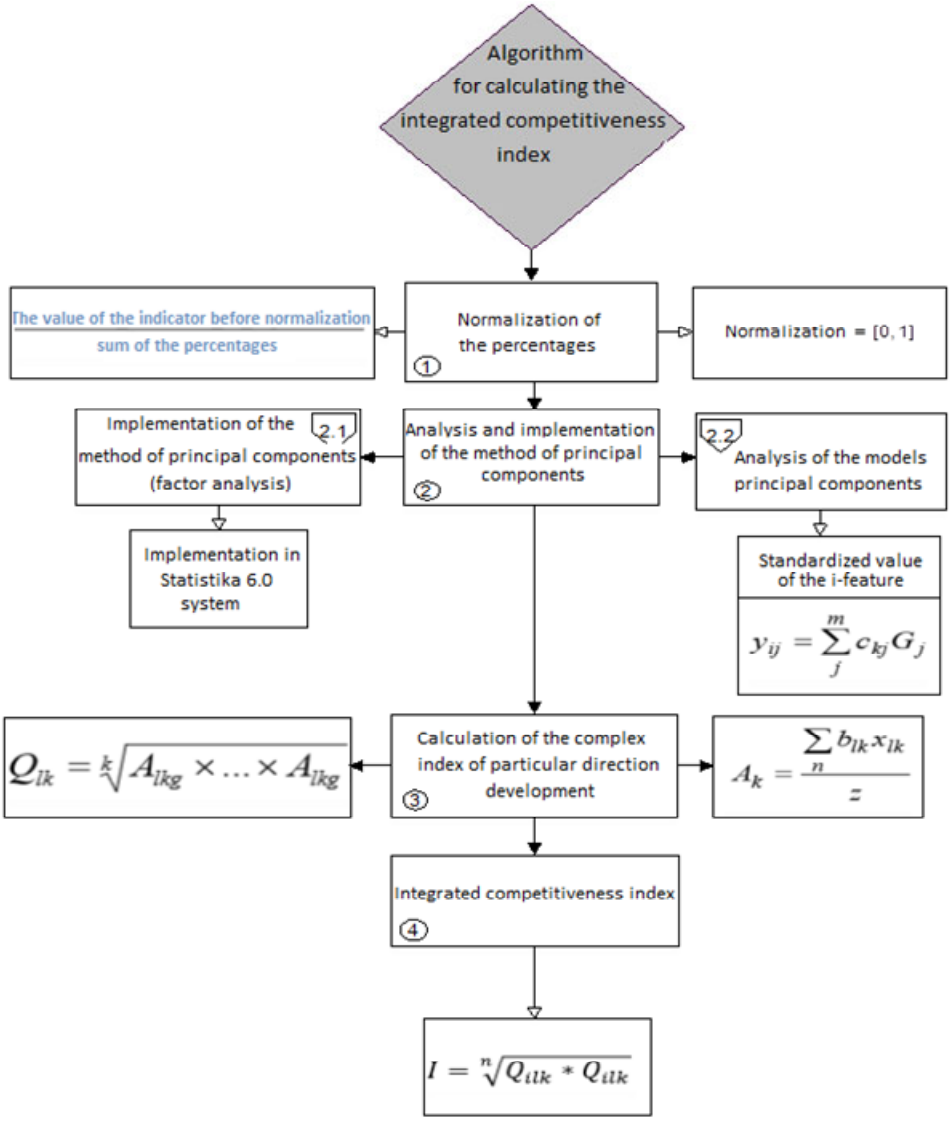
3.1 Stage 1

A database is created for a fixed territory, which is divided into two logical blocks, including economic and social indicators. In what follows, they make it possible to qualitatively assess the peculiarities of the development of a particular region. After that, it is necessary to pass to the second step of research.

3.2 Stage 2

Calculations are performed in specialised software complexes that work with databases. Based on the results of calculations, the main components of economic development indicators that occupy the largest share of the contribution to the total dispersion of the distribution are selected. After that, the main components of the block of social indicators are determined. As a rule, social indicators include income, expenditure, savings and employment by types of economic activity. Income and incomings from property, vehicles and professional activities, and others may be the main factors.

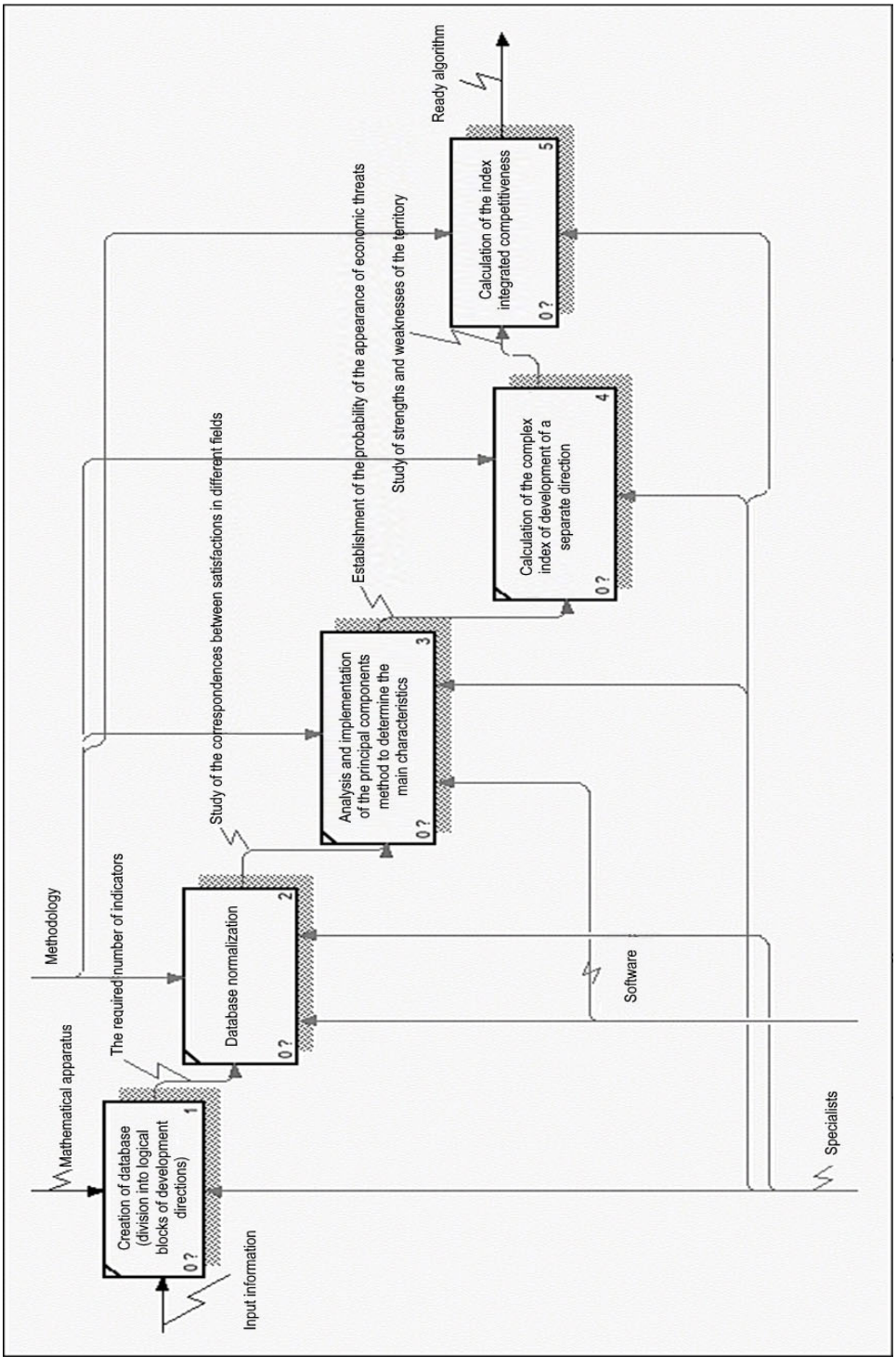
Figure 3 Algorithm for calculating the competitiveness index of the territory (see online version for colours)



3.3 Stage 3

Weight characteristics are determined by using the method of principal components. Knowing from the previous stages the main indicators of the development of the territory, the main ones that have a direct impact are determined. For each of the factors, the weight characteristics which will be used in further calculations and research are set. An important component of this stage is to establish the probability of economic threats. That is, forecasting of prospects of economic development and harmful factors that can cause negative economic consequences for the territory is performed.

Figure 4 Block diagram of algorithm for calculation a competitiveness index of the territory



Component analysis is designed to convert the system k of the original features into a system of k new indicators (main components). The main components are not correlated with each other and are ordered by the size of their variances. The first main component has the largest variance, and the last, $k - a$ – the smallest. This reveals implicit, not directly measured, but objectively existing patterns due to the action of both internal and external causes. Component analysis is one of the main methods of factor analysis. In the tasks of reducing the dimension and classification are usually used m first components ($m << k$).

Based on the matrix of the original data

$$X = \begin{pmatrix} x_{11} & x_{1j} & x_{1k} \\ x_{i1} & x_{ij} & x_{ik} \\ x_{n1} & x_{nj} & x_{nk} \end{pmatrix} \tag{1}$$

Dimension nk, where x_{ij} – the value of the j^{th} indicator in the i^{th} observation ($i = 1, 2, \ldots, n$; $j = 1, 2, \ldots, k$), calculate the average values of indicators $\vec{x}_1, \vec{x}_2, \ldots, \vec{x}_k$, and also $s_1, \ldots, s_k$ and a matrix of normalised values

$$Z = \begin{pmatrix} z_{11} & z_{1j} & z_{1k} \\ z_{i1} & z_{ij} & z_{ik} \\ z_{n1} & z_{nj} & z_{nk} \end{pmatrix} \tag{2}$$

with elements

$$z_{ij} \frac{x_{ij} - \overline{x}_j}{s_j} \tag{3}$$

The matrix of paired correlation coefficients is calculated:

$$R = \frac{1}{n} Z^T Z \tag{4}$$

with elements

$$r_{jl} = \frac{1}{n} \sum\nolimits_{i=1}^{n} z_{ij} z_{ij} = \frac{\frac{1}{n} \sum\nolimits_{i=1}^{n} \left(x_{ij} - \overline{x}_j\right)\left(x_{il} - \overline{x}_l\right)}{s_j s_l} \tag{5}$$

The expression for the variance of the normalised variable z_j will look like:

$$\begin{aligned} s_j^2 &= \frac{1}{n} \sum_{i=1}^{n} z_{ij}^2 + \frac{1}{n} \sum_{i=1}^{n} \cdot \left(\sum_{i=1}^{k} a_{jv} f_{iv} \right) = \frac{1}{n} \sum_{i=1}^{n} \cdot \left(\sum_{v=1}^{k} a_{jv}^2 f_{iv}^2 + 2 \sum_{v \neq v'} a_{jv'} a_{jv} f_{jv} f_{jv'} \right) \\ &= \sum\nolimits_{v=1}^{k} a_{jv}^2 \left(\frac{1}{n} \sum\nolimits_{i=1}^{n} f_{iv}^2 \right) + 2 \sum\nolimits_{v \neq v'} a_{jv'} a_{jv} \left(\frac{1}{n} \sum\nolimits_{i=1}^{n} f_{jv} f_{jv'} \right) \end{aligned} \tag{6}$$

where $v, v' = 1, 2, \ldots, k$.

Made the final calculations receive:

$$s_j^2 = \sum\nolimits_{v=1}^{k} a_{jv}^2 = 1. \tag{7}$$

Under the condition, the variables z_j are normalised and $s^{o2} = 1$. Thus, the variance of the variable z_j is represented by its components, which determine the share of the contribution of all k main components. The total contribution of the v^{th} principal component in the variance of all k initial features is calculated by the next formula:

$$\lambda_k = \sum_{j=1}^{k} a_{jv}^2 \tag{8}$$

One of the main conditions of the principal components method is related to the representation of the correlation matrix R through the matrix of factor loads A:

$$R = \frac{1}{n} Z^T Z = \frac{1}{n} (FA^T)^T FA^T = A\left(\frac{1}{n} F^T F\right) A^T \tag{9}$$

or

$$R = AA^T. \tag{10}$$

Next consider to the search for eigenvalues and eigenvectors of the correlation matrix R. It is known from linear algebra, that for any symmetric matrix R, there is always such an orthogonal matrix U, performed condition:

$$U^T RU = \Lambda \tag{11}$$

where

$$\Lambda = \begin{pmatrix} \lambda_1 & 0 & 0 \\ 0 & \lambda_2 & 0 \\ 0 & 0 & \lambda_k \end{pmatrix}$$ diagonal matrix of own values dimensions $k \times k$

$$U = \begin{pmatrix} u_{11} & u_{1v} & u_{1k} \\ u_{i1} & u_{iv} & u_{ik} \\ u_{k1} & u_{kv} & u_{kk} \end{pmatrix}$$ orthogonal matrix of own vectors dimensions $k \times k$.

The matrix R is positively defined, its principal minors are positive, and all own values $\lambda_v > 0$ for any $v = 1, 2, \ldots, k$. In component analysis, the elements of the matrix Λ are ranked: $\lambda_1 \geq \lambda_2 \geq \ldots \geq \lambda_v \ldots \geq \lambda_k \geq 0$. The own value λ_v is characterises the contribution of the v^{th} principal component to the total variance of original space of space features.

Thus, the first main component makes the largest contribution to the total variance, and the last k is the smallest. In the orthogonal matrix U of own vectors, the v^{th} column is an own vector corresponding to the $\lambda_v{}^{th}$ value.

Own values $\lambda_1 \geq \ldots \geq \lambda_v \ldots \geq \lambda_k$ are found as the roots of the characteristic equation:

$$|\Lambda E - R| = 0. \tag{12}$$

The own vector V_v, which corresponds to the own value λ_v of the correlation matrix R, is defined as a non-zero solution of the equation, which follows from:

$$(\lambda_v E - R) V_v = 0. \tag{13}$$

The normalised eigenvector U_v is equal to:

$$U_v = \frac{v_v}{\sqrt{v_v^T v_v}}. \tag{14}$$

From the condition of orthogonality of the matrix U, it follows that $U^{-1} = U^T$, but then, by definition, the matrices R and Λ are similar, since they satisfy the condition $U^{-1}RU = \Lambda$. Since in such matrices, the sums of diagonal elements are equal, then:

$$tr\Lambda = tr\left(U^{-1}RU\right) = tr\left[R\left(UU^{-1}\right)\right] = trR. \tag{15}$$

Given that the sum of the diagonal elements of the matrix R is equal to k, we have $tr\,\Lambda = trR = k$.

The total contribution of all major components to the total variance is equal to k. The total contribution m of the first principal components is determined from the expression $\frac{1}{k}\sum_{v=1}^{m}\lambda_v \cdot 100\%$. Usually for analysis use m the first main components, the contribution of which to the total variance exceeds 60%–70%. Matrix of factor loads used for economic interpretation of a main components, which are linear functions of the original features. For economic interpretation of f_v, only those x_j are used for which $|a_{jv}| > 0.5$. Values of mail components for each i^{th} object ($i = 1, 2, \ldots, n$) are given by the matrix F. The matrix of values of main components can be obtained from the next formula $Z = FA^T$, where:

$$F = Z\left(A^T\right)^{-1} = ZV\Lambda^{-1/2}. \tag{16}$$

The regression equation on the principal components is based on the algorithm of step-by-step regression analysis, where the main components are used as arguments, not the outputs indicators. The advantages of the latter model include the fact that the main components are not correlated. All main components should be taken into account when constructing regression equations.

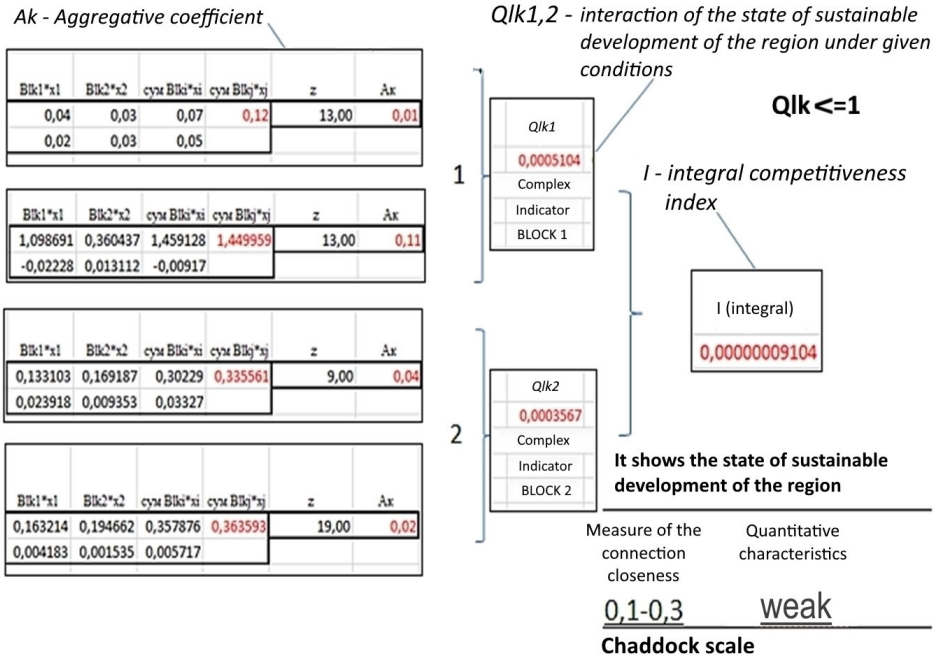
3.4 Stage 4

At this stage, the calculation of a composite index of development of a particular direction is made. Based on the analysis of the entire TS and the directions of its functioning, the strengths and weaknesses of development are determined. This is a key moment of the whole calculation algorithm, as the correctness of the conducted research and establishment of a real advantages and disadvantages of the territory will depend on effectiveness of its operation in the future.

3.5 Stage 5

The final stage is the calculation of the integrated index of competitiveness of the TS. Taking into account all the previously calculated coefficients, the state of sustainable development of the region under these conditions is determined. One of the criteria for the results of the calculations is the use of the Chaddock scale. It shows the state of balanced development of the TS (Figure 5).

Figure 5 Methods of calculation of the competitiveness index of the TS (see online version for colours)



The aggregate coefficient (Figure 5) shows the development index of a separate block of indicators – social and economic blocks. The complex indicator combines a general index for the whole block of social and economic indicators. The integrated competitiveness index is a value that indicates the state of sustainable development of the TS. It allows identifying in real time the strengths and weaknesses of the development of a fixed territory, indicates the presence of risk factors and allows focusing on alternative solutions.

Thus, the integrated index of competitiveness of the TS is a complex indicator of its development and functioning efficiency in the real economic conditions of the world economy.

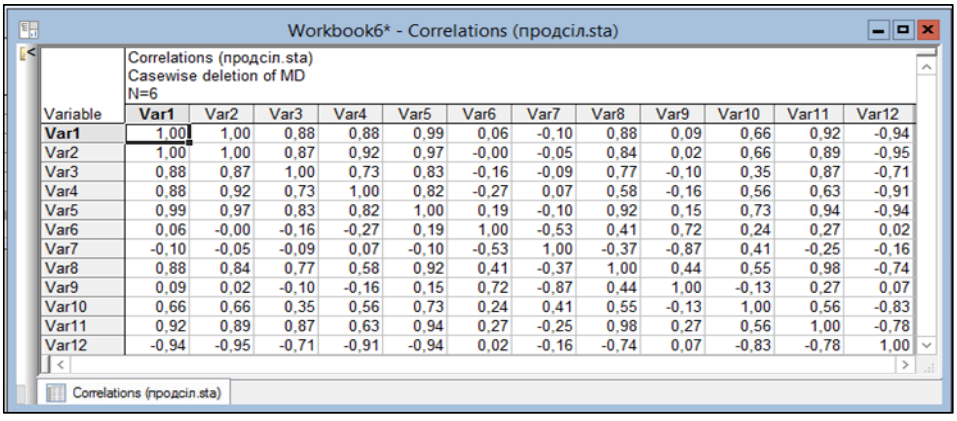
4 Discussion

The above method is investigated on the indicators of socio-economic development of Kherson region (Ukraine). The database of development indicators of Kherson region is divided into two logical blocks, which include economic and social indicators separately. To do this, a correlation analysis of the main indicators of socio-economic development was implemented (Figure 6).

The calculations were performed in the Statistika system and the corresponding results were obtained. The main components of economic development indicators, which occupy the largest share of the contribution to the hall dispersion of the distribution, were selected. The main components of the block of social indicators are identified. Social

indicators include income, expenditure, savings and employment by type of economic activity.

Figure 6 Correlation analysis of the main indicators of socio-economic development of Kherson region (see online version for colours)



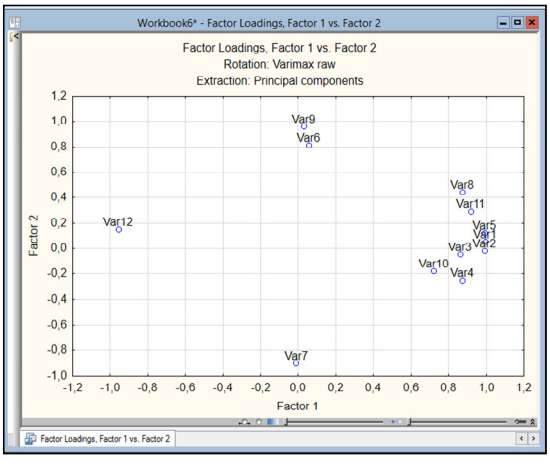
Workbook6* - Correlations (продсіл.sta)

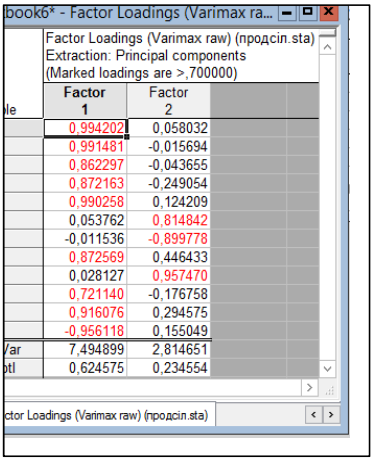
Correlations (продсіл.sta)
Casewise deletion of MD
N=6

Variable	Var1	Var2	Var3	Var4	Var5	Var6	Var7	Var8	Var9	Var10	Var11	Var12
Var1	1,00	1,00	0,88	0,88	0,99	0,06	-0,10	0,88	0,09	0,66	0,92	-0,94
Var2	1,00	1,00	0,87	0,92	0,97	-0,00	-0,05	0,84	0,02	0,66	0,89	-0,95
Var3	0,88	0,87	1,00	0,73	0,83	-0,16	-0,09	0,77	-0,10	0,35	0,87	-0,71
Var4	0,88	0,92	0,73	1,00	0,82	-0,27	0,07	0,58	-0,16	0,56	0,63	-0,91
Var5	0,99	0,97	0,83	0,82	1,00	0,19	-0,10	0,92	0,15	0,73	0,94	-0,94
Var6	0,06	-0,00	-0,16	-0,27	0,19	1,00	-0,53	0,41	0,72	0,24	0,27	0,02
Var7	-0,10	-0,05	-0,09	0,07	-0,10	-0,53	1,00	-0,37	-0,87	0,41	-0,25	-0,16
Var8	0,88	0,84	0,77	0,58	0,92	0,41	-0,37	1,00	0,44	0,55	0,98	-0,74
Var9	0,09	0,02	-0,10	-0,16	0,15	0,72	-0,87	0,44	1,00	-0,13	0,27	0,07
Var10	0,66	0,66	0,35	0,56	0,73	0,24	0,41	0,55	-0,13	1,00	0,56	-0,83
Var11	0,92	0,89	0,87	0,63	0,94	0,27	-0,25	0,98	0,27	0,56	1,00	-0,78
Var12	-0,94	-0,95	-0,71	-0,91	-0,94	0,02	-0,16	-0,74	0,07	-0,83	-0,78	1,00

Correlations (продсіл.sta)

Figure 7 Factor analysis of the main indicators of socio-economic development of Kherson region (Ukraine) (see online version for colours)



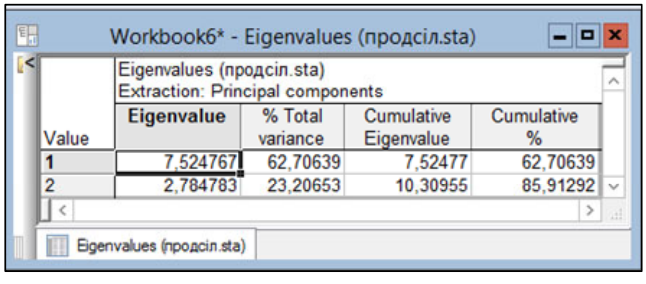


book6* - Factor Loadings (Varimax ra...

Factor Loadings (Varimax raw) (продсіл.sta)
Extraction: Principal components
(Marked loadings are >,700000)

	Factor 1	Factor 2
	0,994202	0,058032
	0,991481	-0,015694
	0,862297	-0,043655
	0,872163	-0,249054
	0,990258	0,124209
	0,053762	0,814842
	-0,011536	-0,899778
	0,872569	0,446433
	0,028127	0,957470
	0,721140	-0,176758
	0,916076	0,294575
	-0,956118	0,155049
	7,494899	2,814651
	0,624575	0,234554

ctor Loadings (Varimax raw) (продсіл.sta)



Workbook6* - Eigenvalues (продсіл.sta)

Eigenvalues (продсіл.sta)
Extraction: Principal components

Value	Eigenvalue	% Total variance	Cumulative Eigenvalue	Cumulative %
1	7,524767	62,70639	7,52477	62,70639
2	2,784783	23,20653	10,30955	85,91292

Eigenvalues (продсіл.sta)

After that, a factor analysis of indicators of socio-economic development of Kherson region as a TS was conducted. The main factors are the profit and incomings from property, vehicles and professional activities, respectively (Figure 7).

After conducting of the correlation-regression and factor analysis, the aggregate coefficients by sub-blocks were determined. After calculating the coefficients, the interaction of the state of sustainable development of the region (TS) under these conditions is determined. As a result of calculations by the Chaddock scale, it was determined that the state of balanced development for the Kherson region is weak. Thus, according to the developed methodology, the calculation of the integrated indicator of competitiveness of the TS was carried out, on the example of Kherson region (Ukraine).

The application of local indicators of sustainable development of TSs for the developed methodology is promising. Each region of the world is characterised by inherent factors of sustainable development. Therefore, it is necessary to take into account certain characteristics for fixed territories. Coordination of local indicators of development of TSs with the method of calculation of their integrated indicator will allow taking into consideration the prospects of development of a fixed territory, forecasting their economic growth.

It should be noted that the article has certain disadvantages. The developed research methodology is quite difficult from a mathematical point of view and is not fully presented in the paper. This is due to the complex mathematical apparatus of calculations and impossibility of presenting all algorithms and formulas. This will complicate readability of the material and its understanding.

Another disadvantage is a certain limitation of factor analysis of the main indicators of region socio-economic development. This is because of the fact that each country has its own TSs with their own indicators. Therefore, to take them into account, it is necessary to conduct a preliminary analysis of necessary indices and take them into account in accounts according to developed methodology. This will allow to adapt the developed model to a specific TS of almost any region of the world and increases its practical value.

These shortcomings do not reduce the research value, but only indicate promising areas for their further implementation.

5 Conclusions

In the article investigated the economic aspects of a TSs management. The integrated indicator of competitiveness of fixed territory is calculated. An algorithm of calculation of integrated indicator of competitiveness of fixed territory is investigated (on the example of Kherson region) on the basis of correlation and factor analysis. This algorithm allows a qualitatively assess of advantages and disadvantages of a particular territory and identify the factors, that influencing on the further development. The method of calculating the competitiveness index is described, that allows in real time mode to evaluate an efficiency of the territory functioning.

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