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Elaboration of the system of indicators for the territorial tourist potential evaluation based on the cluster approach to tourism development

Elaboración del sistema de indicadores para la evaluación del potencial turístico territorial a partir del enfoque de cluster para el desarrollo turístico

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Contents

ABSTRACT:
The urgency of this research: The relevance of this study is due to a number of existing theoretical and applied gaps in the implementation of the cluster approach in the tourism sphere. Research objective: The purpose of this article is to systematize existing studies and work out a methodological approach to assessing the development potential of tourist-recreational clusters. Research methods: The main methods to investigate this problem are methods of cognitive methodology based on the graphical and set-theoretic description of systems. Research findings: A system of indicators for assessing the tourist potential of tourist-recreational clusters was developed. Peculiarity of the proprietary methodology is determined by the ability to create high-quality simulation models of systems taking into account the variable characteristics. Research significance: The study made it possible to obtain a system of indicators for assessing the tourist potential, comprehensively determining the prospects for development within a certain territory of the tourist-recreational cluster.
Keywords: development potential of tourist-

RESUMEN:
La urgencia de esta investigación: la relevancia de este estudio se debe a una serie de vacíos teóricos y aplicados existentes en la implementación del enfoque de clúster en el ámbito del turismo. Objetivo de la investigación: El objetivo de este artículo es sistematizar los estudios existentes y elaborar un enfoque metodológico para evaluar el potencial de desarrollo de los clusters turísticos-recreativos. Métodos de investigación: los principales métodos para investigar este problema son los métodos de metodología cognitiva basados en la descripción gráfica y teórica de conjuntos de sistemas. Resultados de la investigación: se desarrolló un sistema de indicadores para evaluar el potencial turístico de los clusters turísticos-recreativos. La peculiaridad de la metodología patentada está determinada por la capacidad de crear modelos de simulación de alta calidad de sistemas teniendo en cuenta las características variables. Importancia de la investigación: El estudio permitió obtener un sistema de indicadores para evaluar el potencial turístico, determinando de forma exhaustiva las perspectivas de desarrollo dentro de un determinado territorio del

recreational clusters, cluster approach to tourism, system of indicators, cognitive methodology, high-quality simulation models, variable characteristics.

conjunto turístico-recreativo.
Palabras clave: potencial de desarrollo de clusters turístico-recreativos, enfoque de clusters al turismo, sistema de indicadores, metodología cognitiva, modelos de simulación de alta calidad, características variables.

1. Introduction

In the modern world, most countries view tourism as a significant area of the economy. There is no exception to the understanding of the role of tourism from this point of view and within the organization of the process of managing Russia's social and economic development. Nevertheless, according to Rosturizm (Russiatourism, 2017), the share of tourism in Russia's GDP does not exceed 3.4%, while in the world it is up to 10% on average. Therefore, we can say that the approach to managing the sphere of Russian tourism is not effective enough.

This research urgency is determined by several key issues. First, adaptation of approaches, mechanisms and tools that have justified themselves in foreign practice to the management of Russian tourism is not always possible. This is explained, among other things, by the governmental structure of tourism management, vertically organized with a differentiated functional at each level and a certain legal framework and budget. Secondly, the development of Russian tourism manifests itself in a multi-sectoral nature and close factor interrelationship with other subsystems of the national economy of each particular territory, which makes it necessary to take into account territorial features and functions under the existing conditions of uncertainty and instability of the internal and external environment. For the tourist and recreational sphere in Russia, the territorial issue of functioning, control and management is of paramount importance (Kruzhalin et al., 2014).

Consequently, one can say that effective management of the Russian tourist-recreational complex as a territorial system presupposes the search, introduction and adaptation to specific economic conditions of functioning, innovative tools and methods to enhance managerial decision-making processes, which determines the research problem statement.

According to the provisions of the statutory and regulatory framework for the functioning of the Russian tourism sector and due to modern economic research dealt with the tourism development, the need to use the cluster approach as the main one is recognized and substantiated (Aleksandrova, 2007, 2017; Aleksandrova & Aigina, 2016; Mitrofanova, 2010; Morozova, 2011; Shepelev & Markova, 2012). In the Russian practice of tourism management, the preset mechanism for state funding and the implementation of public investments to ensure the development of domestic and inbound tourism is based on the use of the cluster approach.

The purpose of the study is to develop a methodology for assessing the territorial tourism potential, which will enhance the effectiveness of the process of managing the spatial development of tourism through the implementation of cluster initiatives.

The main tasks of the research are as follows:

- systematization and evaluation of existing methodological guides in the field of assessing the territorial tourist potential, aimed at identifying opportunities for introducing cluster initiatives;

-development of a system of indicators for assessing the territorial tourist potential from the perspective of applying a cluster approach to the tourism development.

1.1. Literature review

Today we can clearly state that the number of definitions of the cluster is huge. It can also be argued that, despite the existing differences in the definitions of this category, they do not contradict each other, but only emphasize certain features. Among these features are the territorial affiliation of cluster subjects (Visser & Boshma, 2002; Swann & Prevezer, 1996; Andersson et al, 2004; Porter, 1990, 2003), the interrelationship between cluster

subjects (Porter, 1998; Feser, 1998; Elsner, 1998), the existence of a synergistic effect (Rosenfeld, 1997), etc.

A similar situation is also determined when analyzing the interpretations of the notion of a tourist-recreational cluster (a tourist cluster), which the authors suggest, taking into account the tasks of ongoing research, forming unique conceptual and semantic structures (Aleksandrova, 2007, 2016, 2017; Capon, 2004; Beni, 2003; Iordache et al., 2010; Chernikova et al., 2015, etc.). Keep in mind that foreign researchers apply the notion of a tourist cluster, while Russian scientists often use such term as tourist-recreational cluster. This fact is explained by a number of reasons, one of which is the use of the term "tourist-recreational cluster" in modern Russian statutory and regulatory documents. In the framework of the study, we will consider the existing difference as not having a fundamental character, since it is a question of cluster education, the sectoral belonging of which is the sphere of tourism.

The significance of shaping a definition of a tourist-recreational cluster within each conducted research is related to the solution of specific scientific tasks. Taking into account the task of forming a methodology for assessing the territorial tourist potential that could implicitly become clusters, we will formulate, in the first place, the definition of a tourist-recreational cluster. For this purpose, let us outline the main features that, in the authors' opinion, allow determining the essence of the tourist-recreational cluster.

First, it is the availability of tourist resources for a specific territory, by which we mean the totality of natural-climatic, historical, socio-cultural facilities and places of interest.

Secondly, this is the territorial enterprises' location. Irrespective of the industry, the cluster assumes the geographical concentration of enterprises. For tourism, this fact is of crucial significance, since it is an issue of using the tourist potential of a particular territory. In such a case, we will view separately the notion of a tourist-recreational complex and a tourist-recreational cluster.

Tourist-recreational complex is a part of the overall economic complex of the territory within certain administrative boundaries (which determines the management system), which has a certain potential for the tourism development, primarily based on tourist resources and essential infrastructure facilities. We can say that the tourist-recreational complex is a "platform" for the emergence of potential tourist-recreational clusters (proto-clusters (Artamonova et al., 2013)), which can later develop into full-fledged clusters.

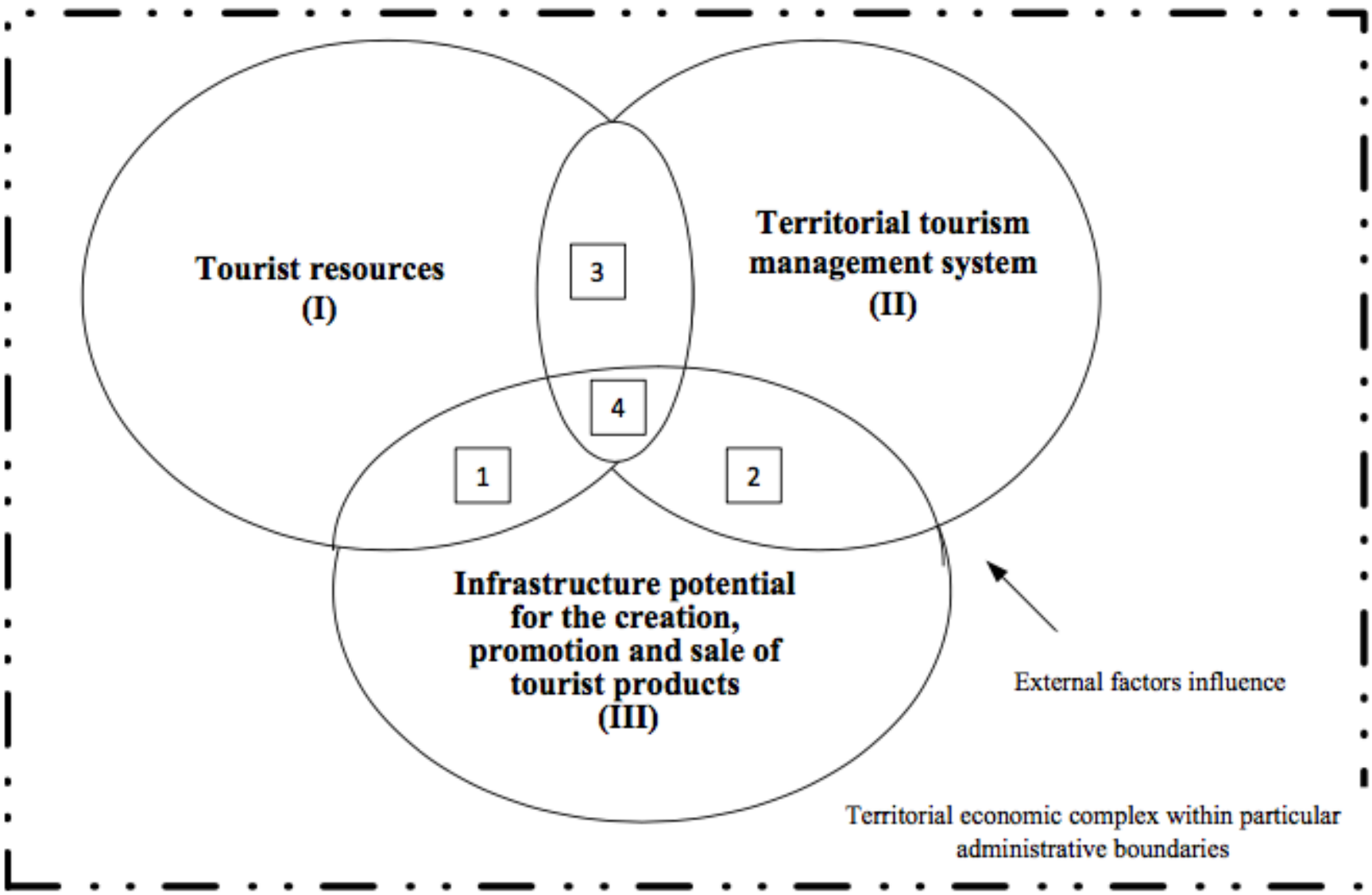
Thirdly, it is a kind of cooperation between enterprises and organizations united by a common area of activity, which result in the creation, promotion and implementation of a unique territorial tourist product, including the launch of infrastructure facilities (Yakimenko, 2008). Emphasizing the need for the existence of forms of cooperation between enterprises and organizations within the framework of the creation of a unique territorial tourist product, there is another important difference in the tourist-recreational complex from the tourist-recreational cluster, the essence of which is that there are enterprises within the complex that create tourist products not associated with the use of territorial tourist resources, while the cluster should be created to convert resources of a particular territory and to use it as attractions for tourists.

The singled out features are basic for the definition of a tourist-recreational cluster and allow formulating it as follows: a tourist-recreational (tourist) cluster is a form of cooperation of enterprises and organizations united by a common area of activity, the result of which is the creation, promotion and implementation of a unique territorial tourist product and which are characterized by: the unification through close industrial and economic ties, joint and optimal use of tourist potential (as a set of tourist resources and necessary infrastructure) of the engaged territory, as well as coordination by state and (or) other entities (associations, unions, etc.).

Let us illustrate the interaction of the described features within the framework of the launching a tourist-recreational cluster (Fig. 1).

Fig.1

Variants of intersections of basic features of a tourist-recreational cluster



The integration of areas I, II, III gives an idea of the territorial tourist-recreational complex.

The intersection of areas I and II (zone 3) characterizes the situation in which the territory possesses tourist resources; there are certain institutional conditions for the tourism development, but so far there are no subjects of sphere of tourism and the necessary infrastructure. There is the potential for the launching a tourist-recreational proto-cluster. Such a situation is not uncommon for Russian territories having significant tourist resources, but not developing tourism because of the tourist infrastructure underdevelopment.

The intersection of areas II and III (zone 2) characterizes the situation in which enterprises and organizations of one territorial entity create, promote and sell tourist products, using the tourist resources in different territories. It concerns, first of all, travel agencies dealing with outbound tourism. One can assume that in a territory that does not initially have tourist resources, a proto-cluster may appear only in the case of the creation of tourist attractions. An example of this kind of development is the emergence of Las Vegas.

The intersection of areas I and III (zone 1) assumes the functioning of enterprises and organizations of territorial entity associated with the creation, promotion and sale of tourist products based on tourist resources of a particular territory. But the tourism management system has not been formed. The appearance of a proto-cluster in this situation is also possible, which implies the management system formation.

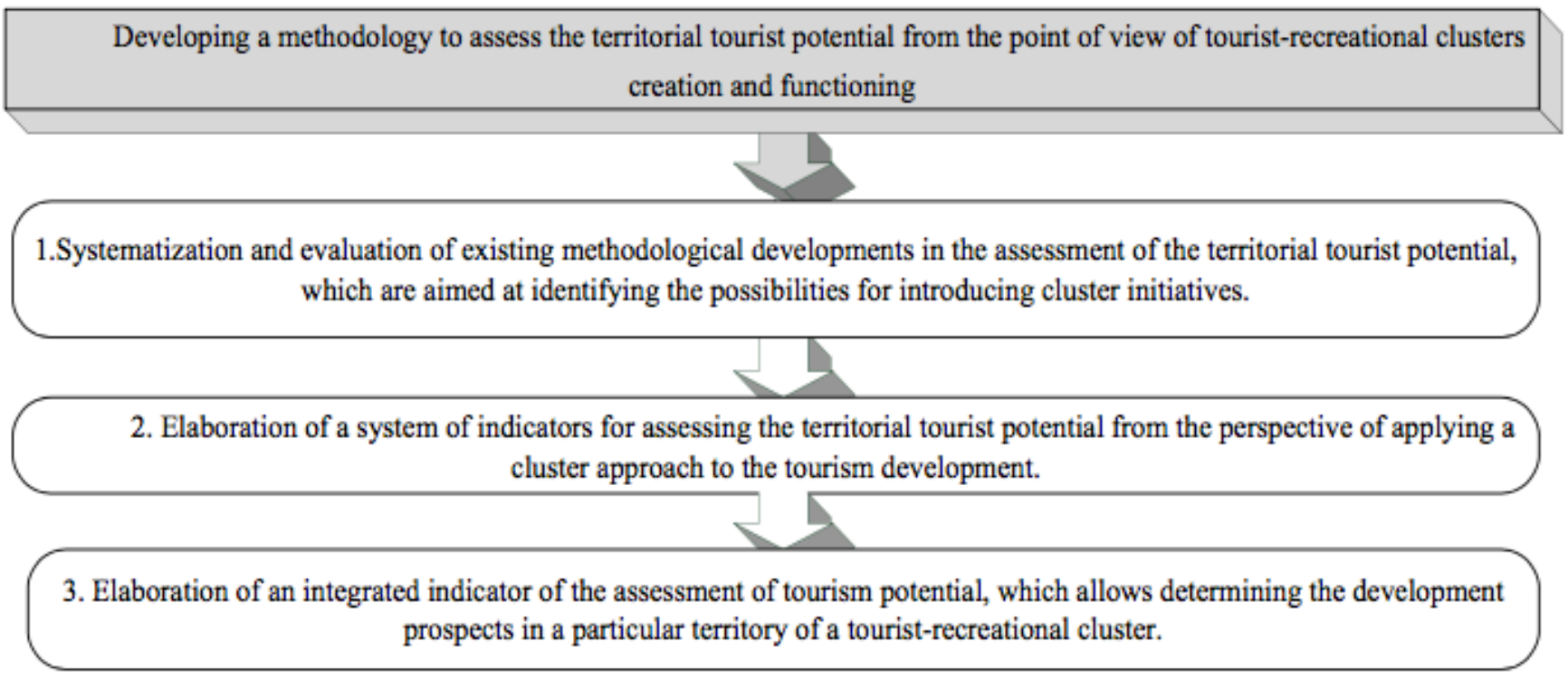
Zone 4 represented in the figure as the intersection of areas I, II and III, describes the conditions for the emergence of a tourist-recreational cluster, under which there is cooperation of enterprises and organizations for the creation, promotion and sale of tourist products, based on the use of tourist resources of a particular territory. For this purpose, the key moment is the availability of a management system that initiates and / or develops various forms of cooperation of the territories of economic entities engaged in the tourism development. Accordingly, proto-clusters of the territorial tourist-recreational complex are developing objects that have all chances to become clusters, which requires a certain managerial impact.

2. Methodology

Currently, the issues of effective management of the tourist-recreational complex as a territorial system, as well as theoretical and applied research aimed at studying the development of the tourist-recreational cluster as an element of the territorial socio-economic system and oriented toward sustainable and innovative development, remain topical.

That makes it necessary to conduct a research focused on elaboration of a methodological approach to assessing the potential of tourist-recreational clusters development, aimed at solving the problem of increasing the efficiency of spatial development of tourism in Russia. The general algorithm for developing a methodology to assess the tourist potential of territories from the point of view of tourist-recreational clusters creation and functioning is demonstrated in Fig. 2.

Fig. 2
Algorithm for developing a methodology to assess the territorial tourist potential from the point of view of tourist-recreational clusters creation and functioning



One of the key objectives of this study is to elaborate a system of indicators to assess the territorial tourist potential from the perspective of applying a cluster approach to the tourism development. The research findings can create prerequisites for the formation of modern management tools for tourist-recreational clusters in Russian regions.

The "territorial tourist potential" system served as an experimental basis for the study, which cannot be imagined only in the form of traditional formal quantitative indicators. This is mainly due to the fact that this system is characterized by a huge number of elements that are dissimilar in their economic nature and the interconnections between them, the lack of sufficient quantitative information about the dynamics of processes and the need for a description also at a qualitative level. The presence of such conditions allows attributing numerous problems of making managerial decisions in the assessment of the territorial tourist potential from the perspective of the tourist-recreational clusters creation and functioning to semi-structured ones.

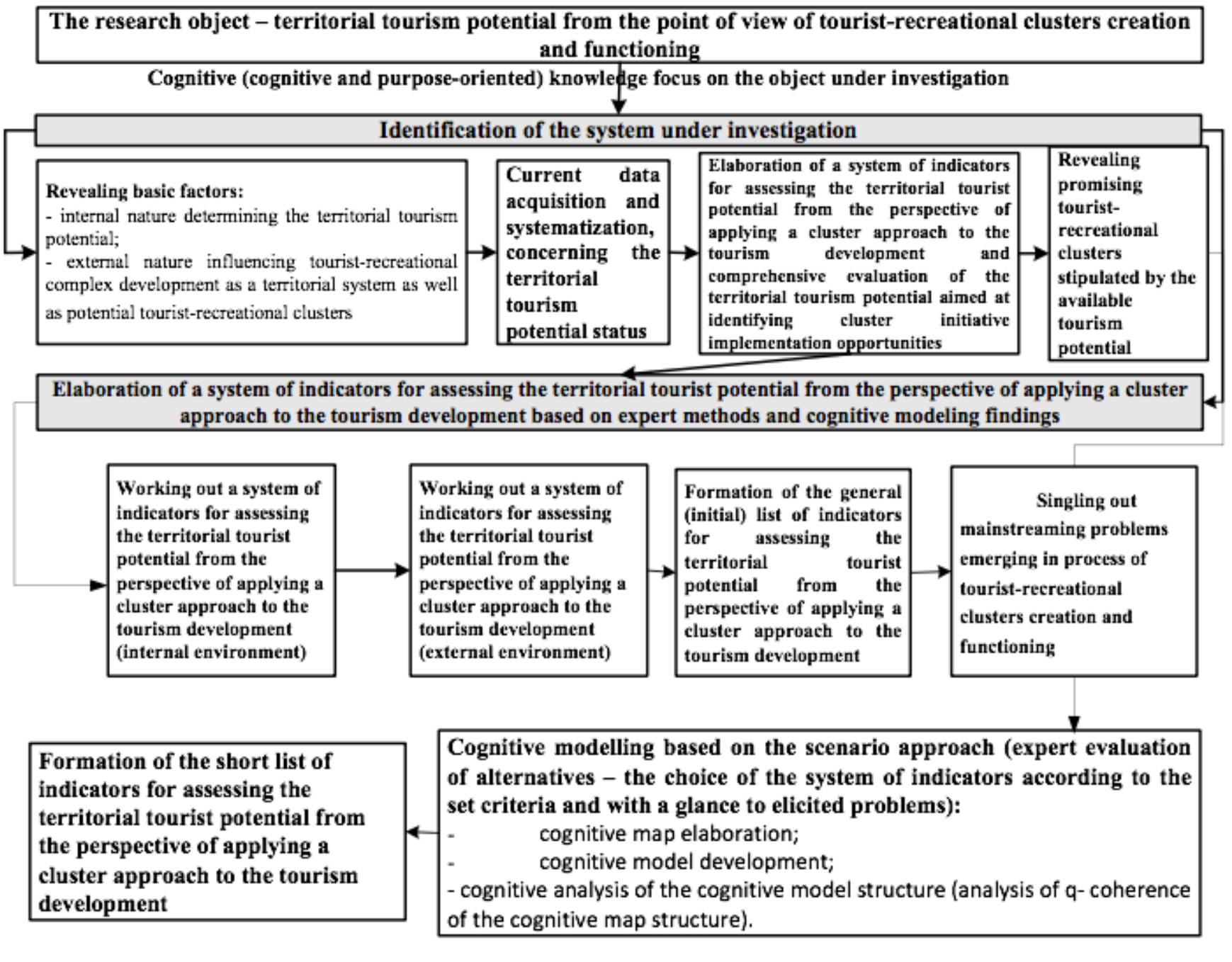
To solve a semi-structured problem, one needs: the problem source as a system; the objective and tasks of problem solving; a manager or an expert in the field of concern, who has the relevant competence available – the decision-maker; method and technology of managerial decision making (MDM), stipulated by algorithm development for managerial decision formulation (MD) and the MD model.

Taking into account the fact that when researching and solving problems arising on the way of creation and functioning of tourist-recreational clusters, all system tasks should be solved, and this is available far from all decision-making models, but only for those providing qualitative and quantitative descriptions, then cognitive models with similar capabilities are acceptable for these objectives.

Consequently, the methodology for elaborating a system of indicators to assess the territorial tourism potential from the perspective of applying a cluster approach to the tourism development is recommended to be worked out on the basis of a cognitive approach that allows using a combination of such management decision-making methods in the sphere of tourism as expert and statistical ones combined with cognitive analysis and cognitive modeling of the problem situation and to take into account all the main factors that affect the problem, and possible changes in the complex system under investigation, influenced by internal and external conditions of its functioning (Zhertovskaja, 2007).

The elaborated methodological tools are shown in Fig. 3.

Fig. 3
The methodology for elaborating a system of indicators to assess the territorial tourism potential from the point of view of applying the cluster approach to the tourism development



Thus, the general scientific principles and methods were applied within the framework of the study: systemic, cognitive (Gorelova, 2011; Gorelova et al, 2017; Zakharova, et al, 2015; Ginis, et al, 2016; Klimenko, et al, 2017), statistical, cluster approaches, simulation modeling, decision theory methods, as well as logical, comparative and structural analysis, synthesis, classification, statistical, monographic and expert methods.

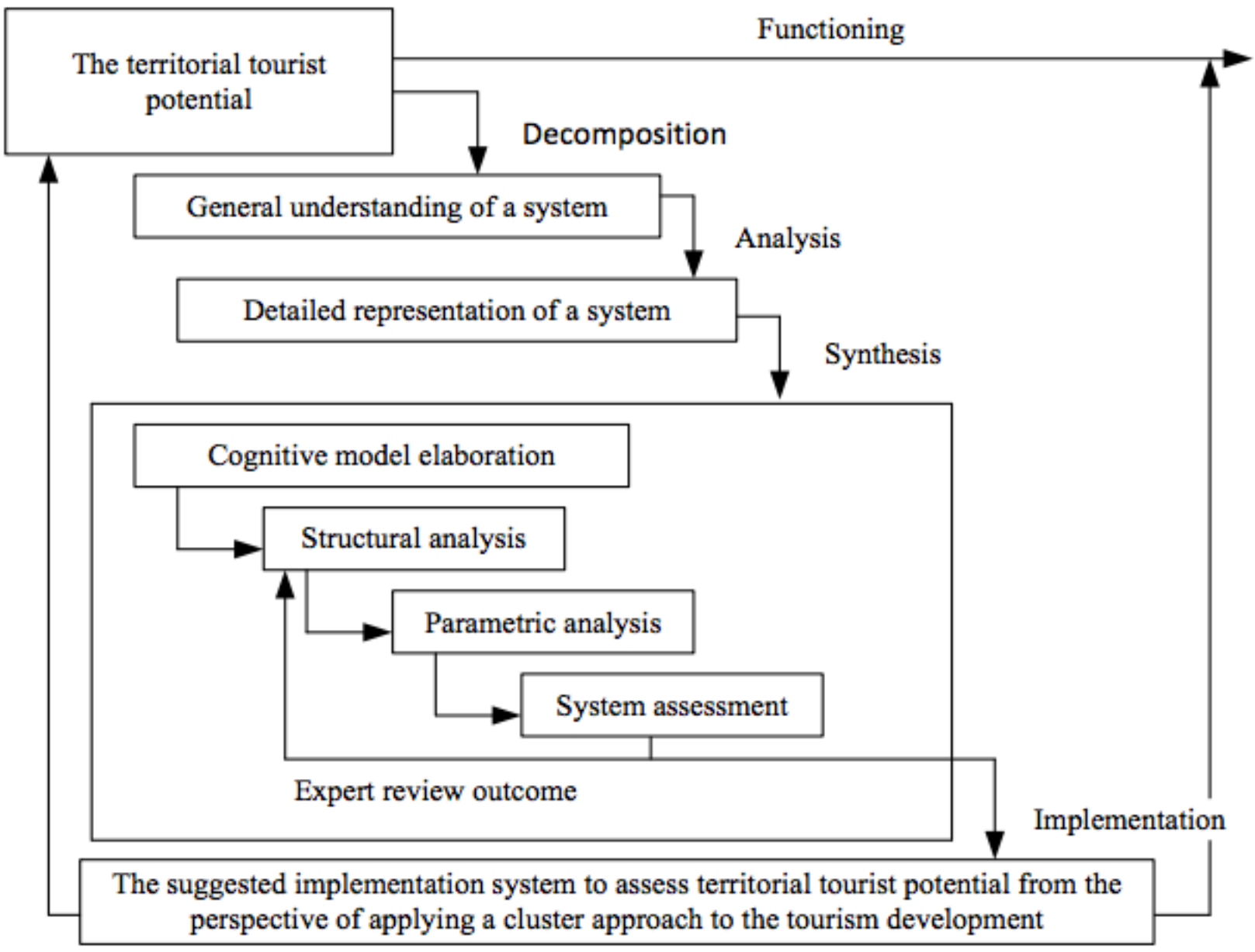
The factual material related to the structural components of the category “tourist potential” is to a large extent represented in the form of various statistical reports. Accordingly, the methodology of the study includes statistical methods. Whereby mainly those that allow reflecting the relationship and the degree of influence of various indicators (multidimensional statistical analysis) and development trends (time series analysis methods).

For the analysis of semi-structured problems in the development of tourist-recreational clusters in the context of territorial differentiation, cognitive research methods based on the

graphic and set-theoretic description of systems are applied. The cognitive approach makes it possible to work with both qualitative and quantitative parameters and has the ability to fill cognitive modeling methods (cognitive analysis and cognitive technologies developed on its basis – modern information technologies of system-oriented analysis) with other methods of system-oriented analysis at different stages of research and decision making.

Let us represent the functional cycle in Fig. 4.

Fig. 4
Functional cycle of the structure of cognitive system
analysis of the "territorial tourist potential" system



The application of cognitive modeling is one of the options for using a systematic approach to solving semi-structured problems in a tourist-recreational complex development in an unstable environment.

Cognitive structuring contributes to the formation and refinement of the hypothesis on the tourist-recreational cluster functioning and development, the object of control of which is its tourist potential, considered as a complex system consisting of separate but interrelated subsystems (tourist resources; infrastructure potential for the creation, promotion and sale of tourist products) and in identifying future target and undesirable states of the managerial object and the most significant (basic) managerial factors, i.e. development drivers, and the external environment that impact the transition of the control object to these states, as well as the establishment of qualitative (cause-and-effect) relationships between them, taking into account factors' mutual interaction.

As a result of cognitive structuring, an informal description of knowledge about the subject area is elaborated, which can be graphically presented as a graph with scales, matrices, tables, which is a mathematical apparatus of cognitive analysis and efficient cognitive management that allows analyzing the problem situation and synthesis of control strategies, as well as considering dozens or hundreds of essential factors.

Since cognitive modeling plays a key role in the choice and adoption of management

solutions in order to handle complex problems in evaluating the territorial tourist potential from the perspective of the tourist-recreational clusters creation and functioning, it appears reasonable to devote particular attention to its stages: a cognitive map and model development and their cognitive analysis.

At the early stage, it is necessary, firstly, to collect and systematize the existing statistical and qualitative data about the status of the tourist potential and its external environment for the subsequent specification of a list of concepts, namely, basic, managerial and targeted parameters and data-indices by expert judgment; secondly, establish cause-and-effect relationships between parameters, which will reveal the major directions of factors impact (positive "+", negative "-"). Accordingly, a cognitive map of the research object can be constructed. Methods for creating cognitive maps are different, but in the context of this research, the following techniques were applied: the authors construct the cognitive map based on their basic knowledge in the subject area, reference materials and the experts' participation (applying open-ended opinion surveys). Representatives of the tourism industry and authorities responsible for coordinating the tourism of territorial entities acted as experts.

Based on the cause-and-effect relationships established by the experts, a cognitive model is constructed, closer to the real object, in the form of a parametric vector functional graph (Zhertovskaja, 2007).

$$\Phi n = \langle\langle V, E\rangle, X, F, \theta\rangle, \qquad (1)$$

where $G = \langle V, E\rangle$ - a cognitive map in which $V = \{vi \mid vi \in V,\ i = 1, 2,\ldots, k\}$; $E = \{ei \mid ei \in E,\ i = 1,2,\ldots, k\}$; G - oriented graph; $X: V \to \theta$, X - set of parameters of vertices, $X = \{X(Vi) \mid X(Vi) \in X,\ i=1, 2,\ldots, k\}$, $X(Vi) = \{x(i)g\}$, $g = 1, 2,\ldots, l$; $x(i)g$ - g-parameter of the vertex Vi, if $g = 1$, then $x(i)g = xi$; θ - the space of vertex parameters $F = F(X, E)$ - arc-transformation functional , $F: E \times X \times \theta \to R$

After the cognitive model construction, the stages of model analysis follow, which include research of the appropriateness of the constructed parametric model and the study of its structure (analysis of the q-coherence of the cognitive map structure).

Analysis of the q- coherence of the system structure consists in determining the simplexes of the cognitive map and their connectivity. This analysis allows providing reasons to solve the problems of decomposition and composition of the system under study "the territorial tourist potential" with the external environment, to identify the parameters influencing the processes of formation and development of tourist-recreational clusters most of all in the conditions of territorial differentiation in the system under consideration and forming peaks that are more rational to be chosen as managerial ones (drivers of development), and make decisions about the system's manageability (Bereza, 2011).

Thus, cognitive analysis implies the scientific substantiation of an expert's "qualitative" analysis of a set of parameters of the territorial touristic potential development aimed at identifying the possibilities for introducing cluster initiatives to form the overall system of indicators to assess the territorial touristic potential from the perspective of applying a cluster approach to the tourism development.

The comprehensive use of the mentioned methods, tools and approaches, united by a common cognitive methodology and research algorithm, will ensure the scientific veracity and reliability of its results.

The implementation of this methodology will considerably overcome the problem of regions' territorial differentiation in the tourism potential development, make management decisions based on a comprehensive analysis of the issue of assessing the possibility of tourist-recreational clusters development, estimating their effectiveness from the point of view of cooperation of enterprises and organizations united by a common field of activity, the result of which is the creation, promotion and implementation of a unique territorial tourist product, and other possible outcomes resulting from tourist-recreational clusters creation and operation.

3. Results

The research result is the development of a system of indicators for assessing the territorial touristic potential from the point of view of applying a cluster approach to the tourism development.

At the first stage, for the purpose of the subsequent identification of the "territorial touristic potential" system, the basic factors / indicators, both external and internal, directly affecting the tourist-recreational cluster development, were identified.

Table 1 presents the extended set of indicators developed by the authors used for the cognitive structuring of knowledge about the object under study and its external environment. It is worth noting that a set of parameters was compiled by the authors based on the results of expert assessments of the degree of internal and external factors influence on the territorial tourist-recreational cluster creation and development.

Table 1

Blocks of indicators applied for cognitive structuring of knowledge about the territorial touristic potential and its external environment

	Denomination of the block of indicators	**Factors**	**Characteristics**
		INTERNAL FACTORS:	
		Infrastructure potential for tourist products creation, promotion and sale (V01)	
		- territorial accommodation structure (**v011**);	*basic* - the number of infrastructure objects; - the volume of service rendered - the cooperation development level
		- organizations of sanatorium and health-resort service (**v012**);	*basic* - the number of infrastructure objects; - the volume of service rendered - the level of cooperation development
		- tourism organizations (**v013**);	*basic* - the number of infrastructure objects; - the volume of service rendered; - the level of cooperation development
		- foodservice facilities (**v014**);	*basic* - the number of infrastructure objects; - the volume of service rendered - the level of cooperation development
		- road network (**v015**);	*basic* - the level of road network
		- sports facilities (**v016**);	*basic* - the number of infrastructure objects;

			- the level of cooperation development
		- sports facilities (**v017**);	*basic* - the number of infrastructure objects; - the level of cooperation development
		-the level of development of industry-specific administrative and executive establishments in the territory (**v018**);	*indicator* - the number of infrastructure objects (availability of a specialized department / committee on tourism or tourism department under the Administration; - the level of cooperation development; - the level of management performance
		Tourism resources (**V02**)	
V0	*Territorial touristic potential*	- natural climatic resources (**v021**);	*target-oriented* - level of preservation and rational use of natural resources *indicator* - water resources quality level; - swimming season duration
		- cultural heritage (**v022**);	*target-oriented* - the level of the conservation and sustainable use of cultural heritage resources; - availability level
		- level of financial tourism resources development (**v023**);	*indicator* - bank loans availability; - attraction of investments and implementation of investment projects in tourism sector
		- private investments in the tourist-recreational complex development (**v024**);	*target-oriented* - volume of private investments
		- human capacities in tourism sector (**v025**);	*basic* - quality of labor supplies for tourism industry resources
		Territory Tourism Management System (V03)	
		- tourist area marketing (**v031**);	*managerial* - tourism brands and the unique territorial tourism product development, etc.

			indicator - level of development of advertising and information activities in the area of promotion of a unique regional tourism product; - tourism brands and territorial tourism product development, etc.
		-regional tourism strategy (**v032**);	*indicator* - efficiency of the regional management system of the regional tourism area; - level of application of the program-targeted approach in the field of tourism development at the regional level; *managerial* - regional legislation in the field of support and development of territorial tourist-recreational clusters;
		- cooperation of territorial tourism enterprises (**v033**);	*indicator* - level of cooperation; - economic mechanisms for stimulating the development of territorial tourism enterprises
V1	*Regulatory and legal framework*	**EXTERNAL FACTORS:**	
		- federal legislation for the support and development of tourist-recreational clusters (**v11**);	*managerial* - level of the effectiveness of tourist-recreational clusters management in the country
		- presence of legislative base for development and support of investments into a tourist complex (**v12**);	*indicator* - level of attraction of investments and implementation of investment projects in the tourism area
		- tourism contribution to GRP (**v21**);	*target-oriented* – contribution of tourist-recreational complex to the regional economy – (Output, RUB million);
		- competition (**v22**);	*indicator* - the level of the development of competition with neighboring tourist areas; - the level of the development of competition within the tourist destination;
		- inflation (**v23**);	*indicator* - the level of inflation in the region

V2	*Tourism economics*	- budgets of all levels (**v24**);	*target-oriented* - the volume of revenues (tax) from tourism to the regional and federal budgets (Taxes, RUB million)
		- investment attractiveness of the tourist region (**v25**);	*target-oriented* - investment climate at the regional level; - amount of investment in tourism - (Investments, RUB million)
		- interregional and foreign economic exchange (**v26**);	*target-oriented* - the level of development of interregional and foreign economic relations; - the region's participation in Russian and international exhibitions
		- quality of life in the population (**v27**);	*target-oriented* - society standard of living; - annual average number of employees in the tourism industry, 100 K people – average monthly salary in the tourism area, RUB.
		- the state of the enterprises involved in the tourism area (**v28**);	*indicator* – tourism multiplier
V3	*Geographical location and territorial geopolitics*	- Geographical location and geopolitics (**v3**);	*basic* - proximity of the territory to the regions that generate tourists; indicator - level of security at the tourism destinations;
V4	*Tourism demand*	tourist flow (inbound and outbound) on the territory of the region (**v4**);	*target-oriented* - the tourist flow volume
V5	*Environmental situation (environmental risks)*	- condition of the aquatic environment (**v51**);	*indicator* - water pollution level
		- atmospheric conditions (**v52**);	*indicator* - air pollution level

Internal factors affecting the tourist-recreational clusters creation and operation are key phenomena and trends that are manifested directly in the area of tourism development. First of all, they include factors related to the development of the infrastructure potential for the creation, promotion and sale of territorial tourist products, tourism resources, as well as indicators characterizing the level of the management system improvement for the territorial tourist potential development, conditioned by the level of advancement of the territorial

entity’s tourism policy.

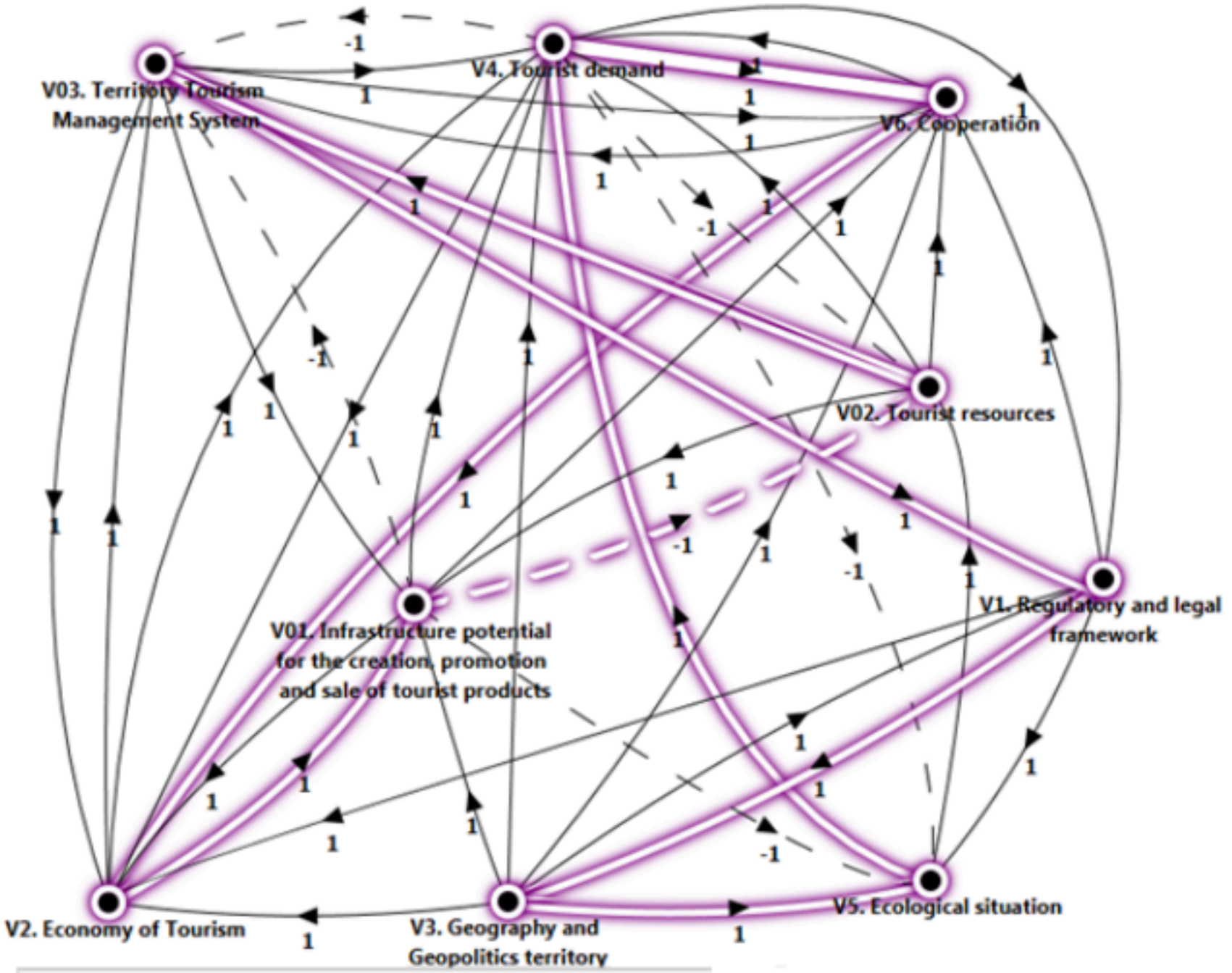
External factors affect the development of the territorial tourist-recreational complex through changes occurring within the tourist destinations and have different significance for various elements of the system.

The group of target indicators are factors of social and economic efficiency resulted from creation and functioning of tourist-recreational complexes and clusters. The group of data-indicators for the development of the territorial tourist-recreational complex shows the changes in any parameter of the controlled process or the state of the research object according to the foregoing criterion, such as, for instance, the efficiency of the regional management system of the territorial tourism area; the level of the investment climate in the region, etc. Indicators can be qualitative and/or quantitative.

All the indicators considered above simultaneously impact the functioning of the tourist-recreational proto-cluster, creating time-varying effect combinations, both positive or stimulating, and negative or limiting.

To elaborate an integrated indicator for the tourist potential assessment, which makes it possible to comprehensively determine the development prospects within a particular territory of the tourist-recreational cluster, cognitive structuring (Fig. 5) of the obtained factors was carried out and a more concise list of indicators was developed, based on a cognitive approach that enables to work both with qualitative, and quantitative indicators at different stages of the investigation.

Fig.5
Aggregate cognitive model of the interaction of the Territorial Tourist Potential system with the external environment from the point of view of considering the assessment of the basic premise for tourist and recreational clusters creation and functioning



Cycles. Total 7521. Negative: 227. Positive: 7294.

- (1) V01 -> V02 -> V03 -> V01
- (3) V01 -> V02 -> V03 -> V1 -> V2 -> V01
- (5) V01 -> V02 -> V03 -> V1 -> V6 -> V4 -> V2 -> V01
- (4) V01 -> V02 -> V03 -> V1 -> V6 -> V2 -> V01
- (3) V01 -> V02 -> V03 -> V1 -> V3 -> V01
- (5) V01 -> V02 -> V03 -> V1 -> V3 -> V4 -> V2 -> V01
- (6) V01 -> V02 -> V03 -> V1 -> V3 -> V4 -> V6 -> V2 -> V01
- (6) V01 -> V02 -> V03 -> V1 -> V3 -> V5 -> V4 -> V2 -> V01
- (7) V01 -> V02 -> V03 -> V1 -> V3 -> V5 -> V4 -> V6 -> V2 -> V01
- (6) V01 -> V02 -> V03 -> V1 -> V3 -> V6 -> V4 -> V2 -> V01
- (5) V01 -> V02 -> V03 -> V1 -> V3 -> V6 -> V2 -> V01
- (4) V01 -> V02 -> V03 -> V1 -> V3 -> V2 -> V01
- (5) V01 -> V02 -> V03 -> V1 -> V5 -> V4 -> V2 -> V01
- (6) V01 -> V02 -> V03 -> V1 -> V5 -> V4 -> V6 -> V2 -> V01
- (2) V01 -> V02 -> V03 -> V2 -> V01
- (5) V01 -> V02 -> V03 -> V2 -> V4 -> V1 -> V3 -> V01
- (4) V01 -> V02 -> V03 -> V4 -> V1 -> V2 -> V01
- (5) V01 -> V02 -> V03 -> V4 -> V1 -> V6 -> V2 -> V01
- (4) V01 -> V02 -> V03 -> V4 -> V1 -> V3 -> V01
- (6) V01 -> V02 -> V03 -> V4 -> V1 -> V3 -> V6 -> V2 -> V01

Figure 5 presents an aggregate cognitive model of the interaction of the Territorial Tourist Potential system with the external environment, taking into consideration the assessment of the basic premise for tourist-recreational clusters creation and functioning. The stage of cognitive modeling and subsequent analysis was carried out using the software system for cognitive modeling (PC CM) (Gorelova, 2011).

Building the cognitive model, as well as its analysis, gives the primary and maximum visual representation of the interaction of the territorial tourist potential with its external environment in terms of assessing the prospects for implementing cluster initiatives in the

tourism area, where the arrows represent the main relationships and the direction of the indicators impact on each other.

The developed concise list of factors, used to assess the territorial tourist potential from the perspective of the tourist-recreational clusters creation and functioning, is presented in Table 2.

Table 2
A concise list of factors, used to assess the territorial tourist potential from the perspective of the tourist-recreational clusters creation and functioning

№	Factor denomination	Designation
1	Infrastructure potential for tourist products creation, promotion and sale	V01
2	Tourist resources	V02
3	Territorial tourism management system	V03
4	Regulatory and legal framework	V1
5	Tourism economics	V2
6	Geographical location and territorial geopolitics	V3
7	Tourist demand	V4
8	Ecological situation	V5
9	Cooperation	V6

The selection and justification of the system of indicators included in the model for assessing the territorial tourist potential are related to the adjacency matrix (Table 3), reflecting the directions of the indicators influence in the system under investigation, obtained on the basis of the expert method application.

Table 3
The adjacency matrix Rϕ of the Territorial Tourism Potential system interaction with the external environment

	V01	V02	V03	V1	V2	V3	V4	V5	V6
Infrastructure potential for the creation, promotion and sale of tourist products V01	0	-1	0	0	1	0	1	-1	1
Tourist resources V02	1	0	1	1	1	0	1	0	1
Territorial tourism management system V03	1	1	0	1	1	1	1	1	1
Regulatory and legal framework V1	1	1	1	0	1	1	1	1	1

Tourism economics V2	1	0	1	1	0	0	1	0	1
Geographical location and territorial geopolitics V3	1	0	0	0	0	0	1	1	1
Tourist demand V4	1	-1	1	1	1	0	0	-1	1
Ecological situation V5	1	1	0	1	1	0	1	0	0
Cooperation V6	1	1	1	0	1	0	1	0	0

Cognitive modeling, based on the scenario approach, was applied to perform an expert examination in order to confirm the validity, adequacy and rationality of the factors used for the cognitive structuring of knowledge regarding the territorial tourist potential and its external environment (Table 1), acting as potential for inclusion in the short list of indicators for assessing the territorial tourist potential from the point of view of applying the cluster approach to tourism development (Table 2).

The procedure for cognitive modeling was carried out using the methodology of cognitive modeling of complex situations in the development of territorial entities' tourist potential, introduced in detail in Figure 4 and included a series of actions (Zhertovskaja, 2007):

1) identification and substantiation of the system of factors included in the cognitive model – Table 1;

2) assessment of the importance of the factors (on a ten-point scale) on the basis of expert methods – taking account of application of the cluster approach to the tourism development and the solution of priority problems arising on the way of the tourist-recreational clusters creation and functioning;

3) the attribution to the arcs of the influences directions wij with the range from [-1; +1], setting wij by experts (Table 3), the construction of a basic parametric graph of the direct influence of factors on each other (Fig. 5);

4) formation of the short list of indicators for assessing the territorial tourist potential, applying a cluster approach to the tourism development.

The developed cognitive model is approximate to the assessment of the prospects for the tourist-recreational cluster creation and development in a single social and economic system of the territorial entity and allows the use of cognitive analysis technology to study the mutual influence of factors characterizing the territorial tourist potential, to identify those factors whose influence on the tourist-recreational complex development was the main one.

As a result of the study, a system of indicators for assessing the territorial tourist potential was developed, applying a cluster approach to the tourism development.

In spite of the fact that the developed system of indicators is of high practical value, in particular, it is a necessary condition for justification of the optimal spatial and structural organization of the tourist-recreational cluster creation, there are theoretical and methodological issues still not fully elaborated, which are related to the need to take into account the impact of the totality of the indicators to estimate the tourism potential, since it is difficult to determine the influence of any dominant factor, which actualizes the necessity to develop an integrated indicator of the tourism potential assessment that allows comprehensive determining of the development prospects within a certain territory of a tourist-recreational cluster.

4. Conclusions

The tasks of the research, which consisted in systematization and evaluation of existing methodological developments in the assessment of the territorial tourist potential, aimed at

identifying the possibilities for introducing cluster initiatives; the elaboration of a system of indicators to evaluate the territorial tourism potential, applying a cluster approach to the tourism development, have been achieved.

The main research findings include the proposed methodology for assessing the territorial tourist potential from the perspective of the tourist-recreational clusters creation and functioning, which can be used as information support in the development of programs for spatial development of tourism based on the cluster approach.

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