Interpretation and Identification of Tourism Sector Clustering

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Abstract. The question of identifying the clustering of the tourist sector due to its positive impact on the economic development of Russia was considered. The author's methodological approach to the assessment of identification based on the integral method was presented. This approach includes six groups of indicators: assessments of natural and resource potential of a recreational area, localization, specialization, per head production, heterogeneity, and the competitiveness of the tourist sector in the region. Each group of the indicators includes single indicators; it should be noted that for the assessment of the natural and resource potential of a recreational area expert method is used with follow-on use of integral method to determine the resulting indicator. For the remaining groups of indicators, only the integral method is used. For the final conclusions on the identification of clustering of the tourist sector, the authors developed a scale with interval estimates and a presentation of the characteristics of each of them. Approbation of the author's methodological approach was carried out using the example of the tourist sector of the Republic of Crimea with a test of objectivity by the Pearson criterion. The results indicate that there are good opportunities for the creation and development of tourist clusters in the regions of Crimea: south-coastal, south-western and southeast regions have a high level of clustering of the tourist sector; western and eastern regions have a good level, and central region has an average level.

1. Introduction

The tourism industry is one of the most profitable types of economic activity characterized by a high investment multiplier where one ruble of investments contributes to the growth of total income of 4,81 rubles in related industries of the Russian economy. This sector is characterized by a positive trend of growth in the share of revenues in the country's GDP estimated at 1,64%, and taking into account the multiplier effect of 5,93% for the period 2014-2018, the index of tourism competitiveness, as a sphere of economic activity, is constantly increasing and amounts to 4,37-4,63 for the same period which corresponds to the 56th place in the rating of 160 countries studied according to the data of the World Economic Forum (WEF). The study of the statistical database for the period 2014-2018 indicates an increase in the share of tax revenues in the aggregate budget of Russia by 4,11% which was the result of a decrease in the share of "shadowing" of the tourism sector by 14,07%. At the same time, the share of budget revenues from this sector to local budgets is characterized by steady growth and is estimated at 6,23% over the same period. A distinctive feature of the tourism industry is the creation of favorable opportunities for the activities of related industries in the tourism sector characterized by an increase in turnover by 7,83% which has a positive effect on the normalization of social conditions of life of the population of resort regions and provides a contribution to the creation of gross regional product. However, the tourist sphere of Russia is characterized by a low level of tourist service,

quality of tourist services, seasonality of work of enterprises in this sphere, irrationality of location of tourist industry objects which contributes to addiction in the consumption of tourist services leading to a decrease in demand for these services in certain regions of the country. In this regard, the implementation of the Federal Target Program "Development of domestic and inbound tourism in the Russian Federation (2011-2018)", involving the development of tourism based on a cluster approach, will level the existing negative effects in the tourism sector and ensure the development of tourism based on inter-industrial ties which helps to optimize the species specialization of tourism activities in the regional dimension which has a positive effect on the socio-economic development of the country in general and the region in particular which emphasizes the actuality of this research.

2. Theoretical studies

2.1. The purpose, objectives and methods of research

In this regard, the purpose of this study is to substantiate the identification of the clustering of the tourism sector on the basis of the methods of scientific knowledge. To achieve this goal, the tasks were solved: the existing approaches to assessing the clustering of the tourism sector were systematized; author's methodological approach was developed that differs from the existing ones by using the integral method for determining the indicators which allows an objective assessment of the possibility of implementing cluster policy in the tourism sector in a specific region of the country; approbation of the author's approach to assessing the identification of the clustering of the tourist sphere on the example of the Republic of Crimea was carried out.

In the process of the research, the methods of analysis, integral, comparison and logical were used. The method of analysis which consists in decomposing the subject matter of the research into its component parts was applied in studying the existing methodological approaches to assessing the identification of the clustering of the tourist sphere. The integral method which consists in determining an objective generalizing assessment of the development of the process was applied in the calculation of individual and complex indicators characterizing the possibility of the development of tourist clusters. The method of comparison consisting in establishing the differences between the objects of the material world was applied when establishing an objective assessment of the possibility of creating a tourist cluster in different regions of Crimea. The logical method consisting in the consistent construction of reasoning for the knowledge of the objective world was applied in substantiating the author's methodological approach to assessing the identification of the clustering of the tourist sphere of Crimea.

2.2. Analysis of publications on the research topic

The works of many domestic and foreign scientists are devoted to the study of the clustering of the tourist sphere which differ in the depth of scientific study of various aspects of the use of the cluster approach in this field. The scientist M. Monford suggested using the framework concept of a tourist cluster consisting in combination of the possibility of adjusting components, creating the possibility of forming a cluster where for the first time the significance of natural resources was substantiated as the basis for building a cluster in the tourist sphere and giving it a multi-faceted nature consisting in attracting different business entities to the activities in order to create and maintain a multiplicative effect [7].

The scientist M. Beni considers a tourist cluster from the standpoint of the complex interaction of its components aimed at creating a high-quality tourist product. Here, emphasis is placed on two aspects: the first aspect is to give decisive importance to natural resources and the recognition of geographical localization as the basis for creating a cluster, and the second aspect is the need to create favorable conditions in a separate territory for mutually beneficial cooperation of tourism enterprises and related industries [3].

The scientist M. Rodriguez considers a tourist cluster from the position of interaction between specialized and related business entities located on the same territory creating conditions for the production and supply of tourist services and related services of enterprises operating in related industries (transport, catering and communications) [9].

The point of view of Russian scientists is distinguished by its applied nature which is characterized by the development of real proposals for the formation of a tourist cluster in a certain recreational area which has unique climatic conditions with justification for solving a complex of tasks related to the study of the development features of the tourism sector, the use of recreational areas, the determination of factors affecting on the development of a tourist cluster, the study of the conditions and potential of clustering sphere, efficiency of the tourism cluster, the definition of synergistic effect, the justification of activities for the development of a tourist cluster [1, 2, 4, 5, 6, 8, 10]. Special attention is paid to the development of the methodological approach to assessing the possibility of forming the tourism cluster and identifying the results of its operation with a positive impact on various spheres of life in the region. In this regard, works of a number of domestic scientists deserves attention and is of some interest. Thus Iu.P. Bachinina proposes to assess the prospects of the work of a tourist cluster on the basis of comparing the growth rate of industry growth and the rate of cluster growth under the condition of a high share of creation and supply of a quality tourist product [1]. This indicator allows us conclude about the significant importance of the tourism cluster for the region and the feasibility of applying the system of institutional measures relative to it from the state structures.

The scientist A.A. Battalova considers it necessary to evaluate the activities of a tourist cluster using a system of quantitative and qualitative indicators which will determine the localization coefficients characterizing the importance of the tourist sphere in the regional economy and reach the calculation of the integral indicator of the clustering of the tourist sphere [2]. It should be noted that this approach is characterized by systemacity of the calculation base which includes a group of indicators that can justify the possibility of creating a cluster and evaluate its performance in a period of time. However, the qualitative assessment of the clustering of the tourist sphere based on the study of the geographical location of the territory and its natural resource potential depends on the level of objectivity of the researcher which in this approach makes it necessary to focus on the need to use certain criteria also when conducting a qualitative assessment which will significantly reduce the level of subjectivity in making a final decision.

M.V. Vinokurova suggests using the approach based on the use of quantitative and qualitative indicators to assess the potential of the clustering of the tourist sector. In this case, the quantitative component of the approach includes an indicator of the growth rate of small and medium-sized enterprises operating in this area, and the qualitative one is based on the assessment of natural, material, financial, infrastructural, and labor resources [4]. Attention is drawn to the subjectivity of the quantitative component of this approach which includes only one indicator. In addition, considering the subjects of small and medium-sized businesses which work only in the field of tourism, the possibility of taking into account the activities of enterprises of related sectors of the economy working in tourism is excluded, thereby violating the principle of equal interaction of business entities.

The scientist A.V. Iermishina considers it expedient to conduct research on the possibility of creating a tourist cluster by applying a system of quantitative and qualitative indicators. In particular, the research process includes three stages: analysis of competitive stability, analysis of conditions of competitive stability and analysis of cluster stability [6]. At the same time, the first stage studies the degree of specialization of the sphere, the second – provides for the study of the natural resource base, the third – provides an assessment of the degree of strategic importance of the cluster. It should be noted that the conclusions on the target installation of the stages are carried out on the basis of a gradation of indices 0,50-1,00 which imposes certain difficulties in substantiating both the intermediate conclusions on the stages of studying the situation and the final decision on the performance of the cluster, given that that the indicators used are characterized by different sizes and to bring them into a comparable look, it is necessary to use the qualimetry method. The study of the possibility of clustering the tourism sector on the basis of an assessment of its potential is proposed by E.A. Smirnova, using partial and integral indicators [10]. In this case, the focus is on the study of specialization and localization of the tourist sphere of the region. The approach allows obtain project estimates indicating the possibility of creating a tourist cluster. However, the final decision is made without checking the obtained result for adequacy and reproducibility which characterizes a certain share of subjectivism. As you can see, there are different points of view regarding the identification of the clustering of the tourist

sphere differing in the logic of thinking and having certain disadvantages which allows the author present his own point of view regarding the identification of the clustering of the tourist sphere.

3. Experimental studies

3.1. Methodological approach

The implementation of cluster initiatives in the tourist sector requires a comprehensive study of the possibilities of its creation and development which involves the study of issues related to the assessment of the natural resource potential of a recreational area, the synergistic effect in the regional economy, the real level of development of the tourist sector in the region in the current period of time, cooperation of economic entities in a separate recreational area, attracting of small and medium-sized businesses of adjacent areas to the activities of a tourist cluster, and the attractiveness of the sphere of tourism in the region in order to attract investment in a tourist cluster. It is advisable to take an objective decision regarding the creation of a tourist cluster in a certain recreational area based on the systematization of indicators characterizing the prospects of cluster activities in the long term which implies the use of the methodological approach. At the same time, it is important not only to obtain a system of indicators, but an objective interpretation with the involvement of a mathematical apparatus which makes it possible to prove the effectiveness of a cluster in the tourist sector. In this regard, the authors present their own methodological approach to assessing the identification of a tourist cluster which has a quantitative and qualitative focus based on the use of the integral method which allows determine a single resulting indicator and draw conclusions about the possibility of creating a cluster using an identification scale calculated on the basis of the mathematical formula of M. Sturges. The used baseline of the initial data is selected in such a way as to obtain dimensionless coefficients which greatly simplifies the interpretation of the obtained results and eliminates the need to use an additional mathematical tool to bring in a comparable form. Groups of the indicators include an equal number of single indicators which as A.A. Garmider notes 'eliminates the manifestation of the effect of dispersion of the integral index as a result of violation of the weight significance of group indicators' [5, p. 56]. This means that the number of calculated indicators shall meet the principle of optimality according to which the number of groups of indicators does not exceed 7, the number of indicators in the group – 3-6, the amount of background information on the indicators used – 10-25.

The methodological approach is focused on determining the integral indicator for identifying the clustering of the tourist sector for which six groups of indicators are used, the name of which determines the target setting of the settlement process for this group: the natural and resource potential of a recreational area, localization, specialization, heterogeneity, competitiveness, per head production in the tourist sphere. Under the assessment of the natural-resource potential of a recreational area, it is advisable to understand the identification of the composition of the natural resources of a given territory capable of being used in economic activity. It should be noted that these resources are characterized by specific features that can have a positive impact on the process of restoring the physical condition of a recreant. In addition, they differ in a certain approach in their use, are prone to the accumulation of negative effects of human economic activity which can lead to a violation of the quality state. In this regard, it is advisable to proceed from the availability of the ability of natural resources to self-purification and dispersion of pollutants which is possible if the ecological capacity exceeds the volume of pollutants. Assessment of the natural and resource potential of a recreational area is carried out by an expert method subject to the mandatory use of the concordance factor which allows determine the degree of consistency of the experts' points of view when determining the indicators characterizing the security of the area with natural resources. At the same time, in order to increase the objectivity of the expert assessment results, their number should be 3-5 people, the presented estimates vary from 0 to 1, with the submission of detailed interval estimates: 0,00-0,333 – low, 0,334-0,666 –average and 0,667-1,00 – high availability of natural resources in a recreational area. The natural and resource potential was proposed to be assessed by indicators: climatic conditions (air temperature, sea temperature, atmospheric pressure, precipitation, climate continentality), ecological conditions (air and surface water pollution), natural (uniqueness of natural landscapes, species diversity of plant and animal world). This will allow present a differentiated opinion of experts and increase the level of objectivity of the resulting indicator:

$$I_p = (I_{ac} \cdot I_{en.} \cdot I_{nc})^{0,333}; \tag{1}$$

where I_{ac}, I_{en}, I_{nc} − are integral coefficients of availability of climatic, environmental and natural conditions in a recreational area.

Localization is considered from the point of stopping economic activity in a certain recreational area which is reflected in the use of its resources to create a tourist product with characteristic features specific to this territory. In this case, it is advisable to identify the components of the natural and resource potential that can be used to develop the activities of both tourism enterprises and related industries which contributes to an increase in the quality of tourist services provided. Localization of the tourist sector has been proposed to explore on the basis of indicators: localization of the supply of tourist services of a recreational area, localization of investments in the tourism sector of a given territory, localization of enterprises of related industries working in the field of tourism. The calculation of these indicators is carried out using statistical data: the number of enterprises in the tourism industry and related industries operating in this recreational area, the volume of investment in the tourism industry as a whole and a separate territory, the volume of production of tourist services in this territory. Then the integral indicator of the localization of the tourist sector in a recreational area can be determined:

$$I_l = (P_{ts} \cdot N_{er} \cdot U_{it})^{0,333}; \tag{2}$$

where P_{ts}, N_{er}, U_{it} − are indicators of the localization of the offer of tourist services, the number of enterprises in related sectors of the economy working in the field of tourism, investments in the tourist sector of a recreational area.

Specialization is considered from the position of focusing activities on a limited set of areas of economic activity due to the capabilities of enterprises operating in this recreational area. In this regard, it is advisable to focus on the specialization of enterprises providing tourist services depending on their equipment, fixed assets, and staff qualifications. The calculation of the indicator of specialization is based on the availability of statistical data on the quantitative composition of objects that provide tourists with sanatorium and resort services and rehabilitation services when placed in specialized and collective accommodation facilities. Then the integral indicator of the specialization of tourism in a recreational area can be determined as follows:

$$I_s = (S_{tp} \cdot S_{cc} \cdot S_{cm})^{0,333}; \tag{3}$$

where S_{tp}, S_{cc}, S_{cm} − are indicators of specialization in terms of the production of tourist services in sanatorium-resort institutions, specialized and collective means of accommodating tourists.

As A. Pashentsev notes, the heterogeneity characterizes the development trend of the tourist sector in a period of time, has a stimulating effect on the formation of a tourist cluster in the event of a positive trend in the tourist market which is reflected in the development of infrastructure facilities providing related services to tourists [8]. To calculate the heterogeneity indicator, it is necessary to have statistical data on the number of leisure facilities for tourists, health workers working in medical institutions located in recreational areas, passenger transportation (water, air, land transport):

$$I_r = (M_{lf} \cdot N_{hw} \cdot M_{pt})^{0,333}; \tag{4}$$

where M_{lf}, N_{hw}, M_{pt} – are indicators of heterogeneity in terms of the number of leisure facilities for tourists, health workers, and passenger transportation.

Per head production of tourist services provides information on the prospects for development of tourism in a certain recreational area, allows evaluate the efficiency of performance of enterprises of the tourist industry. To determine the integral indicator of per head production in the tourist sector, it is necessary to have statistical information about the valuation of tourist services, the profits received by the tour desk, the catering industry (restaurants, cafes, bars, bistros) operating in a recreational area:

$$I_d = (C_{pf} \cdot C_{cr} \cdot C_{ct})^{0,333}; \tag{5}$$

where C_{pf}, C_{cr}, C_{ct} – are indicators of per head production in terms of profits of excursion offices, catering, the cost of tourist services.

Competitiveness is considered in terms of the ability to meet the needs of tourists in the provision of high-quality tourist product which has a positive impact on the increase in tourist flow and profits of enterprises operating in the field of tourism. To calculate the integral indicator of the competitiveness of the tourism industry, it is necessary to have statistical data on the number of tourists receiving tourist services in the tourist cluster, the number of innovative tourist product, the total number of tourists for the studied period of time:

$$I_k = (K_{at} \cdot K_{cc} \cdot K_{rm})^{0,333}; \tag{6}$$

where K_{at}, K_{cc}, K_{rm} – are indicators of attractiveness, concentration, and rotation of the market of tourist services.

Considering the indicators calculated by formulas 1-6, it is possible to determine the integral indicator for identifying the clustering of the tourism industry:

$$I_к = {}^6\sqrt{I_p \cdot I_l \cdot I_s \cdot I_r \cdot I_d \cdot I_k}; \tag{7}$$

where I_p, I_l, I_c, I_r, I_d, I_k – are integral coefficients for assessing the natural resource potential of recreational areas, localization, specialization, heterogeneity, per head production, and competitiveness of recreational tourism.

4. Approbation of methodical approach

For the final conclusions regarding the identification of tourist clustering, the authors developed an identification scale based on the Sturges formula using a range of statistical information on integral indicators.

Table 1. Scale of assessment of identification of a clustering of the sphere of tourism.

Threshold values of an interval	Identification	Qualitative characteristic of an interval of values
0,000-0,250	low	Insufficient quantitative and qualitative level of tourist infrastructure facilities
0,251-0,500	average	The average level of concentration of the tourist enterprises, predominance of the restoration of physical forces over the sanatorium treatment
0,501-0,750	good	Favorable level of concentration of the tourist enterprises, activity of small business in the sphere of tourism and allied industries of economy
0,751-1,000	high	High level of concentration of the tourist enterprises, favorable investment climate, high level of development of tourist infrastructure

Approbation of author's methodical approach to assessment of identification of a clustering of the tourist sphere on the example of the Republic of Crimea with conducting check of the received results on objectivity, reproducibility by Pearson's criterion is carried out.

Table 2. Integrated indicators of identification of a clustering of the tourist sphere of the Republic of Crimea.

Region of the Crimea	Integrated indicators of identification				Settlement $K_п$
	2015 year	2016 year	2017 year	2018 year	Basic $K_п$
South careful	0,837	0,902	0,893	0,931	1,217>0,10
Southwes	0,811	0,841	0,792	0,829	0,983>0,10
Southeast	0,769	0,792	0,8741	0,793	0,897>0,10
Western	0,562	0,512	0,534	0,512	0,736>0,10
East	0,612	0,672	0,681	0,721	0,704>0,10
Central	0,434	0,412	0,495	0,447	0,723>0,10

5. Conclusions

Identification of a clustering of the tourist sphere of the Crimea on the basis of the author's methodical approach based on an integrated method of calculation of a resulting indicator is carried out. The carried-out approbation of this approach on the example of the tourist sphere of the Republic of Crimea showed positive

results that is confirmed with check by Pearson's criterion. Differentiation of regions of the Crimea on extent of identification of a clustering of the tourist sphere is carried out.

6. Acknowledgments

References

[1]   Bachinina Yu P 2007 Clustering as possibility of ensuring competitiveness of the oil and gas region *Neftegazovoye Delo Online magazine* **1** URL:http://ogbus.ru /authors/Bachinina/ Bachinina_1.pdf

[2]   Battalova A A 2013 Assessment of potential of a clustering of the industry *Online magazine "Naukovedeniye"* **6** 1-8

[3]   Beni M 2003 Globalizao do Turismo: Megatendencias do Sectore a Realidade Brasileira Editora Aleph (Sao Paulo)

[4]   Vinokurova M V 2006 Competitiveness and potential of a clustering of the branches of economy of the Irkutsk region *All- Russian economic magazine "Eko"* **12** 73-91

[5]   Garmider A A 2015 Approach to assessment of synergetic effect of a clustering of the tourist sphere of the region *Theory and practice of social development* **14** 54-56

[6]   Ermishina A V Competitiveness of the region http://www.ecsocman.edu.ru

[7]   Monford M Travel Tourism Competitiveness Report 2015 WEF http:// www3.weforum.org/ docs WEF_TT_Competitiveness_Report_2015.pdf

[8]   Pashentsev A I, Garmider A A 2018 Model of management of infrastructure ensuring yacht tourism *Economy of construction and environmental management* **3** 19-29

[9]   Rodrigues A B 2003 Turismo rural: praticase perspectivas Contexto (Sao Paulo)

[10]   Smirnova E A 2010 Cluster approach to assessment of a regional innovative system *Economy and management* **6** 117 –124