Tourism Potential of the Regions in the Conditions of European Integration

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Abstract

In the formation of a socially oriented economy in the context of European integration, the development of tourism is one of the priority areas that positively affects the socio-economic situation of the country as a whole and its regions in particular, stimulates important economic activities and strengthens Ukraine's positive image in Europe and the world. In view of this, in the framework of a thorough study of the tourism industry it is necessary to assess its potential. This study proposes an assessment of tourism potential in the regional context, which consists of consistent implementation of six steps, namely: first, the definition of research objects for which the tourism potential is determined; secondly, the formation of a set of basic features for assessing tourism potential of certain objects; thirdly, the collection of information on individual indicators, which are selected to assess the tourism potential of the objects; fourth, the calculation of parametric indices by comparing the indicators of each individual object of study (region) with the average values in the set of objects under study; fifth, the definition of a generalized index of tourism potential of the region; sixth, grouping regions by the values of the generalized index of tourism potential. Execution of the stated algorithm involves the use of various methods, in particular, statistical, graphical, parametric, the analysis of hierarchies, matrix and cartographic. Approbation of the proposed assessment of tourism potential at the regional level in Ukraine allowed to group regions according to the values of the generalized index of tourism potential, which can be used as a basis for developing measures to increase and enhance their tourism potential in Ukraine in terms of European integration.

Key words:
tourism potential, region, European integration, competitiveness, regional economy, sustainable development.

1. Introduction

TIntegration processes today are extremely important for Ukraine given their positive impact on the development of our country and its individual areas of activity in the context of job creation, raising social standards, reviving trade relations, cooperation in various activities, including tourism sphere. The study of the tourism industry in the context of integration into the European Union shows a number of advantages, including a good geographical location, diversity and favorable climatic conditions, a large number of cultural and historical monuments, a successful combination of tourist, natural and recreational resources.

In the context of European integration, the tourism sector is of great importance and has a significant impact on the economic situation of the country. Therefore, its development should be given special attention, because the tourism industry has a high profitability, investment attractiveness due to their rapid payback, social orientation. Among the main directions of tourism development in Ukraine, the formation of a highly competitive tourism product in the European and world markets, to satisfy the population in tourism services, the implementation of integrated development, ensuring socio-economic interests and more, should be noted.

However, the current economic development of the country, manifestations of external factors negatively affect the tourism industry of regions and Ukraine as a whole, which leads to the loss of potential in this area compared to European countries due to inefficient use of tourism potential of Ukraine. Therefore, the issue of its assessment in the regional context is currently relevant and timely.

2. Literature review

Many domestic and foreign scientists have devoted their research to the peculiarities of the national and regional economy, including tourism potential, in particular: Anishchenko V.O. (2008) [1]; Khanin S. [2]; Derhaliuk M. (2021) [3]; Eidelman B. (2016) [4]; Evgrafova L. (2021) [5]; Kazakov M. (2018) [6]; Khanin S. (2021) [7]; Kholiavko N. (2021) [8]; Zhavoronok A. (2021) [9]; Kuralbayev A. (2016) [10]; Lazarenko Yu. (2020) [11]; Li Y. Xie J. (2021) [12]; Margasova V. (2011) [13]; Sakun O. (2017) [14]; Michalkova A. (2021) [15]; Napook P. (2016) [16]; Nazarov M.I. (2020) [17]; Popelo O. (2021) [18]; Ristic D. (2019) [19]; Rygalova M.V. (2020) [20]; Shkarlet S. (2017) [21]; Gonta I. (2016) [22]; Dubyna M.V. (2017) [23]; Suslov A. (2020) [24]; Tulchynska S. (2021)

[25]; Zabashtanska T. (2017) [26]; Zabashtanskyi M. (2019) [27] and others.

The authors of the article [5] analyzed resource potential of agricultural tourism in the region and substantiated the relevance of rural tourism. Researchers have analyzed natural, cultural, historical and infrastructural potential of tourism development in the Kostroma region and considered the main negative factors influencing the development of rural tourism. Based on the analysis of tourism potential, the authors identified the regions with the greatest and least potential for the agro tourism development and proposed directions for the development of the most promising types of tourism in the Kostroma region, taking into account the region. The research [12] proposed a new method for selecting potential regions of development based on the peculiarities of tourism flow structures and the relationships between picturesque regions supported by GPS and social networking models. The main contribution of the proposed method is the connection of GPS methods with models of social networks to support deeper forms of quantitative spatial analysis in tourism research.

In the article [20] the corresponding topic is studied, which is connected with the study and popularization of regional tourism with the help of geographical information technologies. The ultimate goal of the project is online access to GIS and thematic maps. This will provide information about touristic routes, museums as potential objects to visit, and will allow you to build a route, taking into account individual needs of tourists. The article [24] is devoted to the study of natural, historical, cultural, religious, architectural and other monuments studied in the process of local works concentrated in the Zainsky district of the Republic of Tatarstan, which are considered a promising basis for active development of tourism and recreation in the region. The conclusion about necessity of reconstruction, restoration of heritage objects, improvement of settlements, construction of ethnographic complexes is made.

The main purpose of the study of Kazakh scientists [17] is to analyze the potential of historical and cultural tourism resources of Kashkadarya region, as well as to determine its regional features. The authors identified the features of the classification of tourism and recreational resources based on research by other scientists. It is established that Kashkadarya has a huge potential due to its cultural heritage and natural and recreational potential.

Serbian scientists [19] note that in the tourism area of Kopaonik in Serbia there are numerous mineral and thermal springs (TM) with an initial temperature of 21 to 78.7 °C The main purpose of the study is to determine heat capacity, capacity and energy potential of 19 TM in the spring at 4 resorts in the region. This article confirms the hypothesis that in the touristic region of TM "Kopaonik" sources have a large capacity, as well as energy and heat potential. The current method of determining energy potential and heat capacity, based on the flow, temperature at the inlet and outlet of TM sources, was used in a region with rich geothermal sources, and the results were converted into fossil fuel energy. In the article [6] organizational and methodological approaches to monitoring were improved within the complex system of diagnostics of peripheral territories of the region on the basis of analytical criteria of tourism and socio-economic potentials. The scientific novelty of this article is the development of elements of a systematic scientific and diagnostic methodology for the potential development of peripheral areas based on the analysis of both socio-economic and tourism factors.

The authors of the article [16] from Thailand investigated that there are many tourism attractions in the Lanna region of Thailand. However, with the growing structure of the aging population, each place should unleash potential for older visitors. Scientists propose to use a system of fuzzy systems to assess the readiness of the touristic place. Achieving the goal is done by changing the appropriate neurofuzzy structure for the data set. The study of scientists [4] is devoted to research of problems of the territorial brands formation in the Russian Federation and their solution in modern conditions. The authors note that the creation of local brands is a long-term creative process that requires huge investments, but gives a corresponding return in the form of increased financial income from the tourism development the region.

The aim of the work of Slovak scientists [15] is to study the specific situation in the institutional support of tourism in Slovakia, with special respect for the most important and most vulnerable tourist regions in a crisis, their identification is part of the article. The results of the study show that the importance of regional competitiveness in tourism for changing employment (which is a regional component) is very different, despite well-established management of the destination, it is even negative. Kazakh scientists [10] note that the tourism industry is a priority for the Republic of Kazakhstan. The article focuses on the development of inbound and domestic tourism, the development of exciting routes of cultural, ecological, equestrian and recreational areas. The purpose of the study is the formation of spiritual-historical, patriotic consciousness.

3. Methodology

The most common method of assessing the tourism potential of the region is to rank the values of the main indicators of tourism in the regions and to determine the place of a particular region by comparing the sum of the ranks of all indicators. The authors of this study propose to

assess tourism potential of the regions on the basis of the generalized integral calculation.

The purpose of this study is to determine the state and dynamics of tourism potential of the regions of Ukraine in terms of European integration. To achieve this goal:

- the algorithm of procedure of the estimation of the tourism potential level of regions in the conditions of European integration is offered;

- the list of estimation parameters by means of which parametric indices are calculated is substantiated;

- the generalized index of tourism potential of regions is defined;

- on the basis of the received calculations the regions are grouped according to the level of tourism potential.

The following methods were used to obtain results:

- statistical, which was used to form indicators to assess tourism potential of the region;

- graphic, which allowed to depict the algorithm for assessing the level of tourism potential of the region;

- a modified version of the parametric method used to estimate the parametric indices on the basis of which the

generalized index of tourism potential of the region was calculated;

- the analysis of hierarchies as an element of the theory of fuzzy sets, which allowed to eliminate subjectivity when using the parameters of weight in the calculation of the formula to determine the generalized index of tourism potential of the region;

- matrix method, which is used for typology of regions in accordance with the level of the generalized index of tourism potential of regions;

- cartographic, which contributes to the visual representation of the clustering of regions by values of the generalized index of tourism potential of regions.

4. Results

To assess the level of tourism potential of the regions of Ukraine, we propose to use the following algorithm (Fig. 1).
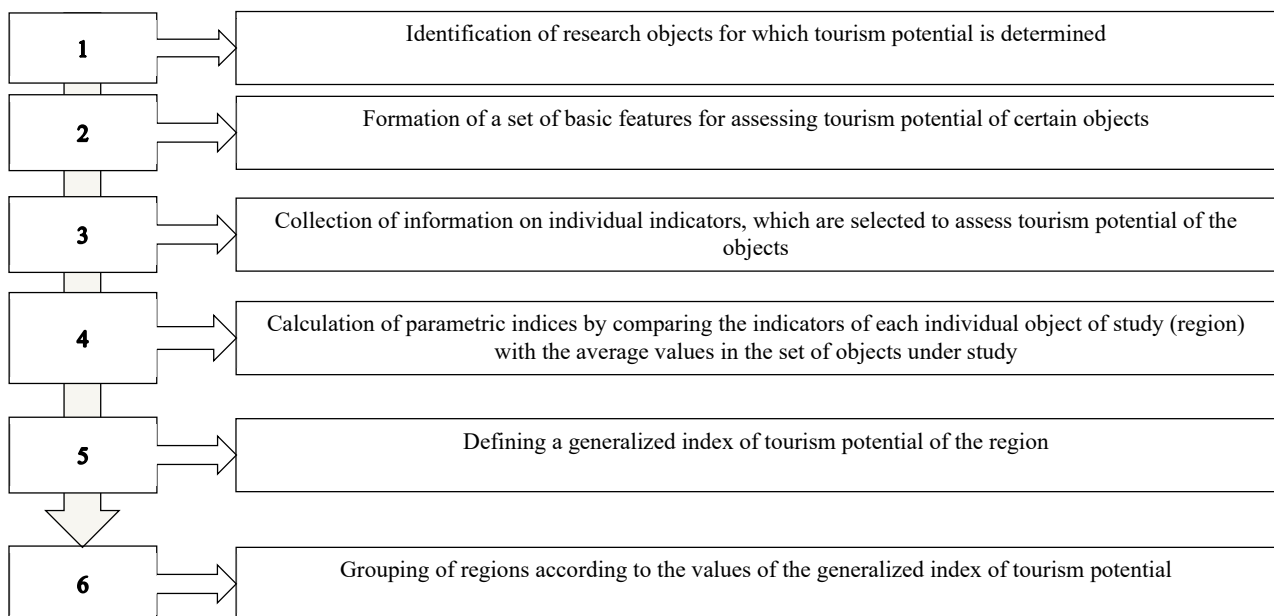

Fig. 1 Procedure for assessing the level of tourism potential of regions in terms of European integration.
(Source: suggested by the authors).

Thus, using the above algorithm, we determine that the objects of study will be all regions of Ukraine, except the Autonomous Republic of Crimea and Sevastopol due to lack of statistical information as a result of the annexation of part of Ukraine.

To assess tourism potential of the regions in terms of European integration, we offer the following assessment parameters:

- the amount of income from tourism, thousand UAH;

- number of tourists served by tour operators and tour agents, persons;

- number of places in collective accommodation facilities, places;

- number of cultural and historical monuments, units;

- area of natural tourist resources, km^2;

- number of subjects of tourist activity, units.

This choice of indicators is due, firstly, to the fact that it takes into account all the main elements of tourism

potential, namely, performance indicators of tourism enterprises, infrastructure component, natural and anthropogenic tourism resources; and, secondly, the fact that they are contained in statistics, i.e. available for easy retrieval and operational use.

To assess tourism potential of the regions in terms of European integration, we propose to use a modified version of the parametric method, the convenience of which is that to determine it, quantitative indicators are used, which are taken from official statistical sources of information. Based on this, we propose to calculate the generalized index of tourism potential of the regions in the context of European integration as follows:

$$I_{gi} = \sqrt{\left(n_1 \cdot I_{inc} + n_2 \cdot I_{nts} + n_3 \cdot I_{nte} + n_4 \cdot I_{npaf} + n_5 \cdot I_{nchm} + n_6 \cdot I_{antr}\right)^2} \quad (1)$$

where Igi is a generalized index of the region's tourism potential;

I_{inc} – parametric index of income from tourism;

I_{nts} - parametric index of the number of tourists served by tour operators and travel agents;

I_{nte} - parametric index of the number of tourism entities;

I_{npaf} – parametric index of the number of places in collective accommodation facilities

I_{nchm} - parametric index of the number of cultural and historical monuments;

I_{antr} - parametric index of the area of natural tourism resources;

$n_1, n_2, n_3, n_4, n_5, n_6$ – weighting factors of each of the parameters.

Parametric indices are calculated by comparing the values of the parameters for each object from the average value.

To level the subjectivity in establishing weights, this technique uses the method of hierarchy analysis (MHA), which eliminates inconsistencies and agrees with experts with a high level of accuracy of further mathematical calculations based on the hierarchical composition principle. The result of pairwise comparisons is a matrix of pairwise comparisons a (i, j), the element of which is the intensity of the manifestation of the hierarchy element relative to the element of hierarchy j. This intensity is determined by a nine-point scale (Table 1).

Table 1: Scale of relative significance of the object

Significance	Value
1	Equivalence of objects
3	Weak predominance of the element over j
5	Significant predominance
7	Strong predominance
9	Maximum possible predominance
2, 4, 6, 8	Intermediate values

(Source: generated by the authors).

In this case, if when comparing the element i with the element j, we obtain a (i, j) = b, then when comparing the element j with the element I, we obtain: a (j, i) = 1/b.

Thus, a matrix of pairwise comparisons is formed. Then the put points on each indicator are multiplied and from this result the root of degree x is calculated, where x is the number of indicators which are analyzed (in that case it is a root of the sixth degree). Then there is the sum of the obtained roots, as well as the share of each root in this amount. The obtained result will show the relative weight of a certain indicator in the overall assessment. Based on the above, we construct a matrix of pairwise

comparisons, the values of the components of which represent the agreed opinion of experts on the impact of selected indicators on tourism potential of the regions (Table 2).

The obtained values of relative weight with the help of a matrix of pairwise comparisons make it possible to formulate a formula for calculating a generalized index of tourism potential of regions in terms of European integration, which based on formula 1 and will take the following form:

$$I_{gi} = \sqrt{\left(0.27 \cdot I_{inc} + 0.16 \cdot I_{nts} + 0.09 \cdot I_{nte} + 0.10 \cdot I_{npaf} + 0.20 \cdot I_{nchm} + 0.18 \cdot I_{antr}\right)^2} \quad (2)$$

Table 2: Matrix of pairwise comparisons of the impact of estimated indicators on tourism potential of regions in terms of European integration

Indexes	I_{inc}	I_{nts}	I_{nte}	I_{npaf}	I_{nchm}	I_{antr}	The value of the product	The value of the root	Relative weight
1	1,00	1,65	5,95	4,25	1,50	2,05	128,30	2,25	0,27
2	0,61	1,00	3,70	1,80	0,82	1,40	4,66	1,29	0,16
3	0,35	0,67	1,00	0,79	0,68	1,10	0,14	0,72	0,09
4	0,45	0,71	1,51	1,00	0,83	1,05	0,42	0,87	0,10
5	0,71	1,38	5,45	2,91	1,00	1,21	18,80	1,63	0,20
6	0,61	1,11	5,35	2,65	0,91	1,00	9,55	1,46	0,18
Total	-	-	-	-	-	-	-	8,22	1,00

(Source: calculated by the authors).

Then, using Formula 2, a generalized index of tourism potential in terms of European integration is calculated for the regions identified at the first stage of the algorithm (Table 3).

Table 3: The value of the aggregate index of tourism potential of regions in terms of European integration in 2020

Regions	I_{inc}	I_{nts}	I_{nte}	I_{npaf}	I_{nchm}	I_{antr}	Generalized index of tourism potential of the region	Ranking of regions according to the generalized index of tourism potential of the region
Vinnytsia	0,08	0,31	0,32	0,30	0,83	1,07	0,41	16
Volyn	0,09	0,29	0,25	0,27	1,72	0,42	0,44	14
Dnepropetrovsk	0,23	0,61	0,97	1,29	0,62	0,99	0,71	6
Donetsk	0,05	0,11	0,26	0,39	0,47	0,37	0,26	23
Zhytomyr	0,07	0,17	0,18	0,37	1,36	1,11	0,40	17
Transcarpathian	0,11	0,29	0,39	1,08	1,09	0,37	0,49	11
Zaporizhye	0,16	0,89	1,74	0,96	0,61	0,92	0,84	5
Ivano-Frankivsk	1,08	3,09	0,26	1,34	0,80	0,71	1,23	3
Kiev	0,13	0,17	0,67	0,53	1,98	0,97	0,61	10
Kirovohrad	0,12	0,36	0,18	0,24	0,53	0,68	0,27	22
Luhansk	0,04	0,10	0,14	0,27	0,45	0,35	0,21	25
Lviv	0,57	1,18	0,99	1,95	1,27	1,91	1,17	4
Mykolayivska	0,22	0,28	1,62	0,44	0,87	0,73	0,67	8
Odessa	0,54	1,46	2,82	1,47	1,07	1,29	1,37	2
Poltava	0,08	0,49	0,32	0,61	0,76	1,07	0,45	13
Rivne	0,07	0,14	0,22	0,34	1,69	0,58	0,38	19
Sumy	0,06	0,25	0,19	0,28	0,99	0,84	0,32	20
Ternopil	0,07	0,19	0,16	0,38	0,58	0,55	0,24	24
Kharkiv	0,31	0,70	0,66	0,77	0,69	1,23	0,63	9
Kherson	0,27	0,30	1,83	-,56	0,78	0,87	0,69	7
Khmelnytsky	0,08	0,38	0,12	0,52	0,93	0,98	0,39	18
Cherkasy	0,08	0,18	0,39	0,40	1,03	1,02	0,42	15
Chernivtsi	0,11	0,37	0,12	0,54	0,42	0,39	0,29	21
Chernihiv	0.06	0,26	0,27	0,38	1,34	1,39	0,46	12
Kyiv city	15,02	7,49	6,59	2,79	0,09	0,48	5,91	1

(Source: calculated by the authors).

Analysis of the data given in Table 3 shows that the highest value of the generalized index of tourism potential of the region in terms of European integration among all regions of Ukraine is in Kyiv, which is expected, as the capital is a leader in such indicators as income from tourism; the number of places in collective accommodation facilities; the number of tourists served by tour operators and travel agents and the number of tourism entities. As a result, the value of the generalizing index exceeds the similar generalizing index of Odessa region, which is the second in the ranking of regions more than 4 times. It should be noted that only two other regions except Odesa (Ivano-Frankivsk and Lviv) have the value of the generalizing index higher than one, i.e. they exceed the average value in Ukraine. This state of affairs demonstrates the significant differentiation of the regions of Ukraine in terms of tourism potential.

Here is the value of the generalized index of tourism potential of the region in terms of European integration for previous years (Table 4).

Table 4: The value of the generalized index of tourism potential of the region for 2018-2020

Regions	The value of an integrated indicator of tourism potential of the region					
	2018	rank	2019	rank	2020	rank
Vinnytsia	0,46	15	0,44	16	0,41	16
Volyn	0,47	14	0,49	13	0,44	14
Dnepropetrovsk	0,81	6	0,74	7	0,71	6
Donetsk	0,27	23	0,28	23	0,26	23
Zhytomyr	0,41	18	0,43	17	0,40	17
Transcarpathian	0,55	11	0,53	11	0,49	11
Zaporizhye	0,86	5	0,9	5	0,84	5
Ivano-Frankivsk	1,27	3	1,32	3	1,23	3
Kiev	0,70	8	0,69	9	0,61	10

Kirovohgrad	0,23	25	0,26	24	0,27	22
Luhansk	0,25	24	0,23	25	0,21	25
Lviv	1,21	4	1,26	4	1,17	4
Mykolayivska	0,69	9	0,72	8	0,67	8
Odessa	1,43	2	1,48	2	1,37	2
Poltava	0,48	13	0,47	14	0,45	13
Rivne	0,35	20	0,31	21	0,38	19
Sumy	0,37	19	0,40	19	0,32	20
Ternopil	0,28	22	0,29	22	0,24	24
Kharkiv	0,65	10	0,66	10	0,63	9
Kherson	0,79	7	0,76	6	0,69	7
Khmelnytsky	0,45	16	0,42	18	0,39	18
Cherkasy	0,44	17	0,45	15	0,42	15
Chernivtsi	0,33	21	0,34	20	0,29	21
Chernihiv	0,49	12	0,50	12	0,46	12
Kyiv city	6,26	1	6,37	1	5,91	1

(Source: calculated by the authors).

On the basis of the received results, it is expedient to carry out grouping of regions on a level of tourist potential in the conditions of European integration, for this purpose we suggest to allocate four groups:

the first - regions with the highest value of tourism potential of the region,

the second - with a high level of tourism potential of the region,

the third - with a low level of tourism potential of the region,

the fourth - with the lowest level of tourism potential of the region.

To assign certain regions to certain of the four groups, we use the matrix method. To establish numerical limits of the selected groups, it is necessary to determine the arithmetic mean of the aggregate index of tourism potential of the region among the 25 regions surveyed and the standard deviations of the aggregate indices for groups of regions, which values K_i are less than and greater than the mean.

Thus, the algorithm for assigning a region to a particular group will be as follows:

$$K_i \in \begin{Bmatrix} \left[K_{max}; K_{cp} + \delta_1 \right] \\ \left[K_{avg} + \delta_1; K_{avg} \right] \\ \left[K_{avg}; K_{avg} - \delta_2 \right] \\ \left[K_{avg} - \delta_2; K_{msn} \right] \end{Bmatrix}, \qquad (3)$$

$$\text{then } i \in \begin{cases} 1 \text{ group} - \text{regions with the highest value of the TPR} \\ 2 \text{ group} - \text{group regions with a high value of the TPR} \\ 3 \text{ group} - \text{group regions with low value of the TPR} \\ 4 \text{ group} - \text{group regions with the lowest value of the TPR} \end{cases}$$

where $K_{max(min)}$ – maximum (minimum) value of the generalized index of tourism potential of the region;

K_{avg} – the average value of the generalized index of tourism potential of the region;

δ_1 (δ_2) – standard deviations of the values of the generalized index of tourism potential of the region, which are more (less) K_s.

The following formulas are used to calculate standard deviations of the values of the generalized index of tourism potential of the region:

$$\delta_1 = \sqrt{(1:k) * \sum (K_s - K_{avg1})^2}, \text{ where } s=1,\ldots,\kappa; \qquad (4)$$

$$\delta_2 = \sqrt{1:(n-k) * \sum (K_{avg} - K_{avg2})^2}, \text{ where } s=1,\ldots,n-k \qquad (5)$$

where κ ($n - \kappa$) – the number of regions for which $K_s \geq K_{avg1}$ ($K_t \leq K_{avg2}$);

$K_s(K_t)$ – the value of the generalized index of tourism potential of the region in the regions for which $K_s \geq K_{avg1}$ ($K_t \leq K_{avg2}$);

K_{avg1} (K_{avg2}) – average values of the generalized index of tourism potential of the region in the regions for which $K_s \geq K_{avg1}$ ($K_t \leq K_{avg2}$).

Using the above formulas, we will group the regions according to 2020 (Table 5).

Table 5: Clusters of regions by the level of tourism potential of the region in terms of European integration

The name of the region according to the level of tourism potential of the region	Regions of Ukraine	The value of the generalized index of tourism potential of the region
Regions with the highest level of tourism potential of the region	Kyiv city	5,91
Regions with a high level of tourism potential of the region	Odessa Ivano-Frankivsk Lviv	1,37 1,23 1,17
Regions with a low level of tourism potential of the region	-	-
Regions with the lowest level of tourism potential of the region	Zaporozhye Dnepropetrovsk Kherson Mykolayivska Kharkiv Kiev Transcarpathian Chernihiv Poltava Volyn Cherkasy Vinnytsia Zhytomyr Khmelnytsky Rivne Sumy Chernivtsi Kirovohrad Donetsk Ternopil Luhansk	0,84 0,71 0,69 0,67 0,63 0,61 0,49 0,46 0,45 0,44 0,42 0,41 0,40 0,39 0,38 0,32 0,29 0,27 0,26 0,24 0,21

5,91

0,86

0,85

0,21

(Source: grouped by authors).

We obtain the following results: the first group in terms of the value of the generalized index of tourism potential includes Kyiv, the second - Odessa, Ivano-Frankivsk and Lviv regions, all other regions were in group of regions with the lowest level of tourist potential of the region.

4. Conclusions

The scientific novelty of this study is the method proposed by the authors to determine tourism potential of regions in terms of European integration, which involves determining the generalized index of tourism potential of the region taking into account the influence of weights by analyzing the hierarchies of parametric indices tourism resources and makes it possible to group regions by the level of the generalized index of tourism potential of the region in terms of European integration.

The authors presented a comprehensive methodology for assessing tourism potential of the region in terms of

European integration based on a model that reflects a particular region as an integrated system with the following components: tourism resources, businesses and tourism services.

This method of assessing tourism potential is objective in nature and is based on quantitative statistical indicators that cover all components of tourism potential.

Based on the approbation of the proposed method, the following conclusions can be made:

- only one region (Kiev) can be attributed to the regions with the highest level of tourism potential, the value of the summary index of which exceeds more than four times this indicator of the next ranked region;

- only three regions (Odesa, Lviv and Ivano-Frankivsk oblasts) have a generalized index value that exceeds one,

which indicates the existing regional disparity in tourism potential, while all other regions due to a small standard deviation are referred to the regions with the lowest level of tourism potential. .

- there is a change in parametric indices over the years, but at the same time no significant differences were identified that would dramatically affect the level of tourism potential of a particular region.

The obtained results are of practical importance, as the calculated generalized indices of tourism potential made it possible to distribute the regions according to their level of tourism potential, which will further develop areas of increasing and activating tourism potential of regions in European integration, which will be reflected in future research.

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