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## Ensuring the competitiveness of the coastal region based on the study of the impact of cluster analysis results on the development of tourism in the conditions of the regenerative ecosystem

### Забезпечення конкурентоспроможності приморського регіону на основі дослідження впливу результатів кластерного аналізу на розвиток туризму в умовах відновлювальної екосистеми

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#### Abstract


The purpose of the study is to determine the indicators' influence of regenerative ecosystem competitiveness cluster analysis on the development of tourism in the coastal region.


The method of cluster analysis allowed analyzing the Ukrainian region competitiveness in their territories' distinguishing with similar indicators in social and economic development. This method was applied in the assessment process of the Ukrainian coastal region's competitiveness, which has direct territorial access to the sea. This grouping covered indicators from various industries, selected basically on an understanding of the constituent elements of competitiveness such as tourism, production, infrastructure, demography and local finances. It was considered on the basis of a


#### Анотація


Мета дослідження - визначити вплив на основі результатів кластерного аналізу конкурентоспроможності на розвиток туризму в приморських регіонах в умовах відновлювальної екосистеми.


Метод кластерного аналізу дозволив проаналізувати конкурентоспроможність регіонів України, що базується на подібності показників соціального та економічного розвитку. Цей метод застосовувався в процесі оцінювання конкурентоспроможності приморських регіонів України, що мають прямий територіальний доступ до моря. Проведене групування охоплювало показники різних галузей, вибраних в основному на розумінні складових елементів конкурентоспроможності, таких як туризм,

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complex grouping of economic (business processes), social (human capital) and administrative-management (administration) indicators. This made it possible to reveal the similarity of the social and economic development of the coastal regions in dynamics, which have direct access to the sea and opportunities to conduct economic activities related to the maritime economy.

The cluster analysis results formed an appropriate informational and analytical justification for the guideline selection for the regional strategic policy of the regenerative ecosystems' competitive increasing as a basis for planning the actions of local authority bodies.

**Keywords:** region, region competitiveness, coastal regions, regenerative ecosystem, tourism development.

## Introduction

Decentralization process activation and current challenges require regions to search for advantages and disadvantages for competitive increasing at the local, the national and global levels. At the same time, it is important to observe the principles of sustainable development and preserve the balance of regional ecosystems, which is a prerequisite for balance at the national level. One of the most essential structural units is the coastal regions, which have significant advantages and create prerequisites for the balance of ecosystems. This affects the development of the tourism industry, which determines the prospects for development and forms the prerequisites for the intensive development of the regional ecosystem. After all, it is tourism that identifies the level of use of regional potential and determines additional opportunities for creating competitive advantages.

Moreover, the regenerative ecosystem competitiveness of the coastal regions is a prerequisite for the development of tourism, which in turn determines the future development prospects of the region. Cluster analysis, which is based on the selection and research of criteria and indicators, allows identifying structural units regarding the prospects of achieving a balanced regional ecosystem. This affects competitiveness and makes it possible to single out poles of growth. One of which for the coastal region is the tourism industry, which allows not only to identify potential opportunities but also to develop them in the future. This is due to the

виробництво, інфраструктура, демографія та місцеві фінанси, що розглядалося на основі складного групування економічних (бізнес-процесів), соціальних (людського капіталу) та адміністративних (адміністраційних) показників. Це дало можливість виявити схожість соціального та економічного розвитку прибережних регіонів динаміки, які мають прямий доступ до моря та можливості проводити економічну діяльність, пов'язану з морською економікою.

Результати кластерного аналізу сформували відповідне інформаційне та аналітичне обґрунтування для вибору орієнтирів для регіональної стратегічної політики розвитку конкурентних відновлювальних екосистем як основи для планування дій для органів місцевої влади.

**Ключові слова:** регіон, конкурентоспроможність регіону, прибережні регіони, регенеративна екосистема, розвиток туризму.

combination and synergy of human, natural, and other components of resource potential. Noted above actualizes the need to analyze the criteria and indicators of the cluster analysis of the regenerative ecosystem competitiveness of the coastal region. The purpose of the article is to study the results of the cluster analysis of indicators of the competitiveness of the region for tourism under the condition of ecosystem development of the coastal region

## Theoretical Framework or Literature Review

The study of the competitiveness of the coastal region allows for an empirical analysis of factors that influence the development of tourism business in the context of ecosystem development (Zhu et al., 2014; Conner, 2009; Filonich & Prachenko, 2007; Huang et al., 2017; Romanko, 2015) Since tourism business changes as a result of external factors, it may be a flexible system that needs definitions and development threats (Budeanu, 2016).

The choice of methodological approaches to the evaluation of regional competitiveness factors depends both on the purpose of the evaluation and on the geographic, natural-climatic, and economic features of the region's development (Huggins et al., 2013; Nazarov, 2022). Coastal regions, among others, distinguish features related to the geographical location along the coast of the sea, which affects the landscape, ground structure, temperature regime and weather in general, winds, vegetation, animal life

(Conner, 2009). Taking into account these features in the Use construction of the economic complex of the region allows you to use the specified features as competitive advantages that hinder the development of energy, tourism and recreation, sea transport (shipping), hotel and restaurant business, extraction of minerals from the sea shelf, aquaculture and fish production, etc. economy of the coastal region allows you to take into account changes in the development system (biological, economic, social, management system) in the overall development strategy of the region (Dominati et al, 2010; Hu, 2014; Rodríguez-López et al., 2019).

The continuation of previous research is urgent issues of the boundary expansion of strategic planning and forecasting of the regions of Ukraine. From the point of view of improving the relevant management activities at the city level (Pascal et al., 2023).

The issue of regional social, economic and ecological development is one of the main tasks of regional policy, especially in the context of the decentralization reform. It is the subject of research by several scientists. Scientists (Burkynskyi et al., 2021) offer different methodological approaches to assessing the balance of the regional ecosystem, the most common of which are sustainable models based on the transition from an integral indicator to a limited range of key indicators (results).

An important direction of research is conceptual and methodological approaches to assessing the regional economic development effectiveness and cooperation based on positive European and world experience, the introduction of relevant mechanisms and tools into the practice of managing the economic development of the regions of Ukraine (Burkynskyi, 2021).

The scientific research analysis made it possible to determine the shortcomings of existing approaches (Goryachuk & Osypov, 2022). These shortcomings include: integral indicators do not have a social and economic essence, the use of a significant number of indicators without highlighting key ones, and double accounting of indicators when calculating an integral indicator. Lack of assessment of trends in key indicators of development and assessments of development indicators in the context of threshold values, certain non-representative groups of indicators.

An important direction of research is the identification of indicators of the development of local territorial formations based on the

definition of certain strategic approaches (Gonchenko et al., 2020), which are based on the development of the local area such as physical environment or business development, or human resource development, or local public initiatives in the context of the development of the tourist business of the seaside region.

Fundamental studies are science-based works on architecture and urban economic space planning, which allows for the integration of landscape, architectural construction, financial and economic, marketing, and digital components as a triangle. The triangle is power – business – public (Gudz et al., 2020a)

It is worth mentioning that an important direction of research is the formation of the foreign economic potential of the region as a factor in the competitive development of the territory. As well as the assessment of the competitive development of the region and the principles of realizing the foreign economic potential of the region (Gudz, 2020; Gudz et al., 2020b).

The use of cluster analysis to study the efficiency of enterprise activity has become widely used (Tkacheva, 2012). At the same time, it should be noted that the issue of choosing and applying the cluster method for assessing the competitiveness of coastal regions remains unexplored.

The specified topic is the subject of own research, which is the basis for continuing scientific research in a certain direction (Bezkhlibna, 2017; 2018; 2020; Koval et al., 2018).

## Methodology

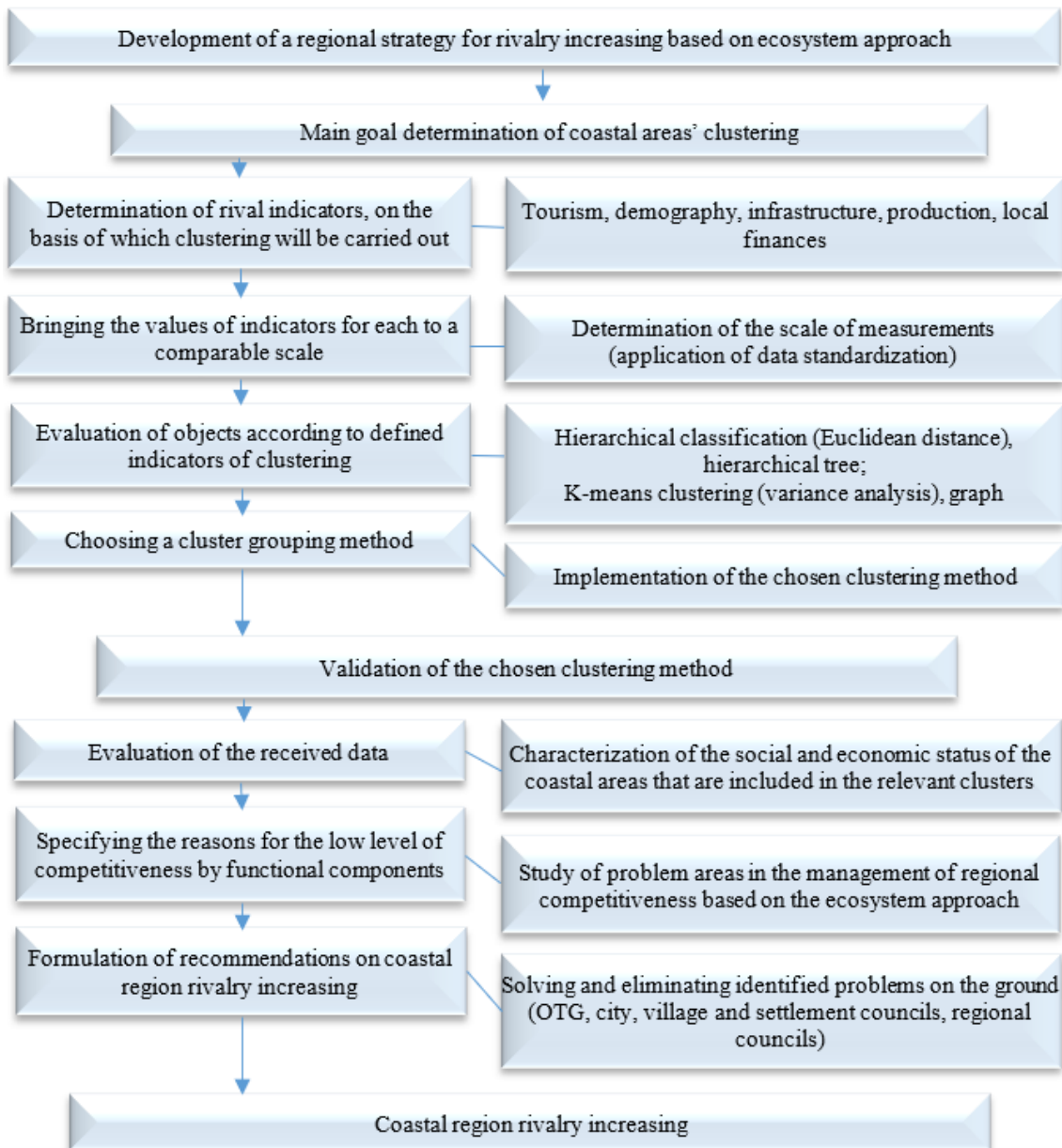
The research methodology is based on the application of cluster analysis, which allows us to create a multidimensional statistical model for grouping regions according to the similarity of their socioeconomic parameters. The use of analysis and synthesis, induction and deduction, as well as graphical methods summarizes the possibilities of grouping regions.

Within the framework of this Study, the above cluster analysis stages were supplemented and detailed. Based on them a cluster grouping technique was adapted to the analysis of the coastal areas' competitiveness. It was developed on the ecosystem approach. This technique involves sequential execution of the main procedures presented in Fig. 1. Each of the above stages plays a significant role when using the cluster method in the analysis of data on the

social and economic competitiveness of the Ukrainian coastal regions.

According to the described algorithm for the grouping of the Ukrainian coastal regions, based on the cluster analysis of competitiveness, the main goal of the cluster grouping was determined at Stage1. The purpose of the cluster analysis of

the competitiveness of the Ukrainian coastal regions based on the ecosystem approach is to conduct a further detailed study of individual groups of coastal regions and improve their development strategies as well as to identify the relationship between the level of ecosystem service development and rivalry.



**Fig. 1.** Algorithm of cluster analysis of the coastal regions' competitiveness based on the ecosystem approach.

(Developed by author)

The selection of variables in cluster analysis is one of the most important stages in the research process.

To carry out the analysis, statistical indicators of the Primorie districts were taken as the source data in accordance with the requests sent to the regional statistical services and data from the official websites of city, village and settlement

councils. Primorie districts (including cities of regional importance), for which the analysis was carried out:

1. Zaporozhzhia region - Melitopol district (including the city of Melitopol); Berdyansk district (including the city of Berdyansk);
2. Mykolaiv region - Mykolaiv district (including the city of Mykolaiv, the city of Ochakiv);
3. Odesa region - Odesa district (incl. Odesa, Yuzhne, Chernomorsk), Izmail district (incl. Izmail), Bilhorod-Dnistrovsky district (incl. Bilhorod-Dnistrovskiy);
4. Kherson region – Henicheskyi district, Kakhovskiy district (incl. Kakhovka city, Nova Kakhovka city), Skadovsk district (incl. Gola Prystan city).

The criterion for selecting indicators (factors) was group selection, the essence of which consists in choosing a set of factors, for their further grouping according to 5 socio-economic subsystems and three blocks of elements of competitiveness (table 1). This group of subsystems provides a multidimensional picture of the competitiveness of the socio-economic situation of the coastal regions, taking into account the ecosystem component of development for 2019 and 2020. The analysis of indicators by functional components will allow for a more detailed investigation of problem areas in management (organization) to solve and eliminate identified problems and identify areas with similar social and economic and ecosystem development. Further justification of the need to create coastal area clusters on an ecosystem basis.

**Table 1.**

*Selected factors for the cluster analysis of the coastal areas' competitiveness of on an ecosystem basis.*

| Connection with elements of competitiveness | A group of factors | The strength of the selected factor   | Indexes   | Unit measurement             |
|---|--------------------|---|---|------------------------------|
|   | Tourism            | Recreational services as a type of ecosystem services                                       | The number of means of accommodation                              | Unit                         |
|   |                    |   | Number of tourists served by tour operators and tour agents       | Wasp                         |
|   |                    |   | The cost of tourist vouchers sold by travel agents. and law wasps | One thous. Hrv.              |
| Business processes                          | Production         | Opportunities for the development of the region and increase in types of ecosystem services | Use of electricity  | Thous. kWh                   |
|   |                    |   | Cargo handling of ports   | million tons                 |
|   | Infrastructure     |   | The total area of residential buildings put into operation,       | m <sup>2</sup>               |
|   |                    |   | Freight traffic of road transport                                 | Thous. tkm                   |
| Human capital                               | Demography         | Population as an active member of the ecosystem   | Transportation of passengers by road transport                    | Thous. wasps                 |
|   |                    |   | Number of live births   | Wasp                         |
|   |                    |   | The number of permanent population,                               | Wasp                         |
| Administration                              | Local finance      | Provision of coastal areas  | Number of dead,   | Wasp                         |
|   |                    |   | Territory budgets per inhabitant                                  | One thous. hrv. for 1 person |

(Design and Calculated by the author)

In cluster analysis, the poly ethical principle of group formation is used – all characteristics simultaneously participate in the grouping, that is, they are taken into account at the same time when assigning an object to one or another group. At the same time, as a rule, clear boundaries for each group are not indicated, and it is also not known in advance how many groups it is

appropriate to distinguish in the studied population (Tkacheva, 2012).

Since all algorithms used in cluster analysis require the estimation of distances between clusters or objects, it is necessary to set the measurement scale. The selected indicators use



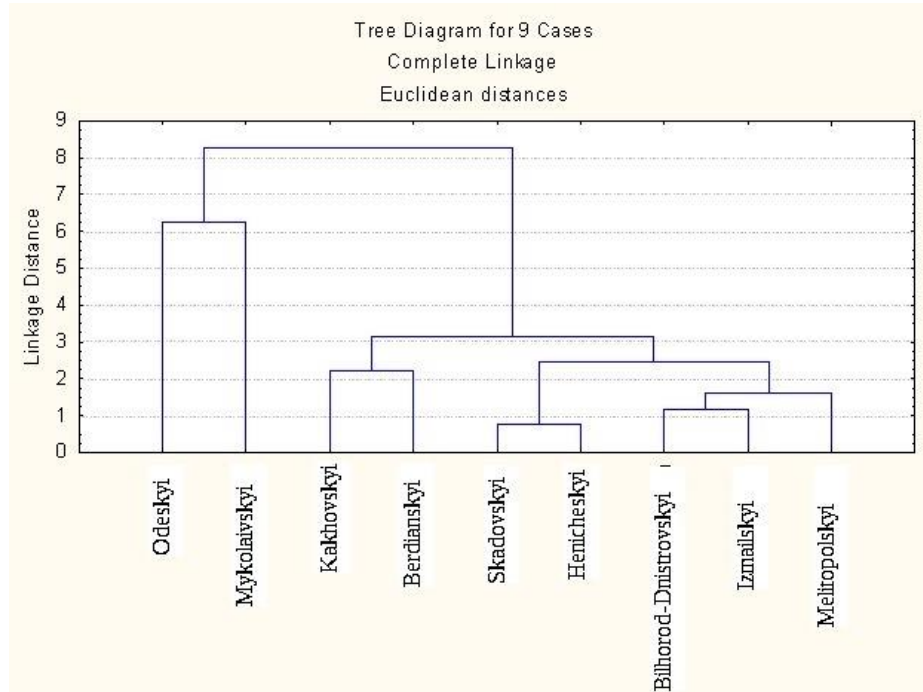
different types of scales and units of measurement that need to be standardized.

At the first stage, “natural” clusters are formed, which can be substantiated for the next analysis. Euclidean distance is defined as a measure of closeness.

The measure of closeness defined by the Euclidean distance is a geometric distance in n-dimensional space and is calculated as follows:

$$d(x, y) = \sqrt{\sum_{i=1}^n (x_i - y_i)^2}$$

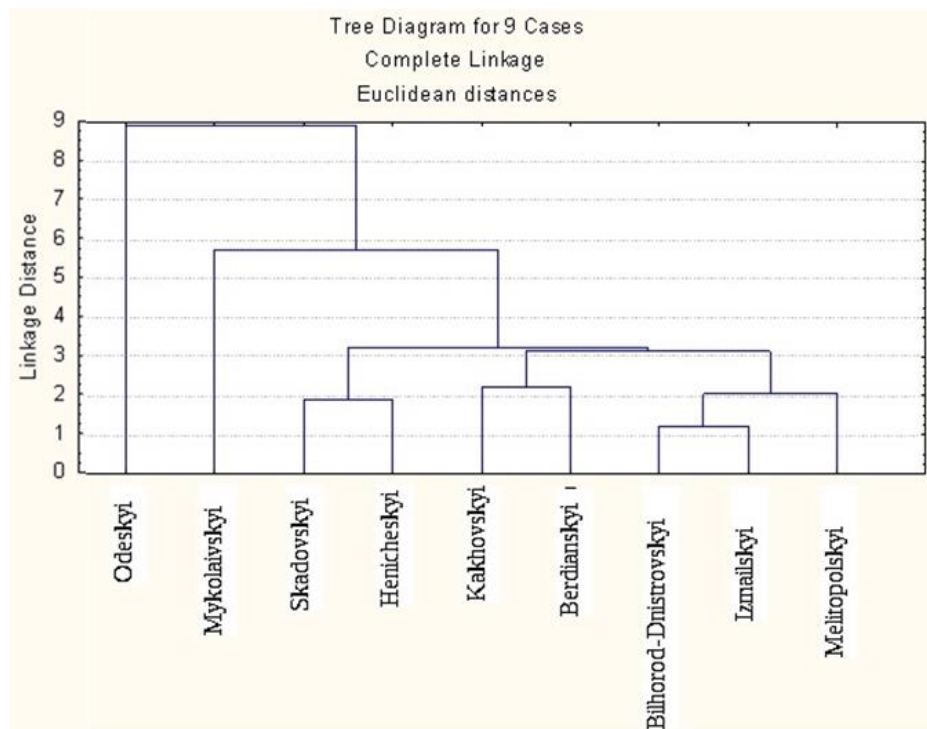
The most important result obtained as a result of tree-like clustering is a hierarchical tree (dendrogram) (Fig. 2-3). As soon as the peculiarity begins, the areas that are “closer” to each other are combined and form clusters. Each diagram node represents a union of two or more clusters. “Linkage distance” defines the distance at which the corresponding clusters were joined. All calculations were made using the Stat Soft Statistics software.



**Fig. 2.** The result of the hierarchical classification of the competitiveness of coastal areas based on the ecosystem approach in Euclidean distance, 2019. (Design and Calculated by the author)

Describing the results of the hierarchical classification of the competitiveness of coastal regions based on the ecosystem approach in Euclidean distance for 2019 (Fig. 4.3), we can state that the coastal regions of Kherson (Skadovsk and Genichesk) and Odesa (Bilhorod-Dnistrovskiyi, Izmail) regions are grouped into clusters at the first stages in

Zaporizhzhia region, the unity of the indicators of the coastal districts is not observed. In the next step, Melitopol district joins Bilhorod-Dnistrovskiyi and Izmailskiyi. Berdyanskyi district is united with Kakhovskiyi in a cluster at the second stage. The single coastal district of t Mykolaiv region is merging into a cluster with Odesa district on the 6th stage.



**Fig. 3.** The result of the hierarchical classification of the competitiveness of coastal areas based on the ecosystem approach in Euclidean distance, 2020. (Design and Calculated by the author)

In 2020 (Fig. 3), there was a change in the cluster of Odesa and Mykolaiv districts. Odesa Primorie District shows separation from the cluster.

Based on the variance analysis, calculations shown in the table. 4.4-4.5, for further cluster analysis using the k-means method, it is recommended to use the statement about 4 natural clusters of coastal areas in 2019 and 5 natural clusters in 2020 (areas that are “closely in touch” with each other are determined).

This hypothesis can be tested using the k-means method, which consists in dividing the initial data into clusters (according to their indicators) and checking the significance of the differences between the obtained groups. The k-means method consists of the following: calculations begin with a selected number of observations, which are the centers of groups, after which the

object composition of clusters is changed in order to minimize variability within clusters and maximize variability between clusters. Each subsequent observation refers to the group whose degree of similarity with the center of gravity is minimal. After changing the composition of the cluster, a new center of gravity is calculated, most often as a vector of averages for each parameter. The algorithm continues until the composition of the clusters stops changing. When the classification results are obtained, it is possible to calculate the average value of indicators by every cluster in order to assess their differences among themselves.

To determine the significance of the differences between the obtained clusters, the method of dispersion analysis was used for the years 2019-2020, the results are shown in the table. 2-3.

**Table 2.**  
*Results of dispersion analysis of the coastal area competitiveness based on the ecosystem approach, 2019*

| Variable   | Between SS | df | Within SS | df | F        | Signif. P |
|--|------------|----|-----------|----|----------|-----------|
| The number of means of accommodation                             | 6.412684   | 3  | 1.587316  | 5  | 6.7333   | 0.033086  |
| Number of tourists served by tour operators and tour agents      | 7.649793   | 3  | 0.350207  | 5  | 36.4061  | 0.000804  |
| The cost of tourist vouchers sold by travel agents. and law firm | 7.956594   | 3  | 0.043406  | 5  | 305.5138 | 0.000004  |
| Number of live births  | 5.649137   | 3  | 2.350863  | 5  | 4.0050   | 0.084700  |
| The number of permanent population                               | 5.962384   | 3  | 2.037616  | 5  | 4.8769   | 0.060294  |
| Number of dead   | 6.769487   | 3  | 1.230513  | 5  | 9.1689   | 0.017831  |
| The total area of residential buildings put into operation       | 2.110977   | 3  | 5.889023  | 5  | 0.5974   | 0.643730  |
| Freight traffic of road transport                                | 6.907553   | 3  | 1.092447  | 5  | 10.5383  | 0.013334  |
| Transportation of passengers by road transport                   | 7.207160   | 3  | 0.792840  | 5  | 15.1505  | 0.006072  |
| Use of electricity   | 2.633672   | 3  | 5.366328  | 5  | 0.8180   | 0.536980  |
| Cargo handling of ports  | 5.904037   | 3  | 2.095963  | 5  | 4.6948   | 0.064494  |
| Budget for 1 inhabitant  | 6.596971   | 3  | 1.403029  | 5  | 7.8366   | 0.024536  |

(Design and Calculated by the author)

When analyzing the results of variance analysis, it is necessary to pay attention to the value of the F-factor and the level of significance p (which should not be higher than 0.05). Criteria that do not satisfy this value are not significant for cluster analysis. According to the results of the dispersion analysis for 2019 (Table 4.4), it should be noted that most of the criteria for the competitiveness of coastal regions on an ecosystem basis meet the necessary criteria. The criteria for the number of live births, the size of the permanent population, the total area of

residential buildings put into operation, the use of electricity and port cargo handling turned out to be unsatisfactory.

The results of the dispersion analysis for 2020 (Table 3) indicate that the factors of the number of accommodation facilities, the total area of residential buildings put into operation, the transportation of passengers by road transport and the budget for 1 pers. Residents are insignificant.

**Table 3.**  
*Results of dispersion analysis of the competitiveness of coastal areas based on the ecosystem approach, 2020.*

| Variable   | Between SS | df | Within SS | Df | F        | Signif. P |
|--|------------|----|-----------|----|----------|-----------|
| The number of means of accommodation                             | 6.395218   | 4  | 1.604782  | 4  | 3,985    | 0.104575  |
| Number of tourists served by tour operators and tour agents      | 7.701143   | 4  | 0.298857  | 4  | 25,769   | 0.004082  |
| The cost of tourist vouchers sold by travel agents. and law firm | 7.910597   | 4  | 0.089403  | 4  | 88,483   | 0.000372  |
| Number of live births  | 7.958370   | 4  | 0.041630  | 4  | 191,168  | 0.000081  |
| The number of permanent population                               | 7.963274   | 4  | 0.036726  | 4  | 216,827  | 0.000063  |
| Number of dead   | 7.924108   | 4  | 0.075892  | 4  | 104,413  | 0.000268  |
| The total area of residential buildings put into operation       | 6.872725   | 4  | 1.127275  | 4  | 6,097    | 0.053971  |
| Freight traffic of road transport                                | 7.981885   | 4  | 0.018115  | 4  | 440,634  | 0.000015  |
| Transportation of passengers by road transport                   | 6.712155   | 4  | 1.287845  | 4  | 5,212    | 0.069401  |
| Use of electricity   | 7.558876   | 4  | 0.441124  | 4  | 17,135   | 0.008786  |
| Cargo handling of ports  | 7.994830   | 4  | 0.005170  | 4  | 1546,285 | 0.000001  |
| Budget for 1 person. resident                                    | 5.876263   | 4  | 2.123737  | 4  | 2,767    | 0.174002  |

Calculated by the author

The cluster analysis made it possible to combine coastal regions similar in terms of competitiveness criteria, taking into account the fact that the criteria of significance changed, the

picture of the combination in 2019 and 2020 is similar. Table 4 shows which of districts form clusters based on the calculation results in 2019 and 2020.



**Table 4.**  
Selection of clusters using the k-means method

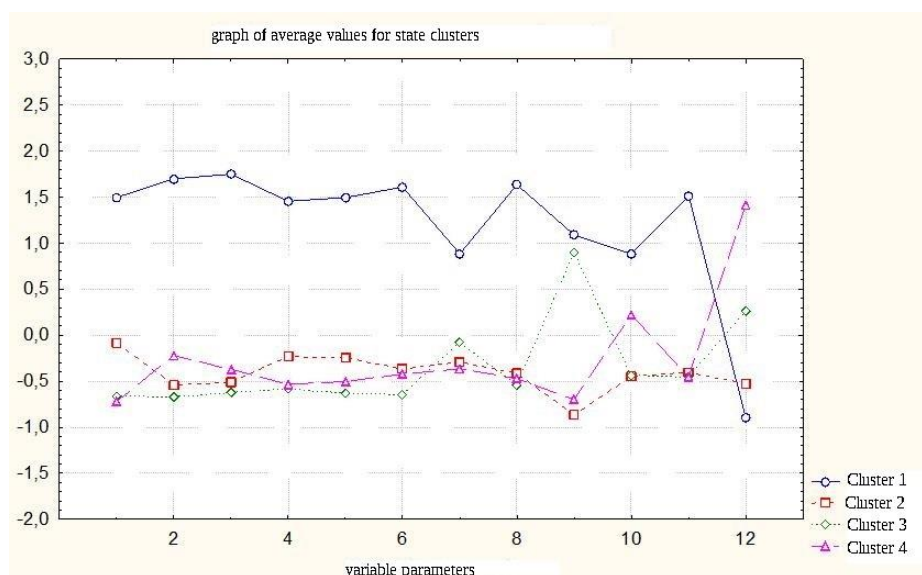
| 2019                   |          | 2020                   |          |
|------------------------|----------|------------------------|----------|
| Storage                | Distance | Storage                | Distance |
| <b>Cluster 1</b>       |          | <b>Cluster 1</b>       |          |
| Berdyanskyi            | 0.321074 | Berdyanskyi            | 0.320767 |
| Kakhovskiyi            | 0.321074 | Kakhovskiyi            | 0.320767 |
| <b>Cluster 2</b>       |          | <b>Cluster 2</b>       |          |
| Henicheskyi            | 0.112770 | Henicheskyi            | 0.271624 |
| Skadovskiyi            | 0.112770 | Skadovskiyi            | 0.271624 |
| <b>Cluster 3</b>       |          | <b>Cluster 3</b>       |          |
| Melitopolskyi          | 0.262006 | Melitopolskyi          | 0.347028 |
| Izmailskiyi            | 0.243035 | Izmailskiyi            | 0.276637 |
| Belgorod-Dnistrovskiyi | 0.180436 | Belgorod-Dnistrovskiyi | 0.213497 |
| <b>Cluster 4</b>       |          | <b>Cluster 4</b>       |          |
| Odesa                  | 0.902242 | Odesa                  | 0        |
| Mykolaiivskiyi         | 0.902242 | <b>Cluster 5</b>       |          |
|                        |          | Mykolaiivskiyi         | 0        |

Calculated by the author

It is vivid that the composition of clusters 1, 2, and 3 does not change during 2019-2020, changes occurred in cluster 4 – in 2020, Odesa and Mykolaiv districts were separated. Each group of districts was selected according to clustering parameters for comparison with the results of the multidimensional grouping of districts according to selected indicators of ecosystem-based competitiveness. The generalization of the results made it possible to state that economic, demographic, social, and foreign economic, indicators of the development

of tourism, infrastructure, and production. These indicators have a significant impact on the grouping of coastal areas according to indicators of competitiveness. Indicators of competitiveness included satisfaction of the needs of residents, improvement of their well-being.

At the next stage of cluster analysis, we will analyze the average values of the variable clusters of the coastal regions in 2019 and 2020 (Fig. 4, 5).



**Fig. 4.** Graph of average values of coastal district clusters 2019.

## Results and Discussion

According to the data of the analysis, it should be noted that the first cluster (Berdyanskyi and Kakhovskiyi districts) is characterized by high values of all indicators, compared to other

clusters, except for the territory budget indicator per 1 inhabitant. It shows the effective development of the components of the competitiveness of the coastal regions, provided that the funding is the lowest, compared to other coastal regions.

Clusters 2, 3, and 4 are characterized by close average values of indicators that are lower than the average level. This indicator includes the number of accommodation facilities, the number of tourists served by tour operators and tour agents, and the cost of travel packages sold by travel agents. It also includes the number of live births, the number of permanent residents, and the number of deaths. The total area of residential buildings put into operation, traffic of road transport, cargo handling of ports. The above-mentioned average indicators of the clusters testify to similar problems of regional

development, which require management efforts of a corrective nature on the part of the regional and national authorities. It is clearly shown that Melitopol, Izmail, and Bilhorod-Dniestrovskiy districts are characterized by average indicators of clusters that are lower than the average level. However, Genichesky and Skadovskyi districts are characterized by high average indicators of passenger transportation by on-land transport and the territory's budget per 1 inhabitant. Electricity consumption and territory budget per one inhabitant is average for Odesa and Mykolaiv districts.

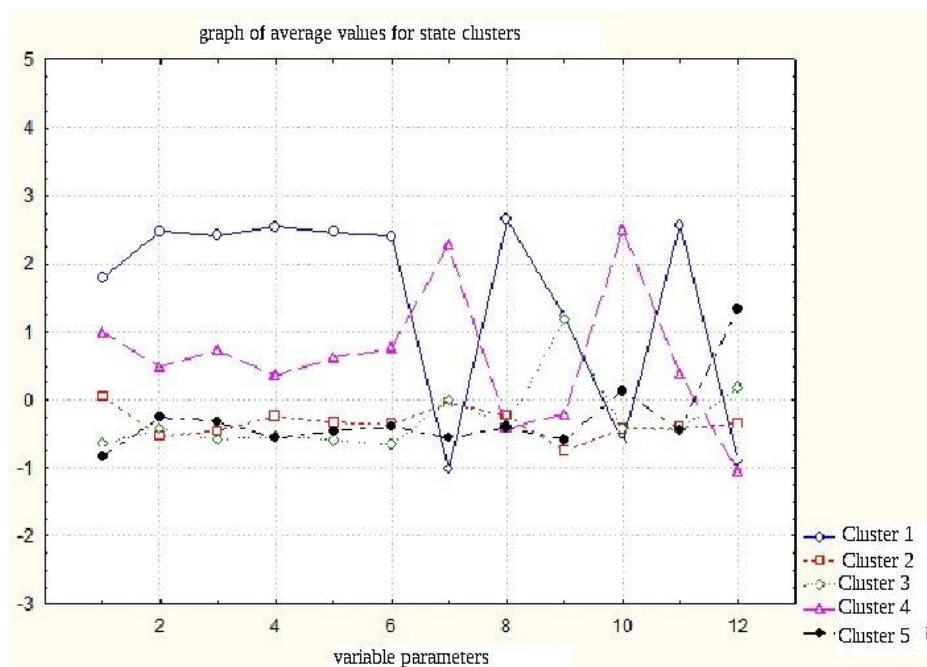


Fig. 5. Graph of average values of clusters of seaside regions, 2020

According to the analysis of the average values of the indicators of the clusters of the seaside districts for the year 2020. It should be noted that the first cluster has an overwhelmingly larger number of indicators that are higher than the average level. The first cluster has an overwhelmingly larger number of indicators that are higher than the average level (Berdyanskyi and Kakhovskiy districts). The first cluster is characterized by high values of all indicators, compared to other clusters, in addition to indicators of the total area of residential buildings put into operation, electricity use, and the budget of territories per 1 inhabitant. It shows the effective development of the components of the coastal region competitiveness and the implementation of energy efficiency measures under the condition of financing, which is the lowest compared to other coastal regions.

Cluster 4, which the Odesa district belongs to, has favorable starting conditions for the development of the coastal region ecosystems. At the same time it has the above-average indicators: the number of accommodation facilities; the number of tourists served by tour operators and tour agents; the cost of travel packages sold by travel agents; the number of live births; the number of permanent population; the number of dead. And it has the highest average indicators of the total area of residential buildings put into operation and the use of electricity. The data of the study help to distinguish the Odesa coastal district from others into a separate cluster characterized by active tourist activity and the construction of new housing. It is recommended to pay attention to increasing the energy efficiency of production and advanced technologies regarding the use of alternative energy sources.

Low indicators of road freight traffic, road passenger transportation, and the territory's budget per inhabitant indicate the need to improve road logistics and infrastructure.

Clusters 3, 4, and 5 are characterized by close average values of indicators that are lower than the average level. This is the number of accommodation facilities; the number of tourists served by tour operators and tour agents; the cost of travel packages sold by travel agents; the number of live births; the number of permanent population; the number of dead; the total area of residential buildings put into operation; traffic of road transport; use of electricity; cargo processing of ports. The above-mentioned average indicators of the clusters testify to similar problems of regional development. These issues are related to the development of tourism, increase in economic activity in the region, adjustment of the demographic situation, and development of transport infrastructure and logistics (road and river transport).

Clearly shown that it is typical for Henicheskyi and Skadovskyi districts that all the average indicators of the clusters are lower than the average level. However, Melitopol, Izmail, and Bilhorod-Dniester districts are characterized by above-average indicators of passenger transportation by road transport and the territory's budget per inhabitant. The indicators are lower for Mykolaiv district. It is only for the budget territory per 1 inhabitant.

### Conclusions

The results of the conducted research made it possible to determine the influence of cluster analysis indicators of regenerative ecosystem competitiveness on the development of tourism in the coastal region. After all, tourism is one of the poles of growth for the region and determines the prospects for its development. After all, revitalizing the development of the tourism industry creates competitive advantages and makes it possible to achieve a balanced ecosystem. Thus, the selected criteria and indicators for cluster analysis correlate with the understanding of the components of the competitiveness of the coastal region described. The methodical approach to assessing the competitiveness of the coastal region is substantiated. The indicators form a certain basis for the complex grouping of economic (business processes), social (human capital), and administrative-management (administration) indicators. These indicators make it possible to identify the similarity (in dynamics) of the socio-

economic development of the districts of the coastal regions, which have direct access to the sea and opportunities to conduct economic activities related to the maritime economy.

The results of the research show that the method of cluster analysis is carried out according to the criteria of indicators of the competitiveness of coastal regions on an ecosystem basis. This method allows expanding the framework of ideas about the state and possibilities of clustering of coastal regions. In addition, the cluster approach provides an appropriate informational and analytical justification for the selection of guidelines for the strategy of the regional policy of increasing the competitiveness of regenerative ecosystems. It can be used as a basis for planning the actions of local self-government bodies.

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