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МЕТОДИЧНИЙ ПІДХІД ДО ЗАБЕЗПЕЧЕННЯ КЛАСТЕРНО-ЛОГІСТИЧНОГО РОЗВИТКУ РИНКУ ПОСЛУГ ТРАНСПОРТНИХ СИСТЕМ УКРАЇНИ

Актуальність. При вирішенні соціально-економічних проблем в останній час все більше посилюються протиріччя між учасниками ринкових відносин на всіх рівнях національної економіки; це особливо актуально, коли мова йде про обґрунтування та практичну реалізацію можливих варіантів, що засновані на аналізі та подальшій інтерпретації емпіричних даних, які стосуються окремих сфер розвитку територіально-виробничих систем або локально сформованих галузевих ринків, зокрема ринків транспортних послуг (РТП), що функціонують в межах певних регіонів країни. У зв'язку з цим виникає необхідність формування методичної бази щодо можливості реалізації кластерно-логістичного підходу до розвитку РТП.

Мета та завдання. Мета написання цієї роботи полягає у розробці методичного забезпечення кластерно-логістичного підходу до розвитку РТП з визначенням організаційних форм взаємодії суб'єктів регіональних ринків у вигляді транспортно-логістичних кластерів (ТЛК).

Результати. При аналізі і прогнозуванні соціально-економічних явищ дослідник досить часто зіштовхується з багатовимірністю їхнього опису. Методи багатовимірного аналізу найбільш діючий кількісний інструмент дослідження соціально-економічних процесів, що описуються великою кількістю характеристик. До них належать кластерний аналіз, таксономія, розпізнавання образів, факторний аналіз тощо. Кластерний аналіз найбільш яскраво відображає риси багатовимірного аналізу в класифікації, а факторний аналіз у дослідженні зв'язку. Головне призначення кластерного аналізу розбивка множини досліджуваних об'єктів і ознак на однорідні групи у відповідному розумінні кластери. У кластерному аналізі для кількісної оцінки подібності вводиться поняття метрики, при цьому подібність або відмінність між класифікованими об'єктами встановлюється залежно від метричної відстані між ними.

У даній роботі використано одиночний зв'язок у межах групи алгоритмів з використанням квадратичної евклідової відстані.

Кластерний аналіз найбільш яскраво відображає риси багатовимірного аналізу в класифікації. Ось чому для аналізу розвитку РТП та його транспортної інфраструктури запропоновано безрозмірну модель, основану на використанні відносних коефіцієнтів ієрархічного агломеративного типу.

Застосування багатовимірних методів класифікації дозволило згрупувати райони, на відміну від

традиційного географічного або адміністративного поділу, по рівню соціально-економічного розвитку, який визначає потреби районів у транспортній інфраструктурі та кооперації, які, зокрема через ТЛК, забезпечать максимальне використання наявного економічного потенціалу, ліквідацію диспропорцій розвитку економіки та вирівнювання умов життєдіяльності населення на різних територіях.

Висновки. Таким чином, було проаналізовано транспортний та соціально-економічний потенціал регіонів, у результаті чого виділено два сформованих ТЛК та п'ять ядер, на основі яких пропонується розвивати ТЛК відповідних типів, шляхом приєднання до них регіонів з середнім та низьким рівнем розвитку транспортного потенціалу.

Ключові слова: ринок транспортних послуг, методичний підхід, кластерний аналіз, транспортна інфраструктура, регіон.

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METHODICAL APPROACH TO ENSURING CLUSTER AND LOGISTICS DEVELOPMENT OF THE MARKET OF TRANSPORT SYSTEMS OF UKRAINE

Topicality. In solving socio-economic problems in recent years, increasing contradictions between market participants at all levels of the national economy; This is especially true when it comes to the justification and practical implementation of possible options based on the analysis and further interpretation of empirical data relating to certain areas of development of territorial production systems or locally established industry markets, including transport services markets (RTP). within certain regions of the country. In this regard, there is a need to form a methodological framework for the possibility of implementing a cluster-logistics approach to the development of RTP.

Aim and tasks. The purpose of writing this work is to develop a methodological support for cluster-logistics approach to the development of RTP with the definition of organizational forms of interaction of regional markets in the form of transport and logistics clusters (TLC).

Research results. When analyzing and forecasting socio-economic phenomena, the researcher often encounters the multidimensionality of their description. Methods of multidimensional analysis are the most effective quantitative tool for the study of socio-economic processes, described by a large number of characteristics. These include cluster analysis, taxonomy, pattern recognition, factor analysis, and more. Cluster analysis most clearly reflects the features of multidimensional analysis in the classification, and factor analysis in the study of communication. The main purpose of cluster analysis is the breakdown of the set of studied objects and features into homogeneous groups in the appropriate sense of clusters. In cluster analysis, the concept of metrics is introduced to quantify similarity, and the similarity or difference between classified objects is set depending on the metric distance between them.

In this paper, a single connection within a group of algorithms using a quadratic Euclidean distance is used.

Cluster analysis most clearly reflects the features of multidimensional analysis in the classification. That is why a dimensionless model based on the use of relative coefficients of hierarchical agglomerative type is proposed to analyze the development of RTP and its transport infrastructure.

The use of multidimensional classification methods allowed to group districts, in contrast to the traditional geographical or administrative division, by level of socio-economic development, which determines the needs of districts in transport infrastructure and cooperation, which, in particular through TLC, will ensure maximum use of existing economic potential. economy and equalization of living conditions of the population in different territories.

***Conclusion.** Thus, the transport and socio-economic potential of the regions was analyzed, as a result of which two formed TLCs and five nuclei were identified, on the basis of which it is proposed to develop TLCs of appropriate types by joining regions with medium and low transport potential.*

***Key words:** market of transportation services, methodical approach, cluster analysis, transport infrastructure, region.*

Problem statement and its connection with important scientific and practical tasks. In solving socio-economic problems in recent years, increasing contradictions between market participants at all levels of the national economy; This is especially true when it comes to the justification and practical implementation of possible options based on the analysis and further interpretation of empirical data relating to certain areas of development of territorial production systems or locally established industry markets, including transport services markets (RTP). within certain regions of the country.

In this regard, there is a need to form a methodological framework for the possibility of implementing a cluster-logistical approach to the development of RTP, the implementation of which is by determining (based on multidimensional statistical analysis) spatially related forms of market interaction, as well as types of «behavior» of transport infrastructure in the territorial-regional dimension. That is, the main results should be: first - to determine the best possible options for the formation of regional TLC; secondly, the development of organizational and economic tools for managing the cluster and logistics development of RTP. At the same time, the methodological basis for obtaining these results is provided by the use of cluster analysis methods and cluster organizational and economic technologies, which, respectively, should be opposed to sectoral analysis and traditional sectoral management. This approach to the development of the country's RTP becomes especially relevant in the context of further reforms in the transport sector, and can also be taken into account in the implementation of administrative-territorial reform.

Analysis of recent publications on the problem. It should be noted that the division of the country's territory into regions is carried out in accordance with the objectives, ie is always targeted or problem-oriented. It is also necessary to take into account that the heterogeneity of the economic space of the country is objective, because the process of economic zoning objectively takes place in space and time; this leads to the «crystallization» of certain parts of the country, forming a certain set of elements of the regional structure (industrial enterprises, transport and other infrastructure), in which they are all perceived as elements of a single artificial system. That is, the most important result of economic zoning is the emergence of a certain list of objects of economic activity, which are with each other in spatially mediated relations and form a «picture of the territory». Transport infrastructure plays a key role in these processes, as it «cements» disparate parts of the regional socio-economic space. In this context, we note that in the theory of location of production, the transport factor has always played a significant role. In this sense, the further development of transport infrastructure is extremely important as an important factor in the integration of territorial structure, which not only connects the regional system of settlement and production, but also contributes to the specialization and cooperation of economic structures.

The problem of transport and economic zoning is reflected in the works of Yu. Pashchenko [1], T. Pepy, L. Chernyuk, O. Yarosh [2]. This indicates not only some element of subjectivism, which, in fact, is always caused by the inequality of researchers' approaches to solving the problem, but also that the scientific community understands the need to form an appropriate methodological basis capable of linking transport and economic change. potential of the territory with the level of its socio-economic development.

Allocation of previously unsolved parts of the general problem. However, in our opinion, in modern conditions of integration development of social and economic systems it is a question of transport and logistic potential of the territory which becomes the main factor of its economic development. Experience confirms that an area with well-developed transport, logistics and other infrastructure is more favorable for the location of industrial enterprises compared to undeveloped areas. In this context, we note that in the theory of location of production, the transport factor has always played a significant role. Thus, in the classical Weber model, the location of production is determined by transport costs and costs of factors of

production. Given that one of the main specific functional features of transport as a branch of production is a close connection with other sectors of the national economy, ie is the material basis that creates the necessary conditions for the functioning of production, integrated and interconnected development of all sectors of the national economy. placement of productive forces, improving the efficiency of natural resources and socio-economic development of the country's regions.

In market conditions, transport and economic potential of the country and its regions is characterized by existing and potential opportunities for quality transport services, which is determined by the level of transport and logistics infrastructure, reflecting the length and density of the transport network, number of transport hubs, port technology and logistics. terminal complexes, etc. At the same time, the level of transport security, coherence and coordination of modes of transport, the degree of reliability and uninterrupted delivery of goods on RTP significantly affect the level and pace of basic production, directly affecting the cost and production of industrial and agricultural products.

Meanwhile, the model of economic development that has been implemented in the country over the past twenty-four years does not meet the fundamental requirements of a modern market economy for the full use of advanced scientific knowledge and the introduction of new technologies. At the same time, the huge differentiation of the country's regions by living standards and other socio-economic and technical-economic indicators is noteworthy. This also applies to the indicators of RTP development, in particular the provision of transport and logistics infrastructure of the regions. That is, the problem of territorial and structural disparities, which has been exacerbated in recent years, is exacerbated and, therefore, is extremely relevant. Foreign experience, as well as domestic practice of leveling the living conditions of societies in different territories confirms that this is a very complex and multifaceted problem. Given that most of these differences are objective in nature and are likely not to be offset, but to stimulate efforts to maximize existing economic potential, less developed regions need to identify «growth points» as locomotives of their development. This is possible not only financially, but also organizationally and economically - through spatially related forms of development: clusters and network formations, ie by implementing a cluster approach. At the same time, it should be, first of all, about the cluster-logistic model of RTP development, because this market is the fundamental basis of interaction of other economic entities, creating conditions for economic relations between producers and consumers of different regions. That is why the cluster-logistical approach to the development of regional RTPs should become today the leading strategy of socio-economic development of national economic entities. This explains the exceptional importance of the choice of cluster models for managing the economic development of regions and regional economic subsystems, in particular the RTP, which puts this problem in the category of special state importance. The solution of this problem requires the development of methodological support for its practical implementation.

Formulation of research objectives (problem statement). The purpose of writing this work is to develop a methodological support for cluster-logistics approach to the development of RTP with the definition of organizational forms of interaction of regional markets in the form of transport and logistics clusters (TLC).

An outline of the main results and their justification. When analyzing and forecasting socio-economic phenomena, the researcher often encounters the multidimensionality of their description. This occurs when solving the problem of market segmentation, building a typology of countries on a fairly large number of indicators, forecasting market conditions for individual goods and services, studying and forecasting the economic depression and many other problems.

Methods of multidimensional analysis are the most effective quantitative tool for the study of socio-economic processes, described by a large number of characteristics. These include cluster analysis, taxonomy, pattern recognition, factor analysis, and more. Cluster analysis most clearly reflects the features of multidimensional analysis in the classification, and factor analysis in the study of communication. Sometimes the approach of cluster analysis is called in the literature numerical taxonomy, numerical classification, recognition with self-study, etc. The main purpose of cluster analysis is the breakdown of the set of studied objects and features into homogeneous groups in the appropriate sense of clusters. This means that the problem of classifying data and identifying the appropriate structure in them is solved. In cluster analysis, the concept of metrics is introduced to quantify similarity, and the similarity or difference between classified objects is set depending on the metric distance between them. If each object is described by k-features, it can be represented as a point in k-dimensional space, and the similarity to other objects will be defined as the corresponding distance, using various methods, including: the relationship between groups (complete communication); communication within a group (single communication); the nearest neighbor method; distant neighbor method; dendroid cluster method; method of median clustering method Ward.

There are a large number of methods of hierarchical cluster analysis, which differ not only in the similarity (difference) measures used, but also in the classification algorithms. The computer program SPSS v 10.0.5 for Windows offered for data processing in work allows to use such measures of similarity, as: quadratic Euclidean distance; distance-cosine.

The task of cluster analysis is to, on the basis of the data contained in the set X, divide the set of objects G into L (L integer) of clusters (subsets) Q1, Q2, QL, so that each object belongs to one and only one subset of the breakdown and that the objects belonging to the same cluster are similar, while the objects belonging to different clusters are heterogeneous.

The most well-known method of representing a matrix of distances, or similarities, is based on the idea of a dendrogram or tree diagram. The dendrogram can be defined as a graphical representation of the results of the process of successive clustering which is carried out in terms of the distance matrix. Using a dendrogram, you can graphically or geometrically represent the clustering procedure, provided that this procedure operates only on the elements of the matrix of distances or similarities.

In this paper, a single connection within a group of algorithms using a quadratic Euclidean distance is used.

The data for the formation of clusters were taken from the data of the State Statistics Service of Ukraine for 2019 [3], in particular, 42 indicators characterizing the socio-economic and transport-economic potential of regions / oblasts of the country were used, which are grouped into 6 groups:

I. Socio-economic development of the region.

II. Transport and economic potential:

1. Indicators of road transport development (all regions).

2. Indicators of railway transport development (all regions).

3. Indicators of air transport development (11 regions).

4. Indicators of maritime transport development (8 regions).

5. Indicators of river transport development (10 regions).

Cluster analysis most clearly reflects the features of multidimensional analysis in the classification. That is why a dimensionless model based on the use of relative coefficients of hierarchical agglomerative type is proposed to analyze the development of RTP and its transport infrastructure.

Clustering took place in three stages. At the first stage, a cluster analysis based on socio-economic indicators of regional development was conducted to identify a «picture of territories» - regions with similar economic potential, which can be formed within several administrative or geographical areas and have some specialization in the Ukrainian division of labor.

At the second stage, a cluster analysis of the existing transport system was conducted, which allowed to assess the level of development of transport infrastructure of the regions: the length and density of the transport network, the volume of freight and passenger traffic, road traffic.

At the third stage the analysis of conformity of transport and economic potential of the territory to the level of its social and economic development was carried out; as a result, the division of regions into clusters is proposed, which allows to use the potential of the existing transport system of regions and provides further development of transport infrastructure as an important factor of integration, specialization and cooperation of economic structures of regions.

At the first stage of the analysis, indicators 1–8 from Group I were selected for economic zoning (gross regional product (UAH million), fixed assets (by regions) (UAH million), capital investments (UAH million), agricultural products (million UAH), volume of sold services (million UAH), employment of the population (aged 15-70 years) (thousand), volume of sold industrial products (million UAH), gross regional product in per capita (UAH)), which allowed to identify clusters, which include regions with different levels of socio-economic development and specialization of production. Since the scale and units of measurement of data differed (for example, indicators of GRP (million UAH) and employment (thousands - people)), during clustering, indicators that were of great importance dominated, which did not allow the correct calculate the distance between points. This problem was solved by rationing, which allowed to bring the values of all indicators to a single range. The analysis was performed by the method of single communication, which is based on the minimum distance between objects («rule of the nearest neighbor»). Euclidean distance was used as a measure of similarity [4; 5].

As part of the study of indicators of socio-economic development of the country's regions and their transport infrastructure, we consider it appropriate to use the territorial division, rather than administrative, and unite the city of Kyiv - with the Kyiv region.

The results of the cluster analysis obtained in the form of a dendrogram can be explained as follows: 5

regions are located separately, in which 51% of GRP is created and almost 35% of the country's population lives: Dnipropetrovsk, Odesa, Kharkiv regions and Kyiv. These regions are the most industrially powerful regions of Ukraine with the predominant development of heavy industry. A characteristic feature of these regions is the presence of a large urban center (core) - a city of millions (Kyiv, Kharkiv, Odesa, Dnepropetrovsk), to which the territory of the region tends. Highly industrial and at the same time agro-industrial areas with strong scientific and technical potential and with great export opportunities such as Zaporizhzhia region and regions with industrial-agricultural and tourist-recreational directions of economic structure development (Lviv region) are grouped into a separate cluster. The rest of the regions can be divided into 5 clusters, which include regions whose priority industry is agriculture: Vinnytsia, Volyn, Ternopil, Kherson, Chernivtsi, Khmelnytsky and Kirovohrad regions. These are regions mainly with agro-industrial structure of the economy. Also in the last two oblasts the structure of the economy is transitional (in recent years it has been transformed from industrial-agrarian to agro-industrial). At the same time, the position of individual areas remains uncertain. Thus Ivano - Frankivsk, Nikolaev, Zhytomyr areas are so-called «disputable objects» which in similarity can be carried to various clusters. But uncertainty about the disputed objects - Vinnytsia, Ivano - Frankivsk, Mykolaiv, Kherson regions remains.

The ambiguity of the distribution can be eliminated by using divisive clustering methods, for example, the k-means method, which differs from the above agglomerative method in that it allows to optimize the total criterion, such as the average internal cluster distance for a given number of clusters [6; 7]. The choice of the number of clusters k is based on the results of previous research and theoretical considerations.

Based on theoretical assumptions, five categories of development were identified to describe the gradation of the level of development from high (so-called «nodal», «gravitational» regions - with all factors of production, high complexity of organizational structure) to low (homogeneous regions with system of elements with an indefinite type of connections).

The results of the distribution of regions by clusters by the method of means are shown in table 1.

Table 1

The results of the cluster analysis of socio - economic development of Ukraine in 2019 by the method of k averages (k = 7)

№	Region	Cluster	Development level
1	Zaporizhzhia	1	average
2	Lviv	1	
3	Odesa	1	
4	Kharkiv	2	relatively high
5	Zhytomyr	3	low
6	Kirovograd	3	
7	Mykolayiv	3	
8	Sumy	3	
9	Ternopil	3	
10	Kherson	3	
11	Khmelnytsky	3	
12	Chernivtsi	3	
13	Vinnytsia	4	below average
14	Poltava	4	relatively high
15	Cherkasy	4	
16	Dnipropetrovsk	5	
17	Volyn	6	low
18	Zakarpattia	6	
19	Ivano-Frankivsk	6	
20	Rivne	6	
21	Chernihiv	6	
22	Kyiv	7	high

The results obtained by a combination of single communication methods and the k average method represent the following «picture of territories».

The Kyiv region stood out in a separate cluster as the most powerful region of the country, the

economy and living standards of the population in which it differs significantly from others. That is, we can assess the development of the region as high: in the Kyiv region there is a complex interaction in time of a set of natural and anthropogenic phenomena.

Separate clusters were created by the industrial and technical Kharkiv region and the industrial giant Dnipropetrovsk region. The level of development of the regions of these clusters will be considered relatively high.

The cluster, which includes Zaporizhia, Lviv, Odesa regions, is characterized by the fact that it combines geographically remote eastern, western, southern territories of the country, where the share of urban population prevails, which determines the nature of the division of labor in these areas and socio-economic indicators life of the population. In these areas, industrialization is in a developed stage, generating a complex, well-developed territorial and economic system with strong internal and external links. We will consider the level of development of the regions of this cluster to be average.

Zhytomyr, Kirovohrad, Mykolaiv, Sumy, Ternopil, Kherson, Khmelnytsky, Chernihiv regions are grouped into a cluster, the hallmark of which is a developed agricultural structure of the regional economy.

Volyn, Zakarpattia, Ivano-Frankivsk, Rivne, Chernivtsi regions, despite the differences in specialization, are territorially adjacent, have long-standing cooperation and demographic ties and create a cluster that «encircles» the Lviv region.

The territory of these regions is dominated by agricultural production, which is characterized by a low level of technological development and equally weak organization of production; relations «society-territory» are episodic, ie settlements are few and scattered throughout the territory, the use of natural resources is not significant. We will consider the level of development of these regions low.

Vinnitsia, Poltava, Cherkasy - areas in which agriculture uses advanced technologies that provide a basis for industrial production and significant economic organization of society, which has a more complex system of values compared to the above regions.

Thus, the use of multidimensional classification methods allowed to group districts, in contrast to the traditional geographical or administrative division, by level of socio-economic development, which determines the needs of districts in transport infrastructure and cooperation, which, in particular through TLC, will maximize available economic potential. elimination of disproportions of economic development and equalization of living conditions of the population in different territories.

Summarizing the above cluster analysis, table 2 shows the results of the general analysis of the transport system of Ukraine for all modes of transport.

Table 2

The results of the cluster analysis of the development of transport infrastructure of the regions of Ukraine in 2019 by the method of k averages (k = 8)

№	Region	Cluster	Development level
1	2	3	4
1	Dnipropetrovsk	1	high
2	Volyn	2	below average
3	Zakarpattia	2	below average
4	Ivano-Frankivsk	2	below average
5	Rivne	2	below average
6	Ternopil	2	below average
7	Chernivtsi	2	below average
8	Zaporizhzhia	3	relatively high
9	Mykolayiv	3	relatively high
10	Kherson	3	relatively high
11	Vinnitsia	4	average
12	Lviv	4	average
13	Poltava	4	average
14	Sumy	4	average
15	Kharkiv	4	average
16	Khmelnytsky	4	average
17	Cherkasy	4	average
18	Chernihiv	4	average

1	2	3	4
19	Odesa	5	high
20	Zhytomyr	6	average
21	Kirovograd	6	average
22	Kyiv	8	high

The level of transport development by clusters was assessed taking into account the results of the above analysis of socio-economic development of the regions (Table 1), as well as the analysis of the development of individual modes of transport.

The first cluster includes the Dnipropetrovsk region, which has a high level of development of the transport system. Latitude railways provide a connection between the coal and metallurgical city and other regions. Developed highways and rivers of Dnipropetrovsk region complement the powerful potential of other regions, which has access to the sea, is a road junction of transnational corridors, has powerful airways.

The second cluster (2) includes regions with a developed automotive structure: Volyn, Zakarpattia, Ivano-Frankivsk, Rivne, Ternopil, Chernivtsi regions. A characteristic feature is the border position of these regions, low length and high density of roads, the prevalence of turnover. Despite the availability of railways, freight rates are low. There is also no direct access to river and sea transport routes. Therefore, the level of development in these regions is below average.

There is also no water transport in the regions of the 6th cluster: Zhytomyr and Kirovohrad regions. However, the great transit potential of these regions: relatively high rates of rail freight turnover, the availability of air transport - participation in freight and passenger air transport, allow us to assess the level of development of the regions of this cluster as average.

The third cluster (3) is formed by Zaporizhia, Mykolaiv, Kherson regions, the level of development of which is considered to be relatively high. Unlike others, the cheapest river and sea transport is developed in these areas, the largest share of cargo in the country is processed in ports, which creates conditions for the development of production in these regions. At the same time, Zaporizhia region is a powerful railway junction, provides freight and passenger traffic.

The fourth cluster (4) includes Vinnytsia, Lviv, Poltava, Sumy, Kharkiv, Khmelnytsky, Cherkasy, and Chernihiv oblasts, which are a «transport artery» connecting the industrial, urbanized east with the agrarian, mostly rural, population of the West.

Territorially, the regions of the 4th cluster are located on the largest highways and railways. For example, the longest European highway E40, 8500 km long, passes through the cities of the cluster (Kharkiv, Lviv, Poltava, Vinnytsia).

The cluster includes the regions with the largest railway junctions with developed station facilities: Lviv, Kharkiv, Zhmerynka, Konotop, Fastiv, Lozova, Kozyatyn, Smila, Shepetivka, Shostka, Chervonyi Promin, Krasnodon and others.

The regions of this cluster differ in complexity and functions. There are «gravitational» regions in the cluster, on the territory of which «megalopolis» cities are located (Kharkiv, Lviv). These regions form the «core» of the cluster - the functional centers of gravity of population flows, goods, resources, etc. and the actual processes of moving the latter.

The other regions are the «periphery» or «satellites» of the «core» region. The vector of movement of economic resources is directed from the «periphery» to the «core».

The «core» strives to have a certain degree of economic self-sufficiency, while having a highly developed transport infrastructure, provided with all modes of transport.

Territories, the main functions and the most important services of which are presented in such a way that the region is able to meet most of the needs of the population itself, can be considered as already formed TLC.

Examples of such formed TLCs are Odesa and Kyiv oblasts. Respectively 5th, 8th clusters.

A characteristic feature of these clusters is the presence of all modes of transport, which provides an opportunity to create a powerful infrastructure network which includes: all types of transport routes; freight stations; gates; warehouses; loading and unloading terminals; different types of vehicles; professionally qualified personnel that carries out the transportation process and creates added value; management system of all types of transport in the regions with institutional and information coordination.

The conducted cluster analysis became the basis for the formation of Transport and Logistics clusters.

Thus during the analysis two problems were solved:

1. Allocation of the territory of TLC localization, on the basis of the administrative units defined in the cluster analysis or their set. Definition of TLC specialization, according to the European classification of TLC, the organizational structure of which consists of port and inland clusters, combining border and territorial (regional) clusters. The separation of port clusters is due to the development of seaports and the high importance of water transport in the economies of European countries, as well as the widespread use of multimodal transport.

Two TLCs were identified, which are formed: continental TLC on the basis of Kyiv region and port TLC on the basis of Odesa region. These regions have a highly developed transport infrastructure and skilled workforce, which allows to serve modern highly mechanized multifunctional multimodal terminal complexes, providing customers with freight forwarding services with a wide range of services and commercial and business services.

Thanks to cooperation with inland clusters, such as Kyiv TLC, Odesa Port TLC has the opportunity to move to a more complex category of TLC, such as gateway ports and dock ports, which would allow Ukraine to occupy a new city in the international transport services market. Port-gateways are ports in which the predominant type of operations are transshipment operations from sea to land or vice versa.

In the process of analysis, 4 regions of the «core» were identified: Dnipropetrovsk region, as well as Lviv and Kharkiv regions.

On the basis of the Lviv region, it is proposed to develop a border TLC, which is formed on the basis of transport hubs at the intersections of large international transport corridors with state borders. Border TLCs usually have a cargo specialization. Historically, border TLCs have developed on the basis of railway border crossings, but now the operations of freight vehicles in many TLCs are commensurate with the railway, or even exceed them. Therefore, it is expedient to connect the regions: Volyn, Zakarpattia, Ivano-Frankivsk, Rivne, Ternopil, Chernivtsi regions, which are included in the 2nd cluster and have developed road and rail transport systems, to the border TLC. The main trans-European transport corridors run through the territory of the border cluster regions, which creates the possibility of high-speed rail and road connections not only between the eastern and western regions of Ukraine, but also between Ukraine and almost all European countries.

On the basis of the core of transport systems of Kharkiv region, it is proposed to form a regional TLC, which includes both passenger and freight sectors.

Dnipropetrovsk region is also a «gravitational» region with great transport and socio-economic potential. But further research is needed to determine the specialization of these regions. On the basis of these regions it is possible to form both a port cluster with the center in Mariupol, and a powerful continental cluster on the basis of Dnepropetrovsk.

In this regard, there is a problem of distribution of regions of the 3rd cluster: river transport ports of Zaporozhye, Nikolaev, Kherson regions. It is necessary either to resolve the issue of joining this cluster to the Odesa port TLC, or to implement another option for the development of these territories, as these ports have the opportunity to develop industrial zones around them, which include, for example, production and processing, ie to join them to one of continental clusters.

Port clusters unite regions with a developed system of sea or annual transport routes. The remaining regions, which are the periphery or satellites of the core regions, need to be connected to separate TLCs.

Conclusions and perspectives of further research. Thus, the transport and socio-economic potential of the regions was analyzed, as a result of which two formed TLCs and five nuclei were identified, on the basis of which it is proposed to develop TLCs of appropriate types by joining regions with medium and low transport potential. At the same time, a certain part of the regions has a «natural» attraction to the respective nuclei. As for others, there are alternative accession scenarios, the choice of the best of which is proposed by building economic and mathematical models.

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