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**Methods of calculating the integrated indicator for assessing the socio-economic development of the territory: a marketing approach**

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**Abstract.** The modern strategic development of any territory is being actively discussed today within a reasonable combination of market instruments to increase the attractiveness of the territory and improve the quality of life. To assess the effectiveness of territorial marketing activities, the integrated indicator or the system of the indicators is needed, which could be used to monitor how the needs for the formation of long-term competitive advantages of legal entities and improving the life quality are met. It should be noted that the development of approaches to the assessing the socio-economic development of the territory has become a necessary major trend in their attractiveness.

The aim of the work is to develop scientific and methodological tools for calculating the integrated indicator for assessing the socio-economic development of the territory on the basis of a marketing approach. In the article was formed the author's methodology of estimation of socio-economic policy of territories. A set of indicators characterising the quality of territorial population life has been formed; the assessment methodology of development priority of territorial clusters is offered; the integrated indicator of the efficiency of the territorial marketing system has been developed. Specified that the review of the territorial complex is based on the indicators of the quality of life of the population, the map of the quality of life is developed, which takes into account the key subjective and objective components. The direction of further research is based on development of territorial marketing activities tools, for solution of socio-economic imbalances of territories.

The practical value of the article lies in the possibility of using theoretical and methodological developments for assessing the socio-economic development of the territory based on the marketing approach of stateauthorities in developing policy documents in socio-economic development of regions and settlements.

**Keywords:** territorial marketing, marketing activities, quality of life, competitiveness.

**Анотація.** Сучасний стратегічний розвиток будь-якої території сьогодні активно обговорюється в рамках розумного поєднання ринкових інструментів для підвищення привабливості території та покращення якості життя. Для оцінки ефективності територіальної маркетингової діяльності необхідний інтегрований індикатор або система індикаторів, за допомогою яких можна було б відстежувати, як задовольняються потреби у формуванні довгострокових конкурентних переваг юридичних осіб та покращенні якості життя. Необхідно відзначити, що розробка підходів до оцінки соціально-економічного розвитку території стала необхідною основною тенденцією щодо її привабливості. Метою роботи є розробка науково-методичного інструментарію для розрахунку інтегрального показника для оцінки соціально-економічного розвитку території на основі маркетингового підходу. У статті сформовано авторську методологію оцінки соціально-економічної політики територій. Сформовано комплекс показників, що характеризують якість життя населення територій; запропоновано методологію оцінки пріоритетності розвитку територіальних кластерів; розроблено інтегральний показник ефективності системи територіального маркетингу. Вказано, що огляд територіального комплексу базується на показниках якості життя населення, розроблено карту якості життя, яка враховує ключові суб’єктивні та об’єктивні компоненти. Напрям подальших досліджень базується на розробці інструментів територіальної маркетингової діяльності для вирішення соціально-економічних дисбалансів територій. Практична цінність статті полягає у можливості використання теоретико-методичних розробок для оцінки соціально-економічного розвитку території на основі маркетингового підходу органами державної влади при розробці програмних документів із соціально-економічного розвитку регіонів та населених пунктів.

**Ключові слова:** територіальний маркетинг, маркетингова діяльність, якість життя, конкурентоспроможність.

**INTRODUCTION**

In modern conditions, the most important task of management remains stable, harmonious and systematic social and economic development, based on research of territorial processes, analysis of problem moments, revealing of disproportions for possibility of further stable development of business activity and improvement of population's quality of life.

Competitive economy should be considered the territorial economy, which provides: supporting for the development of living standards and maintaining such positions when the goods of the territorial enterprises are successfully sold in outer markets.

A territorial approach is an important component of the creation strategy economic system development. Development of territories is a push for production, business, migration processes at different territorial levels, to ensure achievement of strategic goals of socio-economic development of regions and the country in general. Territorial development component as economic systems is an effective marketing activity, which should be based on an integrated indicator or system of indicators, which allows to form long-term competitive advantages for business and to increase the indicator of population's quality of life. The essence of managing the process of territorial transformation is the purposeful development of a set of economic and marketing mechanisms, regulators, which allow to choose the directions of sustainable development for territories.

Territorial attractiveness includes such key elements as competitive advantages and capacity to attract people, investments, resources, etc. that makes it interesting for different target audiences [1].

The development of the market relations in Ukraine has led to the intensification of the activities of economic entities aimed at achieving the highest possible commercial results. As a result, there are “external externalities” (secondary effects), which often have a negative impact on humans. Accordingly, on the one hand, there is a necessity to ensure ecological, social and food safety [2]. And, on the other hand, the objective proposals were made to take into account and assess the impact of these factors on vital activity. A new approach has been developed that offers to research not only the level but also the quality of life. Quality of life is a complex concept that is interpreted and defined in a number of ways within and between various disciplines [3].

Until the end of the 1980s, the concept of living standards prevailed in the world, which was based on the cost quantitative indicators calculated as the value of gross domestic product (GDP) or national income (NI) per capita [4]. According to the UN definition (1961), the standard of living includes the following concepts and indicators: health, food consumption, lifestyle and activities, living conditions, social security, clothing, leisure, human rights.

Nowadays the concept of life quality dominates in the world, which has included the concept of living standards and significantly added it. In 1990, the UN introduced the integrated indicator – the Human Development Index (HDI), which consists of three components: life expectancy, education and living standards. The quality of life of the individual meets with the quality of life of the community or the societal quality within it [5]. The concept of “quality of life” reflects a set of conditions that determines physical, mental and social well-being. These are both external factors that ensure human well-being (food, housing, employment, services, education, etc.) and the subjective understanding of well-being (health, family relationship, work, financial situation, educational opportunities, self-esteem etc.), pleasure, happiness. According to this interpretation, the quality of life can be identified with the help of the system of objective and subjective assessments [2]. The first group is the set of certain objective indicators that compare the actual values with the normative ones. The second group contains subjective results of marketing research in the form of population surveys [6]. Of course, this technique can be used periodically and “point by point” for strategic assessment of life quality, but requires significant time, labor and financial costs [7].

The specific set of the indicators can be expanded or narrowed. But, in any case, such a map will give an idea of the real situation and allow you to model an adequate territorial development policy. The important indicator of competitiveness in the world market, which demonstrates the strength of economic positions, is leadership in a particular branch [8]. However, in general, the structure of the Ukrainian economy is extremely distorted both at the national level and at the level of individual regions. This problem is one of the key ones. Thus, in 2020, 42.8% of the products produced in Ukraine were in Kyiv and six of the 24 regions (Dnipropetrovsk, Donetsk, Zaporizhia, Kyiv, Odesa, Kharkiv) had 31.4%. In the other 18 regions only 25.8% of the total industrial output was produced [9]. Taking into account the dynamic understanding of the term “territory”, territorial development can be described as oriented changes that by stimulating driving forces, such as: entrepreneurship, balancing endo-and exogenous factors as well as competitiveness and cooperation [10, 11].

The important component of territorial development is the implementation of balanced structural policy, as well as the formation of an effective management system that would be able to determine the priorities of economic development and thus contribute to the formation of the optimal economic structure [12]. This problem is multifaceted and requires a fundamentally new approach to their functioning and improvement. The management mechanism is needed, which would contain a set of economic methods, levers, regulators to choose the priority areas of territorial economic development for forming a rational structure of the territorial production complex. The cluster policy has a large potential in solving this problem at the regional level, the instruments of which are territorial clusters that improve the region's competitiveness, as well as integration and diversification of the regional economy [13].

The aim of the paper is to substantiate the theoretical and methodological principles and develop scientific and methodological tools for calculating the integrated indicator for assessing the socio-economic development of the territory on the basis of a marketing approach. It is planned to form a set of indicators that characterize the quality of life of the population of the territories, based on the quality of life map, to develop a methodology for assessing the priority of territorial clusters and to develop an integrated indicator of territorial marketing.

**LITERATURE REVIEW**

The economic aspect of sustainable development is connected with the transition from the current economy of resource use to the economy of their systemic reproduction, while subjects of sustainable development are called to become the territories of different spatial groupings – cities, agglomerations, regions.In modern conditions, considerable attention is paid to the development of territories on the basis of marketing of territories, which is considered as one of the areas of socio-economic policy. The essence of the marketing approach is that the territorial body must take into account the harmonization of its interests with the interests of community members and businesses. For example, among the presented studies it is necessary to note the results obtained by Kulikova E. [14], Rehailia H. and Saadi I. [15], Oklander M. Chukurna O., Oklander T. and Yashkina O. [16].

The necessity to achieve stable, dynamic and sustainable economic growth and on this basis to improve the life quality of the population, the maximum approximation of the welfare to the European standard necessitates the development and implementation of territorial economic policy. The aim of the regional public administration should be to create favourable conditions for the formation of long-term competitive advantages of economic entities and on this basis to improve the life quality of the local population. These statements can be traced in the papers of the following scientists(Haraldstad K., Wahl A. and Andenæs R. [3], Murgas F. and Klobučník M. [5], Pandas A. [2]). The goals of territorial economic policy and the goals of the concept of socio-ethical marketing are essentially the same, and, therefore, the application of the concept of socio-ethical marketing, methodology and technology of marketing at the territorial level will increase the economic and social level of the territory.

Working on the issue of determining the essence of territorial marketing, it is first necessary to determine what is meant by the territory to which marketing efforts are applied [14,15]. Traditionally, it is customary to understand the territory of the economy as a historically established geographic place, a locus characterised by individual characteristics and certain resources (available and potential) to meet the needs and demands of internal and external consumers, viewed as partners, with which long-term mutually beneficial relations are built, according to an ideal scenario [17].

Socio-economic development of the territory largely depends on the size and efficiency of its potential.That is why, with all complexity and multiaspect of territorial problems, one of the most important modern directions of analysis is development of scientific and methodical approaches to assessing the effectiveness of its use.The dynamism of economic systems necessitates the formation of a mechanism for the effective use of territories and should combines the system of economic and marketing instruments that are able to ensure effective use of investment, innovation and labor potential[10, 13].

**MATERIALS AND METHODS**

For the formation of author's tools for the development and evaluation of socio-economic policy of the territories. The paper proposes the following stages that characterize the course of the study:

* the method of constructing a graphic multi-vector model of the "competitiveness polygon" was adapted to the specifics of territorial economic systems based on the assessment of the priority of territorial clusters through the formation of a list of 12 indicators;
* the scientific and methodical approach to calculation of an integrated efficiency indicator of functioning of territorial social and economic system is offered. This approach consists of the following stages:
1. selection, ranking and determination of the level of local indicators to meet the interests of: consumers (increasing the competitiveness of economic entities and quality of life), the executive branch and society as a whole;
2. division into two groups of selected indicators depending on whether the growth rate is positive or negative;
3. determining indices for each local indicator separately for each group;
4. assignment to each local indicator of a weighting factor;
5. definition of the system of integrated local indicators: satisfaction of consumer interests.Namely, increasing the competitiveness of economic entities and the quality of the population life, meeting the interests of the executive branch, meeting the interests of society.
6. determination of the integrated indicator of the efficiency of the territory system. This indicator characterizes the formation of long-term competitive advantages of legal entities and improving the quality of life, increasing budget revenues, neutralizing the negative effects of economic activity.

For an effective evaluation of the effectiveness of the territorial complex, it is advisable to use only a set of objective indicators of population quality(Figure 1).

Levels of well-beingDietary

 3 World Working

conditionsMedicine

 2 National

 1 Social

 0 Ecology Housing

Services Wages

Education

**Figure 1.**Map of life quality (model of forming an integrated indicator of life quality – HDI)

Source: developed by the authors

The following list of the assessing indicators of the priority of territorial clusters that correspond to the radius vectors of the graphical multi-vector model can be proposed:

1. total production;
2. level of labor productivity;
3. availability of material and technical base;
4. profitability (loss) of products;
5. relative share of profitable enterprises;
6. cash flow;
7. number of employees;
8. contribution to GDP (GVA);
9. the share of exports in sales of the territory;
10. trained personnel;
11. implementation of fixed funds;
12. production index.

The assessment of the potential possibilities of each cluster is carried out depending on the corresponding area of the polygon. The larger this area, the higher the competitiveness rating of the cluster. Thus, the area of such a polygon becomes a kind of competitive criterion of the cluster. The criterion is anestimation way of the choice validity of priority areas of the activity in the territorial economic system (country, region, city) [16].

The construction of a graphical multi-vector model is carried out according to the following algorithm:

1. The angles between the radius-vectors are the same and are determined by the formula:

$α=\frac{360}{m}$(1)

where*α*–the angles between the radius vectors;

*m*– the number of radius-vectors used in the model.

2. Length normalisation of *i* radius-vector for the indicators whose growth rate is desirable and reflects increasingof the competitive level of the cluster is carried out by the formulas:

$R\_{i}=\frac{X\_{ACT\_{i}}}{X\_{MAX\_{i}}}$ (2)

where$R\_{i}$–normalised length of *i* radius-vector, $i=\overbar{1,m}$;

$X\_{ACT\_{i}}$–the actual value of the indicator of *i* radius-vector (the values of the selected indicators, which cannot be found due to the lack of the methods or relevant data, are defined by the expert assessment.);

$X\_{MAX\_{i}}$– the maximum value of *і* radius-vector.

$$R\_{MAX\_{i}}=1=X\_{MAX\_{i}}$$

where$R\_{MAX\_{i}}$ –the maximum normalised length of *i* radius-vector is equal to one at the maximum value of the corresponding indicator.

3. The length normalisation of *i* radius-vector for the indicators whose growth rate is not desirable and reflects decreasingof the competitive level of the cluster is carried out by the formulas:

$R\_{i}=\frac{X\_{MIN\_{i}}}{X\_{ACT\_{i}}}$ (3)

where–the minimum value of *i* radius-vector.

$R\_{MAX\_{i}}=1=X\_{MIN\_{i}}$*,*

where$R\_{MAX\_{i}}$ –the maximum normalised length of *i* radius-vector is equal to one at the minimum value of the corresponding indicator.

4. The area of “competitiveness polygon” can be determined by the formula:

$S\_{CL\_{j}}=0,5×\sin(α×(X\_{1})×X\_{2}+X\_{2}×X\_{3}+X\_{3}×X\_{4}+…+X\_{m-1}×X\_{m})$ (4)

where$ S\_{CL\_{j}}$–the area of the competitiveness polygon of*j* cluster, $j=\overbar{1,n}$;

n –the number of the clusters in the structure of the territorial economic complex.

Thus, the area of the competitiveness polygon is a function of the length of the radius-vectors:

$S\_{CL\_{j}}=f(X\_{1},X\_{2},X\_{3},X\_{4},…X\_{m-1},X\_{m})$*.*

The difference in the areas of the competitiveness polygons of the clusters will reflect their relative priority. Therefore, the condition of competitiveness, for example, cluster 1 over cluster 2 has the form:

$S\_{CL\_{1}}-S\_{CL\_{2}}>0$*.*

Since the activities of territorial authorities are carried out in order to achieve indicators above the normative or average, the following criterion is proposed for the effectiveness of the territorial system: the system is effective if its indicators are not less than the normative or average in a given area.

**RESULTS AND DISCUSSION**

Assessing and analysing the effectiveness of marketing activity within macro- and meso-economic systems, it is impossible to limit only the life quality indicator, because in this case the structure of the indicator is oversimplified. In addition, achieving a certain life quality is long. An integrated indicator of the effectiveness of the territorial marketing system is proposed, with the help of which it is possible to control how the needs for:

* formation of long-term competitive advantages of legal entities and improvement of life quality of the population;
* increasing budget revenues;
* neutralisation of negative consequences of economic activity.

These needs are different and therefore the relevant local indicators have different dimensions. Therefore, to determine the integrated index, it is necessary to use an index form, in which the influence of dimensionality is eliminated and there is an opportunity for mathematical calculations. The algorithm of the proposed calculating method of the effectiveness integrated indicator of the territorial marketing system consists of six stages.

The first stage is the selection, ranking and determination of the level of the local indicators to meet the consumers’ interests (competitiveness increasing of businesses and life quality), the executive branch and society as a whole.

1. The indicators of customers’ satisfaction.

1.1. The indicators of competitiveness increasing of the economic entities:

* GDP or GVA per capita;
* value of investment per capita;
* innovation spendingper capita;
* average educational level of employees;
* profitability of economic activity;
* net exports.

1.2. The indicators of life quality of the population:

* life expectancy;
* education level of the population;
* employment rate;
* inflation rate;
* level of average income per capita;
* savings in banks per capita;
* poverty level (minimum consumer budget);
* housing.
1. The satisfaction indicators of executive bodies:
* the capacity of tax revenues and fees;
* degree of budget balance.
1. The indicators of public interest (in this group of the indicators, all the coefficients are calculated per 100,000 population):
* natural increase (+), decrease (-) of the population;
* crime rate;
* crime rate for especially serious crimes;
* the incidence rate of particularly dangerous infectious diseases;
* AIDS incidence rate;
* drinking water quality of conformance to world standards;
* atmospheric air quality of conformance to world standards.

The second stage is the division of the selected indicators into two groups, the growth rates of which are:

1) positive value;

2) negative value.

The following Table 1 shows two groups of indicators for which growth is desirable, group 1 and undesirable, group 2. The indicators include the same key components, namely: consumer satisfaction indicators, which are divided into indicators of increasing the competitiveness of economic entities and quality of life, then indicators of satisfaction of the interests of executive bodies and indicators of public interest.Table data provide a detailed view of the components of key indicators for which growth is a positive and a negative dimension.

**Table 1.**Distribution of key local indicators of positive and negative response to growth

|  |  |
| --- | --- |
| Indicators for which growth is desirable (group 1) | Indicators for which growth is undesirable (group 2) |
| 1. Indicators of consumer satisfaction.

1.1.Indicators of competitiveness increasing of economic entities:* GDP or GVA per capita;
* the value of investment per capita;
* innovation costs per capita;
* median educational level of employees;
* profitability of economic activity;
* net exports.

1.2.Indicators of life quality:* lifetime;
* education level of the population;
* employment rate;
* income level per capita;
* the amount of savings in banks per capita;
* provision of housing.
 | 1. Indicators of consumers’ satisfaction.

1.1.Indicators of competitiveness increasing of economic entities:* no

1.2.Indicators of life quality:* inflation rate;
* poverty rate (minimum consumer budget).
 |
| 1. Indicators of satisfaction of executive bodies’ interests:
* the amount of tax revenues and fees.
 | 1. Indicators of satisfactionof executive bodies’ interests:
* the degree of budget balance
 |
| 1. Satisfaction indicators of public interests:
* natural population increase (+);
* drinking water quality of conformance to world standards;
* atmospheric air quality of conformance to world standards.
 | 1. Satisfaction indicators of public interests:
* natural decrease (-) of the population;
* crime rate;
* crime rate for especially serious crimes;
* the incidence rate of particularly dangerous infectious diseases;
* AIDS incidence rateо.
 |

Source: developed by the authors

The third stage is to determine the indices for each local indicator separately for groups 1 and2.

For group 1, the index is calculated by the formula:

$I\_{i}=\frac{IND\_{ACT\_{i}}}{IND\_{NORM\_{i}}}$(5)

where$I\_{i}$–the index*i*of local indicator, $i=\overbar{1,n}$;

*n*–the number of indicators;

$IND\_{ACT\_{i}}$– theactual level *i* of local indicator;

$IND\_{NORM\_{i}}$– the normative or average national level *i* of local indicator.

For group 2, the index is calculated by the formula:

$I\_{i}=\frac{IND\_{NORM\_{i}}}{IND\_{ACT\_{i}}}$(6)

The fourth stage is the assignment each local indicator of weighing factor (), which can take two forms:

1. to achieve the validity and reliability of the results, it is recommended to use the method of expert evaluation. At the same time, it is necessary to ensure the accuracy and understandability of the questions, to involve a wide range of experts, to achieve full independence of inner-directedness;
2. taking into account the place of the indicator (*m*), which it occupies in each list.

The most significant indicators are in the first place, then in descending order of importance.

Weighing coefficient:

$φ\_{i}=\frac{m}{2^{m}}$ (7)

The fifth stage is the definition of the system of integrated local indicators: managing customers’ needs (increasing the competitiveness of economic entities and quality of life; satisfaction of executive interests; satisfaction of public interests. Each of the four integrated local indicators is determined by the formula:

$E=\sum\_{i=1}^{n}φ\_{i}I\_{i}$ (8)

The sixth stage is to determine the integrated indicator of the efficiency of the territory system.

$E=\frac{E\_{1}+E\_{2}+E\_{3}+E\_{4}}{4}$ (9)

Considering the developed scientific and methodological tools for calculating an integral indicator for assessing the socio-economic development of a territory based on a marketing approach, we can conclude that the problematic point is the complexity of its measurement.

However, this technique is extremely effective, because through the quality of life of society as a whole and its various social groups, it is possible to carry out an integral assessment of the effectiveness of territory management.

A significant advantage of the proposed integral indicator is the ability to consider long-term competitive advantages for business and improve the quality of life of the population, as well as show the direction of development of the territory and evaluate its effectiveness. In addition, the methodology makes it possible to analyze individual components of partial indices, which makes it possible to solve problems in certain areas of the life of the population of a particular territory.

The integral indicator presented inthe paper is of a complex nature, in turn, the existing studies on this topic have a narrower focus. For example, the methodology of AyvazyanS.[18] is aimed only at assessing the quality of life of the population of the territory and includes several indicators within itself: 1. Quality of the population; 2. Welfare; 3. Social security; 4. Environmental quality; 5. Natural and climatic conditions

Research by TarasovP., SmirnovaD. [19] considers the indicators adjusted taking into account the marketing strategy of the analyzed territory and the systems of indicators considered according to the method of AyvazyanS. based on the multifactorial modified Fishbein formula [20].

The marketing approach regarding the socio-economic development of territories allows to take advantage of all the opportunities of a particular territory to improve the quality of life of the population and the efficiency of the activities of management and business entities.

**CONCLUSIONS**

The aim of the study is achieved.A method for calculating an integrated indicator for assessing the socio-economic development of the territory is developed.This approach allows harmonizing the interests of citizens, businesses and public and territorial authorities.The development of a scientific and methodological approach to the calculation of the integrated indicator of the effectiveness of the territorial system allows to developing strategies and programs for socio-economic development of territories. This process contributes to the formation of long-term competitive advantages of legal entities, improving the quality of life, increasing budget revenues, neutralizing the negative effects of economic activity.

The results of the study can be used in the work of regional authorities to create favorable conditions for the formation of long-term competitive advantages of economic entities and, on this basis, to improve the life quality of local people.

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