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**THE INFORMATION BASE FOR ANALYZING THE RESULTS  
FUNCTIONING OF REGIONAL ECONOMY**

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***Abstract***

The relevance of the study is due to the problems of leveling of the socio-economic development of the regions, which are solved in the coordinate system of the spatial economy. In order to develop and make effective managerial decisions at the state level, focused on overcoming significant differences in the socio-economic development of territories, specific and high-quality information is needed on a wide range of issues related to the development of strategic programs for the development of territories and measures for their implementation. The article defines the features of the formation of an information base that reflects the economic and social aspects of the region's life for the purpose of analysing the results of the functioning of its economic complex. The necessity of integrating information resources of municipal and regional statistics to ensure the tasks of socio-economic analysis of territories and inter-territorial comparisons when developing a spatial development strategy has been identified. A methodological approach to a cross-cutting analysis is proposed. A unified approach to the calculation of the system of analytical indicators will provide comparable results for all subjects of diagnostic measures, will reveal in more detail the reasons that affect the level of development of the regional economy and will increase the degree of substantiation of strategic decisions aimed at levelling the socio-economic situation of the territories.

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## 1. Introduction

The existence of the single economic space is the important condition for the sustainable development of the state and the effectiveness of its economy. The formation and maintenance of the integrity of this space is the most important imperative of the country's development strategy. State and local authorities take a set of special measures to preserve the domestic market, stabilize the national monetary system, develop unified infrastructure networks, and reproduce the resource base, including human capital. These tasks are particularly difficult in the context of the federal structure, since the presence of the regions with various levels of natural and industrial-technical resources, development and performance of economic activities requires appropriate additional efforts and costs to agree on development targets, involves the use of redistribution functions. In this regard, the development of the Country's Spatial Development Strategy, taking into account the basic principles of the federal structure (the region, being an integral part of the country's economic territory, has the right to self-development, choice of industry specialization, independent social and economic transformations), should be based on the use of mechanisms of inter-regional cooperation and inter-municipal cooperation to improve the welfare of the population. Since economic analysis is usually considered as the activity of preparing the data necessary for the scientific substantiation and optimization of managerial decisions, the parameters of the spatial strategy should be based not only on the results of the analysis of the regional economy of each subject of the federation by federal districts, but also on the results of the analysis of socio-economic situation of municipalities in each region. Identification of problems at the level of municipalities, and then at the regional level, will ensure the validity of the predicted strategic development indicators (Sedakov, 2008; Trusova, 2011).

However, the analysis of the results of economic activity in the region is currently complicated by various reasons, including methodological, organizational, informational and technical factors, which not only significantly narrow the boundaries of analysis, but also reduces its quality. The purpose of this study is to understand the problems that often determine the methods and procedure for conducting an analysis of economic activity at the level of regions-constituent entities of the Russian Federation, and an attempt to overcome them.

## 2. Problem Statement

Defining the Russian economy as a multi-regional organism, functioning on the basis of vertical (center - regions) and horizontal (inter-regional) interactions (Lvov, 1999), we can draw an analogy with the regional economy, considering it as a multi-municipal organism, where the number of vertical and horizontal interactions, accordingly, increases, which must be taken into account in regional planning and in the developing development strategies. The spatial development strategy of modern Russia, aimed at aligning the parameters of the socio-economic situation of regions of the Russian Federation, should focus on solving the problems of ensuring social justice, comprehensive development of human potential, ensuring a high level of well-being of the population living in specific territories (Kolomak et al., 2018)

A region - a constituent entity of the Russian Federation is an administratively controlled territory within the established boundaries - this is either a region or a republic, there may be a region and a city of

federal significance (Moscow, St. Petersburg, Sevastopol). But in any case, it unites on its territory the totality of various municipal formations: urban districts, towns and villages, municipal areas (several settlements united by a common territory). Within each municipality, there is a local self-government, a municipal property, a local budget and elected bodies of local self-government. Various economic units are located on their territory, characterized by different levels of development of economic activity. Within municipalities the population lives, carrying out their labour activities collectively at enterprises (in organizations and institutions) of various organizational and legal forms, various industries and types of activity, or engaged in individual entrepreneurship. And since the income tax for individuals who work at enterprises geographically located in this municipality is paid to the local budget, any organization, regardless of size and ownership (private, municipal, collective), contributes to the economy of the municipality in particular, and the economy of the region as a whole.

In this regard, the economy of the region can be considered as an additive model, the components of which are the economies of business entities of the municipalities in the region, therefore, the analysis of the economic activities of the regional economy should be carried out taking into account the economic activities of the municipalities.

The theory and practice of economic analysis has accumulated a large arsenal of methodological principles, techniques, and methods for processing quantitative information characterizing the activities of economic entities (Bakanov & Sheremet, 2001; Savitskaya, 2017). The use of certain methods of analysis is largely determined by the objectives of the study, but, first of all, by the fundamental requirements for the content and quality of the information base, to the level of aggregation of data consistent with the hierarchy of the business entity (micro-, meso-, macro-level), to the technical opportunities for economic analysis. The meso-level of the regional economy determines the methodological features of the procedure for analysing the results of regional management.

If the subject of an economic analysis of an enterprise, as a rule, is the reason for the formation and change of the results of its economic (production, financial) activities, then the subject of the analysis of the regional economy is the statistical characteristics of changes in the results of the functioning of the regional economy (in time and space), as well as the identification of the cause and effect relationship of regional socio-economic phenomena and processes that affect development parameters. The object of regional analysis can be a variety of processes and phenomena that reflect economic production in the region and the characteristics of the population activity.

A comparative analysis and study of the laws governing the functioning of the economic activity of the regional economy allows to identify trends in the formation of territorial indicators of the development of productive forces, correctly evaluate the results achieved, identify the reserves for improving the efficiency of the regional economy, determine strategic directions for developing a policy for levelling the socio-economic situation of municipalities in the region, and the region itself as part of the federal district (Zvereva, 2007).

However, the information base of the regional economy has a characteristic specificity, which mainly determines the possibility of applying certain methods and ways of analysis. Features of the formation of information resources based on regional and municipal statistics for the purposes of regional

analysis are determined by a number of methodological, historical, organizational and political reasons that must be taken into account in analytical studies.

### **3. Research Questions**

The study addresses the following issues:

#### **3.1. The specifics of the formation of a regional information base**

The peculiarity of the regional information base is characterized by the lack of systematic planned indicators. This is due to the fact that the regional plans are presented in a certain set of documents containing the Development Concepts, Strategic Development Plans, and Regional (Federal) targeted programs focused on certain aspects of solving the problems of the regional economic complex. It turns out that there are plans, but there are no indicators systematized and summarized in one document. All varieties of regional planning documents contain a set of planned activities, coordinated by timelines, performers, amounts of funding and their sources, however, it is not possible to bring together the expected results of these plans and assess their implementation. This situation is typical for both regional and municipal economies. So, for example, in the Rostov Region, the Development Strategy is currently being implemented, which includes five substrategies, 18 Concepts and more than 30 targeted programs from various sources of financing. Or, in the Novosibirsk Region, in addition to the Development Strategy, 40 targeted programs funded from the regional budget are being implemented, more than 10 state programs, each includes several subprograms. A similar situation is observed in all regions of the Russian Federation. The problem is not only in a significant number of strategic and planning documents and their incomparability in individual regions, but also in differences in the planning horizon.

The current situation cannot be characterized as negative - these are the features of the regional planning, but it is difficult to conduct a comparative analysis regarding the fulfillment of planned obligations (Zvereva, 2007). It is necessary to consider each target program separately, bearing in mind that they show only the resources for its implementation and the actual use of funds. It is impossible to find out from the materials presented on the website of the Administration of Regional Authorities why the program is not 100% complete. If the reasons are indicated, then there are no numerical values, therefore, the possibilities of factor analysis are very limited. It seems that no one can figure out so many planning documents, single out planned indicators of programs and strategies from them, summarize them by type of economic activity.

In addition to comparing the actually achieved levels of various program indicators with planned values, they can be compared for other reasons. Currently, statistical observations on regional and municipal statistics provide an excellent opportunity to carry out dynamic and correlation-regression analysis.

However, there is also a peculiarity here in the formation of regional information resources, based on taking into account the basic requirements of economic analysis - to compare like with like.

In this regard, one can single out the second feature of the formation of a regional information base that provides objective comparisons of indicators over time, which is associated with determining the length of the time series (Elisevov, 2002). A statistical analysis of the development of the parameters of economic

production in the region and municipalities implies, first of all, the identification of trends in the time series of the main accounting statistical categories.

The development trend of any phenomenon studied is characterized by analytical indicators of speed, acceleration, growth rate, doubling period. The average annual chain and basic indicators of dynamics can adequately reflect the development of a phenomenon in time only if the studied dynamic series change smoothly, that is, they do not experience sharp fluctuations at certain times. For series subject to significant fluctuations, it is better to use analytical levelling, while the shape of the trend will depend on the characteristic features of the time series, and trend indicators are tightly associated with certain properties of the analytical functions. Since the main task of the study is to identify a real existing trend form of the parameters of the regional economy, to select the equation that best approximates the objective trend, the theoretical analysis of the process of the development of the phenomenon on the part of material nature, internal causes and external conditions are recognized as the starting point of the method for its identification (Harris, 2011; Nizhegorodtsev et al., 2017).

The possibilities of applying analytical levelling methods using the statistical analysis of economic production and vital signs in the regions are quite wide. However, it is difficult to use long lines for studying the cycles of the regional economy, since the dynamics of the analysed indicators between 1991 and 2000 was influenced exclusively by negative factors. Their impact is due to the political, legal and economic conditions of the economy (“go-go ‘90s”) prevailing during the period of perestroika, and not thought out plan (and even its absence) for the country’s transition to the market.

In addition to significant structural changes in the economy of regional economic complexes, the formation of the information base was influenced by “large-scale” administrative measures. The creation in 2000 of seven federal districts, when along with the existing large economic regions for which statistical information was generated and summarized, a regrouping of regions - subjects of the Russian Federation was made and a list of federal districts was approved, which required corresponding changes in the formation of the information base.

In 2010, there were eight districts, since the North Caucasus Federal District stood out from the Southern Federal District, which led to a change in generalizing statistical indicators for these macro-regions. In addition, there are changes in the composition of the constituent entities of some districts. So on July 28, 2016, after the accession of Crimea to Russia (2014), two entities were included in the Southern Federal District - the Republic of Crimea and the city of Sevastopol. More recently (November 2018), the President by his decree moved Buryatia and the Trans-Baikal Territory from the Siberian District to the Far East. Therefore, to ensure comparability, all parallel time series in the context of federal districts can be objectively compared since 2010, and, accordingly, the length of the time series of the studied parameters of the regional economy during modeling does not exceed seven to eight years, which, if there is a clear trend component, may be enough. However, taking into account changes in the administrative borders of recent years in a number of districts, the method of analytical alignment for the spatial economics of the subjects of these macroregions with the aim of comparative analysis of existing trends can only be used with strong reservations.

### **3.2. Transformation of approaches to the organization of statistical observations and the methodology of their processing**

Since January 1, 2003, significant changes have affected approaches to the organization of statistical observations and the methodology of their processing and generalization in connection with the introduction of the All-Russian Classifier of Economic Activities, which provides an adequate description of the Russian economy in a market environment and are harmonized with international analogues. The boundaries of existing types of activities have changed, for example, tea leaf processing in the All-Russian Classifier of National Economy Sectors was referred to as “Industry”, and now refers to as “Agriculture, Hunting and Forestry”, fishing has become an independent activity, and logging is included in section "Agriculture, hunting and forestry", etc. This means that when calculating the relative values of comparison over time, one cannot take the regional statistics for 2000 as the basis, otherwise there will be disparate estimates (Eliseevoy, 2002), however, some scientists and practitioners allow such comparisons.

In addition to the dynamic analysis of the results of the functioning of the regional economic complex, the most important area of research is the analysis of the relationship of attributes that affect the characteristics of its development, which underlies the correlation and regression analysis (Ryabushkina, 1982). The interest in such studies is confirmed by the increasing number of publications and works every year, and is largely justified by the availability of an appropriate information base, the relevance of topics on forecasting, adaptive-simulation modeling of regional parameters (Fattakhov et al., 2018; Kuklin & Nasluga, 2018; Kulagina & Stepanyan, 1999; Nizhegorodtsev et al., 2017).

Moreover, the information base of regional studies has been significantly expanded due to the development and implementation of statistical observations in practice, according to the “Unified system of indicators characterizing the socio-economic situation of the municipality” (2002). The system includes indicators characterizing the institutional structure, budget, production sector, money income and expenditure of the population, the consumer market and the labour market, the social sphere (housing and communal services) of municipalities, etc.

Conducting additional statistical observations at the municipal level is designed to ensure the completeness of the analysed regional information and to improve the quality of strategic decision-making both at the level of municipalities and at the level of regions. Therefore, an analysis of the functioning of the territorial economic complex and the life of the population of the region, the results of which will be a guideline for developing a spatial development strategy, is advisable to start with an analysis of its municipalities, which assumes a cross-cutting nature in the study (municipalities - the region) and a systematic approach to building the information base of the study.

## **4. Purpose of the Study**

The purpose of the work is to develop an algorithm for analysing data from municipal and regional statistics. The cross-cutting nature of the diagnostic procedures in the analytical study of municipalities - administrative units of the region - allows to get specific and high-quality information not only about the state of each of them, but also about the state of the region as a whole. Unified methodological foundations for the diagnosis of administrative-territorial entities within the region will provide comparable analysis results and increase the probability of developing more justified regional policy measures, taking into

account the identified factors of economic growth at the level of each municipality, which helps reduce economic threats and solve the most important strategic tasks of the regional development.

A possibility of conducting a cross-cutting comprehensive analysis of the regional economy is determined by the presence of statistics related to the quality and quantity indicators observed both for the level of municipalities and for the level of the region-subject of the Russian Federation. The qualitative and quantitative composition of the analytical indicators that form the research information base should be guided by providing a systematic description of the dynamics of the development of the region and administrative-territorial entities in its composition.

## **5. Research Methods**

The starting point for using the systematic approach is the mechanism of cause-effect relationship of the individual components of the municipal economy and generalizing parameters of the regional economy. The systematic construction of the information base is ensured by the structural representation of the economy of the economic entity under study (municipality, region), taking into account the target orientation of its development, the level of provision of necessary resources (labor, material, financial, natural, etc.) and obtaining the corresponding results (turnover of organizations, level of consumption, profit of business entities of all forms of ownership, etc.) (Milovanov, 2004).

The general design of the system of statistical indicators for the analysis of the socio-economic situation of the region and its municipalities may include these blocks: characteristics of the resources provision of the territory (development factors); characteristics of the territory's resources implementation (functioning results); characteristics of the level and quality of life and characteristics that reflect a comprehensive (integral) assessment of the socio-economic situation of the territory (municipality, region).

Development factors are presented by demographic and labour resources, industrial or social infrastructure, and financial resources of the territory. The operating results are represented by two subsystems, the first of which reflects the achieved results of manufacturing, trade and public catering, and the second reflects the financial condition of the economic entities of the territory.

The choice of indicators is dictated by specific, applied research objectives, the minimum but a sufficient set of indicators should be selected, - statistically recorded reporting indicators, firstly, reflecting the most important aspects of the socio-economic situation in the municipality and in the region; secondly, characterizing the interdependence with indicators of the living standards of the population.

## **6. Findings**

The living standards indicators of the population reflect the effectiveness of the functioning of the regional economy and have a decisive influence on the assessment of its state. They are both the causes and the consequence of the emerging trend in the development of the regional economy. The system of statistical indicators for diagnosing the socio-economic situation of the territory includes three blocks:

- indicators of resource provision;
- indicators of resource efficiency;

- indicators of level and quality of life.

The final stage of the assessment is a generalization of the socio-economic situation of the administrative-territorial entity.

The results of the systematization of indicators of municipal and regional statistics reflecting the socio-economic situation of a particular territory in terms of its resource provision are presented in Table 01.

**Table 01.** System of statistical indicators for the diagnosis of resource support of administrative-territorial formation (municipal district, region)

Demographic characteristics and labor resources	Resource characteristics of the production sector	Characteristics of financial resources
The population of the territory	Fixed assets, including livestock of the main types of cattle and poultry in farms of all categories	Fiscal capacity of the territory;
The number of births and the number of deaths per year	The number of enterprises and organizations, including farm (peasant) households, their structural characteristics	Balanced financial result (profit minus loss) for medium and large enterprises
Unemployment;	Investments in fixed assets	
Migration;		
Population growth;		
Economically active population		
Number of employees		

Indicators reflecting the performance of the socio-economic system of the territory are presented in Table 02.

**Table 02.** System of statistical indicators for diagnosing the effectiveness of the use of resources of the territory

Indicators of production and sales of goods, works, services	Financial performance indicators
Shipped goods of own production;	Profit and loss of enterprises and organizations;
Turnover of organizations	The number of enterprises and organizations, including farm (peasant) households, their structural characteristics
Retail sales and catering turnover	Accounts receivable and payable;
Volume of paid services of the population	Number of unprofitable enterprises

The statistical indicators included in the first and second blocks are presented by absolute values, part of the characteristics of the third and fourth blocks (Table 03) are presented by per capita indicators, but in any case they are the basis for calculating the system of analytical indicators expressed by relative values of dynamics, comparison, intensity.

Comparison of the development levels of municipalities in the region is carried out only on the basis of the calculated relative values, especially since all generalizing characteristics are usually represented by

indexes. To characterize the living standards, it is better to use relative intensity values, i.e. per capita, or for example, a two-component indicator that reflects the ratio of per capita money income and the subsistence level in the region.

**Table 03.** General indicators of living standards and socio-economic status of the territory

<b>Block 3. Characteristics of the level and quality of life</b>	<b>Block 4. Generalizing characteristics and assessment of the state of the subject</b>
Nominal wages; money income of the population;	Economic growth rates;
Nominal wages; money income of the population	Volume indexes;
Number of crimes;	Gross Regional Product Per Capita
Volume of paid services of the population	Number of unprofitable enterprises
Provision of kindergartens, schools and other educational institutions;	Human asset index
Provision of health services	

Suppose to analyse a demographic situation, Pokrovsky's vitality coefficient and the coefficient of total population growth are used; to assess the use of labour resources - employment and unemployment rates.

To characterize the efficiency of resource use, it is better to use dynamic characteristics - a coefficient or growth rate of organizations, retail trade, and public catering turnover. If we fix the growth rate of industrial production in some municipality and they are higher than in another, then this may indicate an increase in labor productivity, an increase in the efficiency of economic activity, the preservation of employment of workers and an increase in their income.

Based on the calculated analytical indicators, which together characterize the socio-economic situation of the territory, a comparison is being made with the data of other municipalities in the region. The grouping of municipal regions according to the obtained values of the economic growth indexes makes it possible to single out those territories in which the growth rates in the studied areas of economic activity are more than one hundred percent. The second group, for example, includes those areas for which there is a decrease in one of the types of activity, i.e. the index value is less than one hundred percent and the remaining municipal areas fall into the third group. Based on the averaged growth rates by the type of economic activity, we can calculate the aggregate economic growth index for each group of municipal regions, obtained by the geometric mean formula.

As a general indicator, it is most often proposed to use a synthetic index. The index can be built on the basis of standardized deviations of the indicators of a given municipality from the minimum, divided by the magnitude of the variation of this indicator for the analyzed territories, or according to its average values for the region as a whole. Also, to calculate the integral index, you can use the arithmetic mean formula of simple normalized values selected for the analysis of indicators, while the choice of particular indicators will depend on the objectives of the analysis. In the calculation of synthetic synthesis indicators, the main thing is their relationship with assessments of the living standards of the region's population.

## 7. Conclusion

A single methodology for conducting a cross-cutting analysis of the functioning results of regional economic entities, municipalities, and the country as a whole, allows obtaining comparable data. The results of the comparison of analytical indicators for groups of municipalities characterize the level of differentiation according to the economic development of territories and show which of them need to implement selective regional policies in order to level socio-economic development. To make differentiation rates in the lagging municipalities lower, it is necessary to fix the tide effect. The interaction of several neighboring municipalities (cities and rural areas) can be effective in the implementation of various infrastructure or engineering projects. It can be implemented in the form of joint social programs (education, healthcare), joint investment projects (construction of a cannery, poultry farm), in the form of financial cooperation.

The transition to a sustainable and full-fledged modernization of the Russian economy on the basis of a spatial strategy, taking into account the regionalization of a single economic space, determines the need to involve each participant in economic activity in the implementation of program activities. Improvement of existing development mechanisms and the use of adequate tools help level the socio-economic situation of all subjects of the Russian Federation by reducing the intra-regional differentiation that occurs among municipalities in the region.

The cross-cutting nature of the diagnostic procedures in the analytical study of municipalities will provide specific and high-quality information about the state of each of them and the region as a whole. Unified methodological foundations for the diagnosis of administrative-territorial entities within the region will provide comparable results of analysis and increase the optimality of developing more justified regional policy measures at the level of each municipality, which will reduce economic threats and solve the most important strategic tasks of the regional development.

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