

Factors of social infrastructure development in rural areas

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Abstract. The article considers the influence of social and economic factors on the level of development of rural areas. These factors can help to assess patterns and dependencies to obtain directions that serve as the basis for further strategic planning in relation to the sustainable development of social infrastructure of rural areas. Methods of factor analysis, monographic method, observation, generalizations were used as the main methods of research. The information base is statistics on Nizhny Novgorod region, regulatory legal acts. The results of analytical assessment of enlarged indicators of rural development in Nizhny Novgorod region are given. The role of national strategy and targeted programs in financing rural development is noted. The article presents the results of parameters’ research of social and economic development, according to residents of municipal districts on the example of Nizhny Novgorod region. The main purpose of the monitoring is to analyze conditions and factors of development requiring the attention of authorities on the first place. The author’s research methodology was based on statistical and economic tools and methods of data analysis. As the result of research, problems of development of municipal districts were identified; key development factors were revealed as the main directions for management decisions.

1. Introduction

The current period of social and economic development is defined by strategic planning in the Russian Federation. The annual message of the President of the Russian Federation to the Federal Assembly characterizes the situation in the country and the main directions of the state’s domestic and foreign policy; the message is the basis for determining strategic goals and priorities for social and economic development and ensuring national security, determining the direction of achieving these goals, the most important tasks, as well as for developing other strategic planning documents. The implementation of the message is determined by the issuance of a number of decrees defining strategic goals and priorities for social and economic development.

The main directions of social and economic development contain assessment of current situation, definition of purposes, tasks and priorities of development, justification of the main reforms and programs promoting achievement of purposes and tasks, the main directions, actions and mechanisms of realization of strategic development.

Current trends in Russian economy are forcing us to choose a mechanism for the transition to sustainable development. Many countries draft sustainable development strategies and programs using different methodological approaches with different levels of detail and periods.

The development and effective implementation of measures for sustainable rural development is a significant event both in Russia and in countries in the post-Soviet territory. It should be noted that



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social indicators such as rural density, social and economic poverty and rural depopulation are very important. Sustainable development is determined by a set of social and economic, natural, environmental factors for any area. The absence of any factorial accounting leads to imbalances and failures in development process. The methodology of systematic approach provides the basis for identifying both factors and their interrelationships. All this is necessary to develop a sustainable development strategy for any particular rural area [1].

To assess the state progress of society on the path of sustainable development, it is necessary to use certain criteria. Nowadays the world is actively developing criteria, indicators and methods of sustainable development. Indicators of sustainable development, on the one hand, should be used to generalize and clarify the key aspects of sustainability; on the other hand, they should provide a quantitative description of achievement of sustainable development goals. With the help of indicators, it is possible to assess the development level of country, region, and municipality, predict its future state (economic, environmental, social, demographic, etc.), and make the conclusions about the sustainability of the territory's development.

Agricultural territories are rural settlements and economic entities located within the geographical boundaries of local authorities, i.e. rural administrations. The rural area acts as the fundamental and most important object for the development of agriculture and the agro-food complex as a whole.

The combination of social and economic problems occurring almost in all regions of country is one of the main issues that prevent the development of rural territories. Consequently, special attention should be paid to the development of agricultural regions. Nowadays rural areas are the most important social, economic and ecological subsystem of society [2].

The problems of economy assessing and managing mechanisms for development of rural areas are reflected in scientific publications by both domestic and foreign authors. This problem in Russian science is studied by foreign scientists represented by the names Lindsay A and others [3], Salafsky N and others [4], Jänicke M [5], Spangenberg J [6], Cinner J and others [7], Eikeset A [8] and Russian scientists Shamin A, Frolova O, Nechaeva M, Kutaeva T and others [9,10].

The international community considers the problem of sustainable development of territories very relevant. The main strategic task of Russia in the near future is to increase the well-being of the population, increase employment, increase incomes and a stable state of the economy. Timely actions at the level are being carried out in the direction of approaching the pre-crisis years. Measures are being taken to preserve jobs in order not to allow a sharp decrease in citizens' incomes. The increase in the unemployment rate is under state control. Its high level among the younger generation is associated not only with the epidemic, but also with the internal problems of the economy [11].

Economic decisions to support business, labor collectives, and regions are made and will continue. The resolution of such issues is targeted, which takes into account the specifics of the economy of each economic region separately.

The issue of strengthening programs adopted at the State level and its entities is on the agenda. The program for sustainable development of rural areas is one of the priority programs of the State for its implementation in the regions. It is aimed at fundamentally improving the life of the rural population and further developing agriculture and its reprinting industries.

In order to identify topical issues in rural areas, such as providing children with places in kindergartens and schools, receiving medical, cultural and social services by citizens, receiving support for the employment of people of various ages, a system of constant monitoring is being carried out with the possibility of making managerial decisions [12].

The future of the Russian village depends on the coordinated and organized work of regions, specialists who solve daily acute problems of rural areas. In recent years, agricultural and industrial complex has been gaining momentum and becoming a steadily developing industry, and also has an annual growing potential.

One of the tasks set for Russia is to enter the top five largest world economies. An important role is given to agricultural and industrial complex [13].

In Message to the Federal Assembly on February 20, 2019, President of the Russian Federation V Putin noted that “a key long-term factor in sustainable growth of agriculture, of course, should be improving the quality of life of people who work in rural areas”. The head of state instructed the Government of the Russian Federation to develop separate program for development of rural territories, which should start working from January 1, 2020 [14].

Table 1. Indicators of living standards of the population of Nizhny Novgorod region in the Ist quarter of 2017-2019.

Indicators	I st quarter 2017	I st quarter 2018	I st quarter 2019
1. Average monthly salary for a full range of organizations, rub.	28,353.8	30,817.3	32,774.8
– growth rate (%)	108.3	110.8	105.5
2. Real wages for the full range of organizations (in % of the corresponding period of the previous year)	103.3	107.5	100.1
3. Average amount of accrued pension (as of 01.03), rub.	12,705.9	13,142.9	13,941.3
– growth rate (%)	104.1	103.4	106.1
4. Composite price index (in % of the first quarter of the previous year)	104.8	103.0	105.4
5. Minimum cost of living per capita, rub.	8,971	9,165	10,004
– growth rate (%)	102.4	102.2	109.2
6. Population with incomes below living wage, %	12.2	11.7	12.65
– thousand people	395.2	376.7	406.8

This program entitled “Integrated Development of Rural Territories”, was adopted for the period 2020-2025 by Decree of the Government of the Russian Federation from May 31, 2019 No. 696.

The object of research is the rural areas of Nizhny Novgorod region [15].

Indicators that characterize living standards of the population are also correlated with the development of the region. These indicators are presented in table 1. Based on the above data, several conclusions can be made. The average monthly salary in the first quarter of 2019 is 32,774.8 rubles, which is 4,421 rubles more than in 2017. The average pension amount in the reporting year is 13,941.3 rubles, which is 1,235.4 rubles more than in 2017. The amount of living wage also has also increased. The living wage per capita in 2019 was 10,004 rubles. At the same time, it can be noted that the population with incomes below living wage also increased and amounted to 406,800 people in the first quarter of 2019.

Thus, the main purpose of the article is to analyze conditions and factors of development requiring the attention of authorities on the first place.

2. Methodology

We have studied the factors for social infrastructure development of municipal districts of Nizhny Novgorod region for the period 2020-2021.

In order to study the social and economic factors of the region’s development, a survey was conducted and a questionnaire was developed. The research period is November 2020 – February 2021. The method of collecting information is online and offline survey of residents of municipal districts of Nizhny Novgorod region. In order to obtain reliable results, the sample quotas for conducting the survey were calculated in accordance with statistical data, taking into account gender and age [2], the volume of the sample population in the amount of 631 people.

The procedure of factor analysis using statistical calculations was applied. The use of factor analysis allows to evaluate patterns and dependencies to obtain a model that serves as the basis for further research of patterns. The main idea of these researches is to assess the significance of the parameters, on the basis of which to determine the factors that correspond to development directions.

In the process of rural development, all procedures are interrelated, that is, they are based on the principle of systematics. Some factors have a direct impact on this indicator, while others have an indirect one. One of the main aspects is the analysis of the influence of factors on the studied values, because there is a direct dependence of the effective indicator on a significant number of factors. Therefore, accurate researches of the influence of factors on the value of the effective indicator are the key to a perfect analysis and evaluation of indicators of the quality of rural development; in this regard factor analysis is applicable for comprehensive assessment. Factor analysis is a method of studying the influence of various factors in the organization's activities on the effective indicator, taking into account the principle of complexity and consistency. Based on this definition, authors will present research methodology that will allow us to identify the main factors influencing on the development of social infrastructure of rural areas. The main purpose of factor analysis is to select the fundamental factors based on statistical data processing, which makes it possible to determine development directions of rural areas.

The factor analysis procedure, as the basis of most researches, contains three obligatory elements:

1. The researcher who is a subject.
2. The object, in our example it is a rural area as a social and economic system.
3. The obtained factors, on the basis of which the researcher can determine the directions of rural development.

As a result of statistical processing of primary information, we obtain factors based on the results of correlation matrix and taking into account the variance indicators. Therefore, one of the main advantages of factor analysis is complexity and cyclicity, that is, the stages successively replace each other and allow to get detailed information about researched object.

The research methodology includes the following stages:

1. We have identified the parameters that characterize the development of social infrastructure of rural areas. The obtained variables were evaluated in points based on the opinion of professional experts, namely competent specialists. The experts were specialists and managers who are competent in this industry.
2. Further, the procedure of factor analysis of the main components in the statistical program was carried out in order to identify the components that characterize the level of development of social infrastructure of rural areas.
3. Determine the number of factors to include in the model. Statistical package of program makes it possible to do Scree Plot of dependence of number of factors on the indicator selected by the researcher (figure 1).
4. Construction of correlation matrix. First of all, the correlation relationships between the variables are determined. The factor analysis program allows to calculate the correlation matrix.

3. Results and discussion

The analysis is based on the most important indicators, such as factor loads, generalities, and shares of explained variance (table 2). A high correlation value for the first factor is observed in X_1 and X_3 – “Education and health care”. The second factor is most correlated with the variables X_4 and X_6 – “Sports and culture”. The third factor – “Housing and communal services”. The fourth factor – “Trade and public catering”.

According to the results of analysis, four significant factors were identified that indicate key areas for development of social infrastructure of municipal districts of Nizhny Novgorod region.

The results of this research can be used in strategic planning of the development of municipal districts, in improving the procedure for building a program for development of social infrastructure within the following areas: “Education and health care”, “Sports and culture”, “Housing and communal services”, “Trade and public catering”.

Methodological bases of research are proposed for the sustainable development of social infrastructure of rural areas on the basis of factor analysis, which makes it possible to evaluate patterns and dependencies to obtain directions that serve as the basis for further strategic planning.

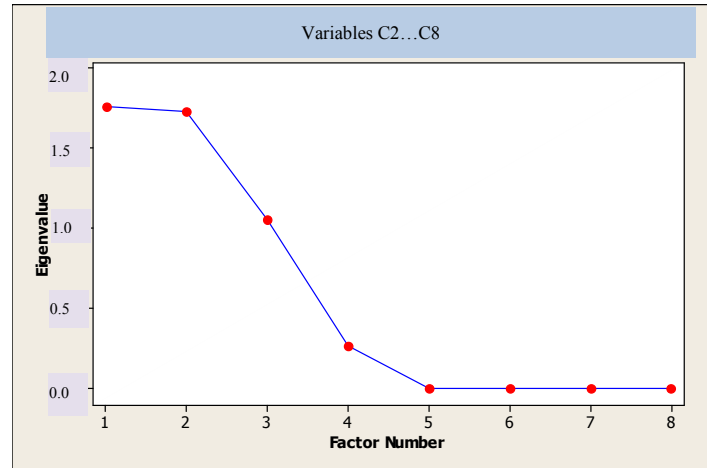


Figure 1. Graph for determining the number of factors.

Table 2. Results of factor analysis.

Factor model	Factor 1	Factor2	Factor 3	Factor 4	Commonalities
X ₁ , Education	0.622	-0.433	0.106	-0.048	0.379
X ₂ , Housing and communal services	0.142	-0.126	0.971	-0.122	0.995
X ₃ , Health care	0.515	-0.277	0.252	-0.190	0.442
X ₄ , Culture	0.203	-0.530	0.090	-0.191	0.366
X ₅ , Consumer services	0.185	-0.314	0.029	-0.117	0.582
X ₆ , Physical education and sports	0.363	-0.740	0.085	-0.067	0.691
X ₇ , Trade and public catering	0.251	-0.176	0.137	0.942	1.000
X ₈ , Transport services	0.422	-0.210	0.089	-0.205	0.367
Variance explained by each factor					
	Factor 1	Factor 2	Factor 3	Factor 4	
	1.4420	1.2815	1.0611	1.0371	
	0.180	0.160	0.133	0.130	

The proposed approach allows to overcome the following contradictions of previously used methods:

1. Key factors allow to move to strategic planning, which is guided by the indicators of medium-term financial planning.
2. Possibility to assess achievement of results according to indicators of medium-term planning of social and economic development of municipal district.
3. Provides an objective opportunity to move to multi-year planning of budget allocation management, transparency of resources and allocation structure for sustainable development.
4. Determining the efficiency and effectiveness of budget expenditures, that is, the optimal value of the results of activities and the costs of achieving them.

According to the results of scientific research of sustainable social development based on factor analysis, it is possible to improve the process of strategic planning, quality management systems and meeting the requirements of social development of the region. Factor analysis highlights the main directions in the development of the region and search for reserves for further growth.

It should be pointed out that factor analysis has practical importance, because it can be used in the administration activities of municipal district, including those that do not have specially trained staff. In addition, the resources of enterprises (finance, labor, time) are usually limited, and the results obtained from the analysis of the interrelationships of factors allow to determine the directions for effective management actions to improve the development of municipal district.

4. Conclusion

Methodological bases of research are proposed for sustainable development of social infrastructure of rural areas on the basis of factor analysis, which makes it possible to evaluate patterns and dependencies to obtain directions that serve as the basis for further strategic planning.

Based on the analysis, we can say that the discussed features of rural development with the assay of key parameters of social infrastructure made it possible to obtain a number of perspective areas which can be used for management decisions. The elaboration of these approaches to the development of social infrastructure based on key indicators will make it possible to develop measures. As a result of a quantitative assessment of the directions of development of social sphere of municipal districts of Nizhny Novgorod region, the most promising ones were identified. It is established that the resulting tools will allow to optimally organize the process of strategic planning of municipal district development, due to thoughtful algorithm for calculating the values of parameters, and can be used for any municipality. Conclusions were drawn about the prospects for development of rural areas in the context of elaboration and implementation of development program.

Thus, the results of research make it possible to draw the following conclusions:

- the issues of finding priority directions for social and economic development of municipal districts are extremely important the population;
- the main advantage of proposed toolkit is the simplicity and convenience of determining factors from a plurality of parameters;
- accessibility for use in any municipal district;
- the opinion of the population obtained during the polls should dominate the management decisions of the administration;
- the received directions for social and economic development reflect the all-Russian specifics in general.

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