Formation of Regional Standards for the Provision of Services in Rural Settlements

Aleksei Orekhov
Department of Finance and Credit
Voronezh State Agrarian University named after Emperor Peter the Great
Voronezh, Russia
alex.orekhov@yandex.ru

Dmitrii Kleimenov
Department of Finance and Credit
Voronezh State Agrarian University named after Emperor Peter the Great
Voronezh, Russia
dmi248@yandex.ru

Elena Kuznetsova
Department of Information Support and Modeling of Agro-economic Systems
Voronezh State Agrarian University named after Emperor Peter the Great
Voronezh, Russia
broga@yandex.ru

Yuliya Tkacheva
Department of Finance and Credit
Voronezh State Agrarian University named after Emperor Peter the Great
Voronezh, Russia
julchen19@yandex.ru

Abstract—Russia is an agrarian country, the significant part of territory is rural areas with a population living on them. It is well known that in many important respects they are highly differentiated from cities: lower incomes, availability of services and opportunities for self-realization. Currently, the formation of a high-quality and comfortable working and living environment in rural areas is nationally important. The relevance of this study is explained by the need to form an evaluation system of compliance the level of socio-economic development of rural areas to modern standards of living. The article presents the author's approaches to solving the indicated problem. Improving the availability and quality of socially important services is a necessary condition for increasing the level of rural life. To solve this problem, it is proposed: 1) create a list of indicators to assess the quality of services received by the rural population; 2) assess the security and availability of services received in the village, including taking into account the territorial and financial possibilities of their consumption; 3) normalize the obtained system of indicators relative to the selected standard; 4) propose measures to improve the availability and accessibility of services in rural areas, as well as the mechanism of their implementation. To assess the average complex of needs for services, a system of indicators used by state and municipal authorities is allocated. The data of calculation of indicators characterizing the provision of services in homogeneous and heterogeneous rural municipal areas of the Voronezh region are presented.

Keywords—rural settlements, quality of life, service standards.

I. INTRODUCTION

In the period of development of digitalization and smart technologies, the issues of development of rural areas and standards of life support and vital activity of their population are very relevant. The transition to market relations at the end of the last century led to negative changes in the economy of rural settlements. As a result, there is a gap in the quality of life of rural and urban residents, which has not been overcome at the present time. All this has a negative impact on the reproduction of human capital in rural areas, leading to an outflow of residents [1].

The concept of standards is related to the quality of life, the availability of goods and human capabilities. The problem of measuring the quality of life in the economy is not new: the term "quality of life" and its qualitative and quantitative definition were first used by J. Galbraith in 1960 [2]. In 1961, the UN proposed a system of indicators characterizing the quality of life. These include health, food consumption, education, employment, working conditions, housing, social security, clothing, recreation, leisure time, human rights. Initially, the existing concept of "feeling the quality of life" has formed approaches to assess the quality of subjective-formed indicators, the so-called "subjective indicators of quality of life" [3]. Gradually began to form indicators of "objective" nature, measuring the parameters of the conditions and processes of life support. And if the standard of living is estimated by statistics, then, despite the presence of a large number of studies, the normative nomenclature of quality of life indicators and established criteria for their assessment at the Federal or regional level has not yet been developed. The methodological support of the study of the quality of life of rural areas is particularly problematic.

II. LITERATURE REVIEW

A. Quality of life

Decent life and free development of a person is regulated by the Constitution of the Russian Federation [4], which also determines the social orientation of the state policy and ensuring a high quality of life. The concept of long-term socio-economic development of the Russian Federation for the period up to 2020 provides citizens high personal security, access to quality educational and medical services, cultural goods, housing and environmental protection.

Human in the modern economy is considered not only as a consumer, but also as a biological carrier of productive forces, he has many attribute qualities and properties, a set of diverse needs and abilities, the reproduction of which as human capital has a certain specificity. Since human capital is currently a priority factor in the formation and growth of national welfare, the state is interested in ensuring the quality of life of the population as the main factor of its growth [5]. In order to improve the standard of living in rural areas various measures are implemented as part of a set of regulations. The main place is occupied by the Strategy of sustainable development of rural areas of the Russian Federation for the period up to 2030 [6]. In its implementation state, regional and municipal strategies development programs are formed [7], [8], [9].

The lack of quality-of-life standards forces us to consider the category of "quality of life" in more detail.
Most researchers, such as P. A. Sorokin [10], as the quality of life understand happiness as an aggregated assessment of satisfaction of subjective human needs, well-being. So in 2006, Adrian G. White [3] introduced a qualitative indicator of subjective evaluation - Satisfaction with Life Index, which is recognized in many countries. It is based on statistical analysis of data from various surveys, indices and other indicators on the level of happiness of people in countries. Interestingly, the highest index in Denmark and Switzerland, Russia is in the middle of the list at 167 place. We believe that it would be interesting to compare rural and urban areas on this indicator.

Thus, according to the dictionary of B. A. Raisberg, L. S. Lozovsky and E. B. Starodubtseva [11], the quality of life includes "not only the amount of material goods and services consumed, but also the level of satisfaction of spiritual needs, health, life expectancy, environmental conditions, moral and psychological climate, spiritual comfort. Therefore, this indicator has a subjective-objective nature and characterizes the consumed and possible consumption of tangible and intangible goods, but also the degree of realization of constantly increasing expectations and opportunities of a person in spiritual, cultural, physical, moral and other development. All this leads us to understand that the indicator of quality of life is an integration of estimates of subjective and psychological perception of the human environment, the volume of availability and consumption of goods, that is, integrates human needs with the possibility of their implementation. Therefore, the quality of life as an object of monitoring can be considered as a set of services available to the population living on a certain administrative-territorial unit, both geographically and financially – in the village, the city, the area, the region, the country.

B. Differentiation of rural areas

In the Concept of sustainable development of rural territories of the Russian Federation rural territories include the territories of rural settlements and the corresponding inter-settlement territories [6].

Despite the legislative consolidation, the economic meaning, the criteria for classifying a territory as rural remain a debatable issue in science. Thus, D. A. Balandin proposes to classify the criteria for determining the territory as rural by geographical, economic and demographic, territorial and administrative-managerial characteristics [12].

Zavodchikov N. D. and Larina T. N. offer to consider the territory of any region as a territorial system with urban and rural territories [13]. Continuing and deepening these approaches, taking into account the existing administrative and territorial division, the principles of inter-budgetary relations, the features of the budget system and socio-economic development, we consider it appropriate to study homogeneous and heterogeneous rural areas. The presence of an urban settlement in the municipal district inevitably leads to the concentration of financial, labor, investment resources in it, and therefore the mechanisms for providing services vary significantly. The main task of management of heterogeneous municipal areas is to ensure sustainable development of rural areas, while maintaining the development of urban settlements.

Homogeneous rural municipal areas in its composition have no urban area, urban population, so when developing the foundations of their sustainable development, it is possible to combine the principles and mechanisms of inter-budgetary relations and developments in the field of rural development, which will allow to apply an integrated approach to solving the problem of rural development.

Thus, the existing administrative and territorial division, the principles of inter-budgetary relations, the features of the budget system and socio-economic development necessitate the classification of rural areas according to their homogeneity (fig. 1). The criterion of homogeneity has an impact on the organization of life of the population, while maintaining a relatively equal level of economic availability of services and goods, changes territorial, temporary, social and information availability. Thus, rural residents have a number of advantages in social programs designed to compensate for the problems of spatial and temporal accessibility. Heterogeneous rural municipal areas are characterized by higher population density, and the provision of services related to the quality of life has greater accessibility, associated with the possibility of forming a smaller unit transaction costs per inhabitant.

![Fig. 1. Classification of the territory of the Russian Federation (on the basis of homogeneity).](image)

The level and quality of life of urban areas varies in direct proportion to the population of the agglomeration. For example, the standard of living in Moscow is one of the highest in the country, but it is wrong to assume that it is so in all cities. If the overall price of services remains unchanged, the cost of transactions decreases inversely to this indicator, and the concentration of the population allows for innovation and innovative development in the field of socially important services. Information accessibility has great importance in the conditions of digitalization: every citizen, regardless of territorial affiliation, can access the sphere of public services, influence the conditions of service provision, assess their quality through communication channels, but the mechanisms for solving problems are still differentiated by territories.

C. Problems of development of rural territories

The concept of sustainable rural development also focuses on the quality of life of the rural population. This implies stable socio-economic development of rural areas, increasing the production of agricultural and fish products, improving the efficiency of agriculture and fisheries, achieving full employment of the rural population and improving their living standards, as well as rational use of land [6].

According to the "Strategy for sustainable rural development until 2030", rural residents have lower incomes, fewer opportunities to realize their potential, more difficult working and living conditions. Naturally, all this leads to an
outflow of population, an increase in the number of sparsely populated and abandoned villages, moreover, against the background of an increase in life expectancy, we can assume a further aging of residents and a change in their needs in the appropriate direction. At the Federal level, the task is to preserve rural areas and maintain the polycentric development of the regions.

However, there are opinions about the non-viability of the modern infrastructure of the village, so E. V., Mikhailova O. N. Izyumova and I. A. Chusov propose to form large agglomerations near cities and move villagers there. Such measures, in their opinion, will most effectively reduce the differentiation of urban and rural areas [14]. On the possibility of transforming municipal areas into urban in modern conditions write E. M. Bukhval’d and N. V. Voroshilov [15].

From our point of view, rural settlements have their own special way of life and can be considered as part of the national culture, with a special environment for the reproduction of human capital.

At the same time, the problem of standardization of the system of providing services to the rural population is not solved: the question of the composition and list of vital and socially important services and the mechanism of their provision remains open.

III. RESEARCH METHODOLOGY

The issue of standardization of components and structure of indicators of quality of life is a priority in the implementation of social guarantees enshrined in the Constitution of the Russian Federation. Among the most popular social and socially significant services for rural areas are services in the field of education, medicine, culture, trade, household and veterinary services. Increasing their availability and quality is a necessary condition for increasing the level of rural life.

To solve the problem it is necessary:

1) create a list of indicators to assess the quality and availability of services received by the rural population;
2) assess the security and availability of services received in the village, including from the point of view of territorial and financial possibilities of their consumption;
3) normalize the obtained system of indicators relative to the selected standard;
4) propose measures to improve the availability and accessibility of services in rural areas, as well as the mechanism of their implementation.

In modern practice, the following methods are used to form an indicator of quality of life: instrumental, computational, expert, statistical, as well as a combined method as their integration. In turn, the assessment of the quality of life should be carried out in terms of compliance with the principles. In our opinion, the most successful in determining their composition is the approach of T. V. Gavrilo [16], according to which its assessment is based on:

- universality of a set of subjective and objective indicators for the possibility of comparison;
- taking into account the specificity of the object of study, expressed in the possible differences and differentiation of the objects of study.

From an economic point of view, the quality of life is determined by the total amount of funding to ensure access to socially significant benefits at the expense of budgets of different levels and extra-budgetary funds (their expenditure parts) and self-sufficiency. The ratio of these two factors is based on a certain system of relations. The state, according to modern standards of building a financial system, participates in different ways in the formation and distribution of services. Standard, mandatory services include: implementation of public administration in the relevant territory; ensuring defense and security; social protection of the population; maintenance of macroeconomic stability and interstate cooperation, as well as elimination of consequences of emergency situations, natural disasters. Conditions for the development of entrepreneurship and business, infrastructure, education, social services, the development of culture, art, health science and innovation is determined by the level of development of the territory (village city, municipality, district, region, country). We believe that the mechanism of self-sufficiency will be primarily important for their implementation. We believe that the mechanism of self-sufficiency, the potential of which is expressed by the level of per capita income, human resource potential and remoteness of the service, will be primarily important for their implementation. Self-sufficiency can take many forms, and its implementation is determined by the quality of infrastructure. In this regard, it can be noted that digitalization expands the resource potential of self-sufficiency, but also requires certain investments in tools and reserves for their implementation. In our opinion, socially significant benefits should be realized in full within the minimum requirements for the quality of life.

Among the General standards currently in force, we can distinguish: the subsistence minimum, the minimum wage, the system of social standards of security of the population in certain spheres of public life. However, this list does not allow to form a complete picture of the standards of quality of life in rural areas, as well as the volume of sufficient budgetary and extra-budgetary funding.

In accordance with the available research in the literature, social standards can be understood as society-determined norms to meet the complex needs and interests of rural residents, in accordance with the level of socio-economic development of regions and municipalities, etc.

To assess the average set of needs for services, we have identified a system of indicators used by state and municipal authorities:

1) Education
   a. Number of children per 100 places in pre-school educational institutions;
   b. Number of students of state and municipal educational institutions per 1 teacher;

2) Transport
   a. passenger turnover per 1 resident, thousand passengers.km / person;

3) Household service
a. the volume of household services to the population per 1 resident thousand rubles/person;

4) **Health care**
   a. number of hospital beds per 10,000 population, units /
      person;
   b. number of doctors per 10,000 population, people ;
   c. number of secondary medical personnel per 10,000
      people, people;

5) **Trade**
   a. retail space per 1 inhabitant sq. m. / person;
   b. retail trade turnover per 1 resident, thousand rubles /
      person;

6) **Culture**
   a. expenses of the consolidated budget of the municipal
      district on culture per one resident, thousand rubles /
      person;

7) **Veterinary**
   a. the share of productive animals covered by measures
      for the prevention of quarantine and especially dangerous
      diseases, including those common to humans and animals
      (with 100% implementation of the plan of anti-epizootic
      measures), percent;
   b. the share of carcasses of slaughtered animals
      subjected to veterinary and sanitary examination in the total
      number of animals subjected to slaughter in farms,
      slaughterhouses and meat processing plants, percent;
   c. Implementation of the annual plan of scheduled
      inspections of legal entities and individual entrepreneurs for
      the year, percent.

The next stage of the analysis of the system of providing services in rural areas is the creation of a sample of the
presented indicators for rural areas for the period from 2008 to 2018. Such observation will allow to reveal regularities and
extremes in the studied indicators, to trace their dynamics.

Based on the findings, it is necessary to determine the standard for each indicator, which has a number of
characteristics:

1) does not contradict the current legislation and the
   accepted normative legal acts;
2) it has the property of flexibility and dynamism-the
   ability to change over time depending on the improvement or
deterioration of the socio-economic situation of the rural area;
3) scientifically justified - when calculating the standard,
   it is necessary to use mathematical methods.

To assess the system of providing services to the rural population we divided all districts of the Voronezh region into
homogeneous and heterogeneous rural municipal districts.

The number of homogeneous included administrative-territorial formations in which there are no urban settlements
(Verkhneamonskiy, Verkhnekhavski, Vorobyevskiy, Kashirskiy, Nizhnedevitskiy, Novousmanskiy, Petropavlowsk, Repyevskiy,
Ternovskiy). Heterogeneous rural municipal areas have one or more urban settlements
(Aaminskiy, Bobrovskiy, Bogucharskiy, Buturlinovskiy, Gribanovskiy, Kalachevskiy, Kamenskiy, Kantemirovskiy,
Liskinskiy, Novokhoperskiy, Olkhovatskiy, Ostrovozhskiy, Pavlovskiy, Paninskiy, Povorinskiy, Podgorenskiy,
Ramonskiy, Rossoshanskiy, Semilukskiy, Talovskiy, Khokholskiy, Ertilskiy).

IV. **RESULTS**

We present the data of calculation of indicators characterizing the provision of services in homogeneous and
heterogeneous rural municipal areas of the Voronezh region.

Education:

1) In 2017 in homogeneous rural municipal areas there is
   no queue in preschool educational organizations. Moreover,
   the dynamics of the indicator “Number of children per 100
   places in pre-school educational institutions”, for example,
   Nizhnedevitskiy district threatens the inexpediency of
   maintaining the current number of pre-school institutions.
   Among the heterogeneous rural municipalities
   Rossoshanskiy and Liskinskiy can not provide the necessary
   number of places for children of the appropriate age in
   preschool institutions (100 capacity – 102 children).

2) We note Anninskiy district in which in 2013 with
   opening at once 3 kindergartens the problem of availability
   of preschool education was solved.

3) The indicator of provision of children with places in
   preschool educational institutions should have a standard in
   the form of a range. On the one hand, insufficient occupancy
   of these organizations leads to senseless spending from the
   municipal budget – and this will be the lower limit of the
   range. On the other hand, the municipality is obliged to
   provide places for everyone-the upper limit of the norm is
   100% involvement.

4) In General, it is possible to note the availability of pre-
   school education for the population of both homogeneous and
   heterogeneous rural municipal areas.

5) The number of students per 1 teacher indicates that
   homogeneous rural municipal districts have less than 10
   students per 1 teacher (except Novousmanskiy district).

6) When developing a standard for this indicator should
   take into account the previously [17] proposed minimum of
   15 people per 1 teacher and the features of spatial settlement
   in rural areas.

   Health care:

1) In most areas of the Voronezh region for 10 years of
   the study period, the number of hospital beds per 10,000
   people decreased. So if in 2007 the average in the region in
   the municipality was 67 beds, in 2017 - 48. Of course, this
   fact has a negative impact on the availability of health
   services.

2) Attention is drawn to the smaller capacity of
   homogeneous rural municipal areas to accommodate patients
   in hospitals. On average, heterogeneous rural municipalities
   in 2017 have 49 beds per 10,000 population, and
   homogeneous only 47.

3) However, during the study period, the number of
   doctors per 1,000 people in the population increased from 21
   to 22 on average. This change has come at the expense of
   more doctors working in homogeneous rural areas.

4) The number of nursing staff for 10 years decreased
   from an average of 93 to 83 people per 10,000 population.
   That is quite consistent with the picture of reducing hospital
beds, and as a consequence, reducing the possibilities of outpatient treatment. And the fall of these indicators synchronously and in homogeneous and heterogeneous rural areas.

5) The most alarming situation with the number of secondary medical personnel is created in Novousmansky district. However, transport accessibility of the regional center eliminates the problem of lack of proper level of health services in the municipality.

6) Attention is drawn to the discrepancy between the number of beds and the number of nurses in the Verkhnamamonsky municipal district.

**Trade:**

To assess trade in the territory of municipal districts of the Voronezh region we refused to use retail trade turnover as its criterion. The value index changes over 10 years due to the inflation factor. The complexity of bringing all the data to a single price level, the un informativity of the results – the reasons not to take into account this coefficient in the dynamics.

In our opinion, the size of retail space per 1 resident on the one hand will reflect the development of trade services in municipalities, on the other hand will ensure comparability of results in municipal areas. The calculations allow us to draw the following conclusions:

1) In each municipal district throughout the study period there was a progressive increase in retail space per 1 person of the population. The average growth from 2007 to 2017 was 179%.

2) The expansion of retail space indicates the development of business activity in the municipality, along with it, the availability of trade services for the population of both homogeneous and heterogeneous rural municipal areas is growing.

**Culture and leisure:**

1) During the study period the number of inhabitants per 1 cultural institution on average increased from 1443 to 1658. This increase occurred in both homogeneous and heterogeneous rural areas.

2) The population in Semilukskiy and Talovskiy districts is the least provided with cultural and leisure institutions in 2017 (more than 3000 inhabitants per 1 institution).

3) The most affluent in 2017 are the residents of Vorobyevskiy district.

**Transport**

The availability of transport services for the population we propose to explore through the volume of passenger traffic per capita. In our opinion, this indicator characterizes the development of public transport in the municipal area, and hence its provision of transport services to residents of homogeneous and heterogeneous rural municipal areas. These calculations allow us to draw the following conclusions:

1) The volume of passenger services to the population in the municipalities during the study period fell by more than 2 times, from 37 pass.-thousand km to 14 pass.-thousand km. Moreover, the reduction affected both homogeneous and heterogeneous rural areas.

2) Low transport mobility also speaks about the lack of demand for services by residents of municipal areas. This is due to the outflow of young people from the village, the aging population.

3) Only 50 km of passenger traffic per year accounts for 1 resident of the Petropavlovskiy district. This is another touch to understanding the problems of the municipality.

4) The volume of transport services along with the volume of retail trade indirectly indicates business activity in the object of study. These calculations show its extinction in the municipal districts of the Voronezh region.

**Household**

Household services (rendered on the territory of homogeneous and heterogeneous municipal districts of the Voronezh region per 1 resident) are characterized by the following data:

1) The average growth of the value of household services in the municipalities of the region was noted ahead of the inflation rate: from 30 rubles/person in 2007 to 275 rubles/person in 2017.

2) Referring to the provisions of the Federal law of 29.11.2007 No. 282-FZ “on official statistical accounting and the system of state statistics in the Russian Federation” (article 4, paragraph 5; article 9, paragraph 1) more and more municipalities do not publish data on household services on their territory. This is done in order to ensure the confidentiality of primary statistical data received from organizations.

To calculate the standards of the presented coefficients we have chosen the arithmetic mean for all homogeneous and heterogeneous rural municipal areas. To control the relevance of the obtained values we calculated additionally the median value of the data for all samples.

After receiving the standard it is necessary to compare it with the indicator of security and availability of services in rural areas, identify the causes of deviations of the results from the norm, and subject them to analysis.
The development and implementation of a mechanism to improve the availability and accessibility of services in rural areas is the final stage of improving the system of providing services to the rural population. It analyzes the proposed measures, assesses the economic feasibility of their application in practice.

V. CONCLUSION

Despite the fact that there are a large number of documents aimed at the development of rural areas, an established conceptual picture of understanding their future does not yet exist. So far, the growth of labor productivity in the agricultural sector leads to the release of the rural population and its outflow, which is confirmed by statistics. In these conditions, ensuring a high equal quality of life in the country is a difficult task that requires a large amount of financial resources. The formation of different levels of transaction costs in relation to the cost of the service itself leads to a high differentiation of its availability, so the priority is to ensure an achievable indicator of quality of life at the regional level for socially important services for rural areas. This approach makes it possible to comprehensively assess the system of providing services to the rural population, to identify problems in it, to propose a reasonable mechanism for its improvement. In the end, the result of this work should be to improve the quality of life in rural areas, socio-economic development of the territory. The presented conclusions are valuable for justification of expenses of budgets not only municipal, but also regional level.

REFERENCES


TABLE I. CALCULATION OF AVERAGE AND MEDIAN VALUES OF INDICATORS OF PROVISION AND AVAILABILITY OF SERVICES IN RURAL MUNICIPAL AREAS OF THE VORONEZH REGION

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Average</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Homogeneous</td>
<td>Heterogeneous</td>
</tr>
<tr>
<td>Number of children per 100 places in pre-school educational institutions, persons</td>
<td>88</td>
<td>97</td>
</tr>
<tr>
<td>Number of students and municipal educational institutions per 1 teacher, persons</td>
<td>8.4</td>
<td>9.7</td>
</tr>
<tr>
<td>Number of hospital beds per 10,000 population, numbers</td>
<td>53.9</td>
<td>54.7</td>
</tr>
<tr>
<td>Number of doctors per 10,000 population, persons</td>
<td>19.8</td>
<td>22.1</td>
</tr>
<tr>
<td>Number of secondary medical personnel per 10,000 population, persons</td>
<td>82.9</td>
<td>89.6</td>
</tr>
<tr>
<td>Retail trade turnover per 1 resident, RUB/person</td>
<td>18541.5</td>
<td>30656.9</td>
</tr>
<tr>
<td>Retail space per 1 resident, sq. m. / thousand people</td>
<td>682</td>
<td>798</td>
</tr>
<tr>
<td>Number of inhabitants per 1 cultural and leisure institution</td>
<td>1321</td>
<td>1629</td>
</tr>
<tr>
<td>Passenger transportation by road transport public organizations, thousand pass.- km.</td>
<td>0.74</td>
<td>0.93</td>
</tr>
<tr>
<td>Volume of household services to the population, RUB/person</td>
<td>16.37</td>
<td>187.70</td>
</tr>
</tbody>
</table>