SCTCMG 2019

International Scientific Conference «Social and Cultural Transformations in the Context of Modern Globalism»

DEVELOPMENT OF RURAL AREAS OF BASHKORTOSTAN IN CONDITIONS OF DIGITAL ECONOMY FORMATION

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Abstract

Chosen research direction is connected with the problems of achieving a self-sufficient level of economic development of the agrarian sector, improving the quality of life of rural population in Russian regions in the conditions of digital economy. The article highlights the need for the implementation of digital technologies in rural territories of the Russian Federation. It is substantiated that digital transformation is a driver for sustainable agricultural development. A brief analysis of the current state and prospects of rural areas development of the Republic of Bashkortostan in the conditions of a digital economy formation is presented. It is concluded that the majority of agricultural organizations in the region use their productive resources inefficiently and develop disproportionately. The article focuses on the problems of the functioning of health care, education and culture sectors of rural areas of the republic. Main directions of introducing digital technologies in agriculture and in rural areas of the Republic of Bashkortostan are highlighted. It is summarized that as a result of the use of digital technologies, a synergistic effect is formed, which will manifest itself in the development of the economic and social component of the rural area, raising the level and quality of life of rural residents in the region. The research results indicate that the increase in labor productivity in the digital economy will lead to positive changes in the management of human and social capital in rural areas of the Republic of Bashkortostan.

Keywords: Rural areas, digital economy, digital technologies.

1. Introduction

At present, the creation of favorable conditions for the effective development of rural areas is one of the strategic objectives of the state agrarian policy, the achievement of which will help to significantly improve the competitiveness of domestic agricultural producers and improve the social situation of rural residents. The development paradigm of rural territories of the Russian Federation defines the rational use of natural resources, efficiency increase in production and economic activities of agro-organizations, problem solving of increasing employment and a substantial growth of population incomes.

Certainly, the effective development of rural areas is largely connected with the solution of key problems of sustainable functioning of the agrarian sector and an increase in the standard of living of rural population. Instability of the production and economic position of agro-formations, deterioration of the social situation of rural residents cause the formation of a new concept for rural areas development in Russian regions.

Modern trends in the development of Russian economy in the face of external challenges, the need to find new "growth points" in rural areas impose new requirements on the system of strategic management of rural competitiveness. Prevailing negative trends in rural areas have led to the need to find and form new effective mechanisms for the socio-economic development of rural areas. The relevance of this study is due to the achievement of the main goal of rural territories development in conditions of the digital economy formation - reaching a self-sufficient level of economic development of the agricultural sector, improving the quality of life of rural population in Russian regions.

2. Problem Statement

Today there is a heightened interest of scientific community in the use of digital technologies in strategic planning of rural development (Smagin, 2018; Oborin, 2018). Digital technologies are a megatrend of economy of the 21st century that can become the basis for ensuring the competitiveness of the development of various territorial systems, including rural areas.

In economically developed countries, digital technologies are widely used at all levels of production management (Keisner, Raffo, & Wunsch-Vincent, 2016; OUN, 2017). For instance, in EU countries, the introduction of new digital technologies has led to an increase in profits of 400 billion dollars (Abdyrov & Turdaly, 2018). According to the study by McKinsey Global Institute, "in the next 20 years, up to 50% of work in the world can be automated, and this process will be comparable to the industrial revolution of the 18th – 19th centuries in scale" (McKinsey, 2017, p. 83).

The digital economy formation and the implementation of digital technologies are becoming one of the main strategic priorities for the development of regions of the Russian Federation (Udalov & Udalova, 2018). According to the Decree of the President of the Russian Federation "On the Strategy of the Information Society Development in the Russian Federation for 2017-2030" and in accordance with the program of "Digital Economy of the Russian Federation" approved by the Government of the Russian Federation, digital technologies play a key role (RF Government, 2017a, 2017b). Within the confines of the second stage implementation of the Strategy for Scientific and Technological Development of the

Russian Federation (2020-2025), a full-scale introduction of digital technologies in various sectors of the country economy is planned.

However, it is necessary to state that the trade export of AIC (agroindustrial complex) products in our country is represented by an extremely small amount of competitive goods from the field of innovative and digital technologies. Thus, modern innovative technologies effectively apply only about 0.5% of peasant (farmer) households and 1.5% of large Russian agroformations in their activities. At the same time, annually about 40-50% of scientific and technical developments remain unclaimed by domestic rural commodity producers (Golubev, 2011).

3.   Research Questions

For the strategic vision and the future of the Republic of Bashkortostan, rural areas development as complex socio-economic systems is important, since 818 rural settlements, united in 54 rural municipalities, function in the region. Today, about 1.5 million people live in rural areas or 38% of the total population of the republic. The system of rural municipalities of the Republic of Bashkortostan can be considered as a certain model territory from a scientific point of view of the appropriateness of using digital technologies for its sustainable growth and development, a set of methodical and practical problems associated with this process and achieved results.

4.   Purpose of the Study

The development of effective measures to minimize negative effects of the digital economy on rural environment should be based on a quantitative assessment of the socio-economic indicators characterizing the development of rural territories of the constituent entities of the Russian Federation. The development of effective measures to minimize the negative effects of the digital economy on the rural environment should be based on a quantitative assessment of the socio-economic indicators characterizing the development of rural territories of the constituent entities of the Russian Federation. The purpose of this study is to analyze the current state and development prospects of rural areas of the Republic of Bashkortostan; revealing key areas for the introduction of digital technologies in agriculture and in rural areas of the region.

5.   Research Methods

The issue of rural areas development of the region in the context of implementing digital technologies is determined by the versatility and dynamism of various scientific approaches and methods to solve (Semin, Kislitskii, Agnaeva, & Vorona, 2018; Koshkarov, 2018). These circumstances define a special role in the application of a system approach for the analysis of current situation in rural areas of the Republic of Bashkortostan in epy conditions of the digital economy development. The system approach use in combination with modern methods of scientific research makes it possible to assess the consequences of digital technologies implementation in rural areas from the standpoint of prospective improvement in the development of the economic and social component of rural areas of the region. The use of expert assessments helps quantify the impact of digitalization level on the agrarian economy competitiveness of

the Republic of Bashkortostan and the sustainable development of rural areas in the new technological order.

6. Findings

Dominated in the post-reform period, the narrow-sectoral agrarian orientation and the lack of a system approach to the development of rural areas led to the formation of certain disproportions in the development of social and industrial facilities, irrational distribution of productive forces, which directly affected the living conditions of the rural population. The discrepancy between the size of rural areas and the number of residents living in them was reflected in the shredding of population network, the depopulation of rural areas and can lead to the loss of control over these territories. The nature of these destructive processes in rural areas has been systemic over the past decades.

Today, the economic condition of most of the rural territories of the Republic of Bashkortostan remains fragile. Many agricultural organizations use their productive resources inefficiently and develop disproportionately. The total sown area of agricultural crops used by agroformations of the republic has decreased by 139 thousand ha for 2010-2017. The needs of the agricultural sector of the region in farming machinery are not fully met. During the period from 2010 to 2017, the number of tractors in agricultural organizations decreased by 1.6 times, combines - by 1.4 times at the regional level.

It is necessary to state that negative tendencies are formed in the farms of the republic, reflecting a significant decrease in the number of main species of agricultural animals. So, for the period of 2010-2017, the number of cattle decreased by 79 thousand animal units or 20% on a regional scale, including the number of cows decreased by 91 thousand animal units or 18%. If we compare the indicators of 2017 with the actually reached level of 2010, then it should be noted that there is a decrease in milk production by 360 thousand tons or by 17% on a regional scale in agroformations of the republic, in meat (live weight) by 57 thousand tons or 12%, eggs - 95 million pieces or by 8%, wool - by 142 tons or by 7% (RB Stat, 2018). For the comparative period, milk production (per every citizen of the republic) decreased from 511 kg to 423 kg, meat - from 69 kg to 66 kg, eggs - from 299 pcs. up to 276 pcs., respectively.

Reduced effective demand of the population in the face of reduced agricultural production leads to a decrease in food consumption. For 2010-2017, the average annual consumption of milk (per resident of the region) decreased from 332 kg to 313 kg, bread-making products - from 126 kg to 119 kg, eggs - from 306 pcs. up to 299 pcs. In 2017 compared to 2016, the increase in imports of certain types of food (vegetables, meat, milk and eggs) indicates a lack of use of the existing production potential of agri-food complex in the region. Thus, in 2017, the level of capacity utilization of large enterprises and organizations of the republic in flour amounted to 44%, in milk - 63%, in curd - 65%, in canned food - 45%, in bread and bakery products - 47%, in confectionery products - 47%.

Insufficient development of organizational mechanisms for strategic planning of the functioning of individual rural municipalities negatively affects the development of rural areas of the Republic of Bashkortostan. The absence of well-formed strategic programs for the sustainable development of rural areas increases the gap in the standard of living between the rural and urban population of the region and enhances the polarization processes among municipalities within the dichotomy "city - periphery (rural areas)" (Askarov, Stovba, & Stovba, 2018).

In 2017-2018 in the field of production of innovative goods and services from all 54 rural municipal areas of the republic, organizations and enterprises of only four rural municipalities were involved. For the comparative period, the indicator reflecting the sales volumes of its own innovative products, in general, in all rural municipalities of the republic in value terms amounted to only 101 million rubles or 0.1% of the corresponding total indicator for the region.

An assessment of the socio-economic situation in the rural areas of the region shows an imbalance in the social sphere and a growth of social tension. A "demographic default" is gradually occurring in the rural areas of the region. In the predominant part of rural municipalities, the mortality rate exceeds the birth rate. For the period from 2010 to 2017, the population of rural areas of the republic decreased by 65 thousand people or by 4%.

The structure of the economically active rural population does not improve. There is a "washout" of the most active, professional part of the rural population from agrarian production. For 2010-2017, the number of people employed in the agriculture, hunting and forestry sectors of the region decreased from 279 thousand people to 198 thousand people or by 1.4 times. It is necessary to state that the indicator of the average monthly nominal wages of employees of organizations and enterprises in the region for 2010-2017 has always been less than the same average national indicator. The total population of younger and older than working age is 40%, and, consequently, causes a significant economic burden on the budgets of municipalities in most rural municipalities of the republic (Stovba, Stovba, & Kolonskikh, 2018). At the same time, the majority of municipalities in the region are subsidized in budget terms.

The reform of educational sector has led to the processes of "optimization" of the number of pre-school educational institutions in rural areas of the region. In 2010-2017, the number of pre-school institutions in rural areas of the republic decreased by 679 units or 1.9 times. The number of state and municipal educational institutions for the same period as a whole in all rural areas of the republic decreased by 477 units or 1.5 times. The decrease in rural network of small (underfilled school) schools and pre-school institutions is accompanied by a reduction in the number of teachers and workers employed in the educational sphere of the region. At the same time, these negative trends are carried out at a faster pace compared with the process of reducing the number of inhabitants in rural areas.

The number of nursing staff decreased by 0.2 thousand people, the number of medical hospital beds decreased by 0.7 thousand units with an increase in the number of doctors during the period from 2010 to 2017 in the field of health care in the region. In recent years, the level of rural cultural services has been declining. The total number of rural library institutions decreased by 101 units or 7% in the period of 2010-2017, the number of cultural and leisure facilities decreased by 282 units or 12% in rural areas of the region. Rural areas of the republic are characterized by a high level of deterioration and low level of improvement of the housing stock.

In our opinion, in the modern conditions of development of rural areas of the Republic of Bashkortostan, it is necessary to adopt anti-crisis measures and strategic programs that should be based on the introduction of innovative and digital technologies in rural areas. Digital technologies represent a new direction for increasing the efficiency of the agroindustrial complex and agriculture (Koltsova, 2018). In our opinion, the effective functioning of digital economy in agricultural sector of the region will be based on the use of blockchain technologies, robotization and the development of "intelligent" agriculture,

creation of electronic field maps and remote monitoring of farms, the formation of clusters based on AIC digital platforms (Table 01).

Table 01. Introduction of digital technologies in agriculture and in rural areas of the region

Implementation of digital technology in agriculture of the region	Implementation of digital technology in rural areas of the region
1. Agriculture blockchain	1. Monitoring the demand for the production of agri-food products
2. Soil-landscape digital mapping for agricultural organizations	2. Internet commerce and the creation of virtual trading platforms in the agri-food sector
3. Development of robotization technologies and "intellectual" agriculture, self-driving agricultural engineering and remote control of agricultural equipment	3. Creating a single digital space for municipal government and AIC enterprises
4. Introduction of geo-information, precision technologies and compilation of electronic field maps	4. Digital processing of technology and technology storage
5. Digital design in adaptive farming and in the livestock industries	5. Compilation of digital maps of social infrastructure
6. Clusters of digital economy based on AIC digital platforms	6. Digitalization of management decisions in rural municipalities

The implementation of digital technologies determines the creation of digital maps of rural social infrastructure facilities and the digitalization of management decisions in rural municipalities, the formation of virtual trading platforms in the agri-food sector of the republic.

Digitalization transforms the social paradigm of life in rural areas. The introduction of digital technologies in agriculture and in rural areas of the Republic of Bashkortostan determines the achievement of a certain synergistic effect (Table. 02).

Table 02. Synergistic effect of digital technologies implementation in agriculture and rural areas of the region

Economic effect	Social effect
1. Reduced production costs	1. Improving food quality
2. Creation of new high-tech jobs with high productivity	2. Development of digital social infrastructure in rural areas
3. Reduced loss of agricultural products	3. Improving accessibility, quality and convenience of social services
4. Increase in competitiveness of rural commodity producers	4. Growth of educational level and social expectations of the new generation personnel, emergence of new professions

At the same time, the lack of access to digital technology leaves rural people without access to medical care and educational services, as well as communication and exchange of relevant information (Sannikova, 2018). In the long term, the development of digital economy can directly affect the processes of unemployment and employment, the number and quality of jobs in rural areas, and the wages of agricultural workers in the Republic of Bashkortostan. In turn, the reduction of employment in rural areas

and the growth of rural unemployment will negatively affect the indicators of the level and quality of life of rural population of the region. Consequently, a change in qualitative characteristics of rural population life will affect the reproduction of labor resources of the agrarian sector in a negative way, as the fundamental basis for sustainable socio-economic development of rural territories of the republic.

7. Conclusion

The use of digital technologies in the agricultural sector of the region will contribute to the growth of profits, profitability by optimizing labor costs and optimal allocation of resources of rural commodity producers. The use of modern digital and information technologies, software and systems analysis allows not only quickly diagnosing the current state of agricultural organizations, but also identifying bottlenecks and problems in the system of strategic management of material resources, modelling the adoption of optimal management decisions.

Increased productivity in digital economy will lead to changes in the management of human and social capital in rural areas of the republic. Digitization of the social sphere will improve the quality of decisions taken at the municipal and regional levels of government in rural areas, develop measures in a timely manner, aimed at decreasing disparities between different layers of rural residents, reducing the stratification of rural society and smoothing social contrasts in rural areas.

The implementation of digital technology in rural areas of the region will contribute to the formation of a clear and unified image of rural areas future, which in the long term can serve as a target guide for both regional policy and the activities of individual rural municipalities. In a strategic perspective, the development of digital economy should be an important factor in economic growth and a key condition for improving the quality of rural population life in the Republic of Bashkortostan.

Acknowledgments

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