Transformation of the Service Sector as Part of the Agribusiness Digitalization

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Abstract. The digitalization of production in agriculture is a global trend. The national priorities of modern Russia to be established by the program documents of the country's socio-economic development for the period up to 2030 determine the digitalization of various industries including the agribusiness as a priority task for ensuring the country's entry into the number of the largest economies in the world. To speed up the process in the agribusiness, a departmental project titled 'Digital Agriculture' is being implemented, the ultimate goal of which is to ensure a technological breakthrough and achieve productivity growth at enterprises by developing and launching replicated end-to-end intelligent systems. Agriculture ranks fourth in terms of the possibility of automation among all sectors of the economy ahead of construction, insurance and trade. The digitalization of the country's economy has determined the transformation of the service sector including banks and telecom operators. Digital initiatives of banks and telecom operators have been analyzed in the interests of the agribusiness.

1. Introduction

Digitalization determines the growth prospects of companies and industries, which contributes to the growth of national economies. Digitalization is a global trend [1, 2].

Reputable international organizations such as FAO, World Bank, and OECD have been monitoring the level of digitalization of world agriculture for many years and declare the high potential of Agriculture 4.0 technologies [3, 4, 5].

According to MarketsAndMarkets, the volume of the global market for solutions based only on artificial intelligence in the agricultural sector reached USD 1 billion in 2020 and will grow to USD 4 billion by 2026 [6].

The current model of the country's socio-economic development for the period up to 2030 provides for the advanced development and modernization of the economy by replicating the basic innovations of the fifth technology revolution and forced transition to the sixth technology revolution, which is based on nano-, bio- and digital technology [7].

The Agency for Strategic Initiatives presented together with the business community a roadmap for the development of the FoodNet food market in September 2017. By 2035, Russian companies should occupy more than 5% of the world market in five priority segments: smart agriculture, accelerated
breeding, affordable organic matter, new sources of raw materials (processing of biomass of algae, insects, introduction of pseudo-cereal crops, etc.), and personalized diets [8].

The level of agricultural production today is also determined by the degree of intellectualization of production and the provision of up-to-date technologies within the framework of the Industry 4.0 concept, such as digital platforms, ecosystems, as well as Big Data analytics, such as 3D printing, robotization, Internet of Things, etc. [9, 10].

The government has set the task of transforming agriculture through the introduction of digital technologies and offers state support within the framework of the Digital Agriculture departmental project, which has intensified the introduction of digital products in the industry, telecom operators become participants in the process, financial services of banks are also often needed for digital modernization of production. Telecom operators and banks found themselves at the intersection of the digital transformation of industries and traditional service formats. To maintain their leadership positions, they need to cooperate with representatives of breakthrough technologies and form their ecosystems, which should be based on control of changes in customer interests and targeted satisfaction of their needs.

The aim of the study is to analyze the initiatives of companies providing services that are critical for ensuring the digitalization of agricultural production. These include communication services, as well as financial ones, without which digitalization becomes difficult for many enterprises.

2. Materials and methods
The materials for the study were the Digital Agriculture departmental program, statistical studies and scientific publications on the research topic, and data on the initiatives of banks and telecom operators in the field of digitalization of agriculture. The monographic, comparative and systems analysis methods, the methods of idealization and mental modeling, as well as a logical approach were used.

3 Results
Digitalization of the economy is one of the priority tasks of the government. The Digital Economy national project is being implemented, which is intended for six years and includes activities to develop a 5G network, to engineer plans for the development of communication networks, certify and classify data centers and define requirements for infrastructure, create an IoT regulation system, prepare big data processing standards, put into operation a unified cloud platform and strengthen cybersecurity [11]. By the end of the program implementation, medical, educational and other facilities will become subscribers of broadband Internet access, and the volume of data storage and processing will increase fivefold in the country.

The IT market in agriculture in Russia reached 360 billion rubles in 2019. It is projected to increase by more than 5 times by 2026. Agriculture ranks fourth in terms of the possibility of automation among all sectors of the economy ahead of construction, insurance and trade [12].

To accelerate the process of agribusiness digitalization, the Digital Agriculture departmental project is being implemented, which should provide a technological breakthrough and achieve productivity growth at digital agricultural enterprises by developing and launching replicated end-to-end intelligent systems based on domestic projects. The total economic effect of digitalization is expected to be more than 4.8 trillion rubles in annual terms, and labor productivity growth is expected to be 3-5 times more [13, 14].

Analysis of statistical information of the Center for Forecasting and Monitoring of the Kuban State Agrarian University on the use of elements of precision agriculture in 64 regions in 2018-2019 showed that elements of precision farming are used in 55 regions at 2834 farms on an area of 15.5 million hectares in 2019. Compared to 2018, the number of regions using new technologies in crop production has increased by 38%; the number of farms using new technologies in crop production has increased by 47%; the total area on which elements of precision farming are used has increased by 24% (table 1).
### Table 1. Dynamics of the use of elements of precision farming in 2018-2019.

| Year | Number of regions | Farms using precision farming | Total area, million hectares |
|------|-------------------|-------------------------------|-----------------------------|
|      | total             | using precision farming       | total                       |
| 2018 | 52                | 40                            | 1,930                       | 12.5                        |
| 2019 | 64                | 55                            | 2,834                       | 15.5                        |
| Difference, units / % | 12 / 23 | 15 / 38 | 904 / 47 | 3 / 24 |

Source: E.V. Truflyak, 2021

IT technologies in the field of animal husbandry are used in 58 regions out of 68 of those analyzed, at 1707 farms with a total livestock of 3 million. Compared to 2018, the number of regions using new technologies in animal husbandry has increased by 166%, the number of farms using new technologies in animal husbandry has increased by 216%; the number of cows at farms that use elements of precision livestock breeding by region has increased by 176% (table 2) [15].

### Table 2. Dynamics of the use of IT technology in animal husbandry in 2018-2019.

| Year | Number of regions | Farms using elements of precision animal husbandry | Livestock of cattle, million heads |
|------|-------------------|---------------------------------------------------|----------------------------------|
|      | total             | using digitalization                               | total                            |
| 2018 | 46                | 35                                                | 789                              | 1.7                        |
| 2019 | 68                | 58                                                | 1,707                            | 3                          |
| Difference, units / % | 22 / 148 | 23 / 166 | 918 / 216 | 1.3 / 176 |

Source: E.V. Truflyak, 2021

According to Sberbank's estimates, the agribusiness is one of the three first sectors of the economy that will actively undergo digital transformation in 2023-2025. Therefore, Sberbank, like many others, develops IoT technologies and works closely with industry enterprises using AI. For example, it issues loans for seasonal field work. More than 20% of customers in the small business segment receive loans in three minutes. Information processing technologies also make it possible to predict service needs and optimize costs.

Sberbank's ecosystem for farmers includes:

- A ToT company, which offers solutions that are unique in scope and completeness for identifying areas of business growth and development of territories, analyzing socio-demographic, financial and behavioral characteristics, and determining the target audience of a business and increasing its loyalty;
- SberCloud cloud services that allow reducing IT costs by more than 30% through the use of modern cloud infrastructure and platform solutions and increasing business efficiency;
- SberKorus, which deals with the process of integrated automation of production to work with the Honest ZNAK system and MercuryFSIS in order to facilitate the transition to the obligatory labeling of dairy products for enterprises.

Sberbank began developing a concessional lending module for the Russian Ministry of Agriculture in 2020. SberKorus, a subsidiary company (formerKorus Consulting CIS), designs client scenarios and user paths in the concept of a future system. The general contractor is FORS—Development Center LLC. The development of a concessional lending module is part of the digital services system for the agribusiness [16].
Russian Agricultural Bank has launched the ‘Ours. Farming’ digital ecosystem, that is the first digital ecosystem for agricultural enterprises. All goods and services of the agricultural sector are collected on a single platform, which will automate processes, save time, and resources and bring business to a new level. The platform is available to everyone involved in agriculture, e.g. farmers, manufacturers and suppliers of goods for the agribusiness, agricultural enterprises, as well as representatives of related business sectors. Ecosystem services are divided into three groups.

The first group is services for supporting agribusiness, for example, a basic set of opportunities for digital farm management or obtaining qualified veterinary care.

The second group expands the sales market and helps in selling products and promoting services in conditions of limited demand; it also includes a service that allows unleashing the tourist potential.

The third group is a lightweight version of the Russian Agricultural Bank product line with financial services, for example, the ability to remotely submit applications for preferential loans. While lending about 70% of small businesses in rural areas, Russian Agricultural Bank has accumulated a large amount of data over 20 years of supporting farming. The ecosystem allows farmers and agribusiness enterprises to automate their work and receive the necessary services in a convenient digital format.

The number of services provided on ‘Ours. Farming’ is developing. A television veterinary service is planned to make it easier for farmers to receive qualified veterinary care. This is the first service of remote round-the-clock support in Russia (developed jointly with the VetExpert team) for agriculture.

The Ours Native marketplace is developing. This is a service where suppliers and manufacturers of goods can place their products, and buyers can find and choose a suitable product and/or service from trusted entrepreneurs. The ecosystem brings together thousands of products from hundreds of Russian manufacturers in such categories as seeds, fertilizers, plant protection products, machinery, agrochemistry, feed, etc. It includes more than 5,000 vacancies in the agricultural sector.

In the course of creating the farming ecosystem, Russian Agricultural Bank held a large-scale event AgroCode in 2020, the central event of which was the unique Agro Hack hackathon for the best adaptation of IT solutions for the agricultural sector, as well as the Agroidea idea contests in the field of agricultural technologies and the FutureTech Conference. The bank's prize fund amounted to 1.35 million rubles.

The shift in technology towards the Internet of Things has determined the transition of telecom operators from the concept of traditional telecom operators to the concept of digital transformation centers in the Agriculture 4.0 format. Thus, MTS has developed a comprehensive MTS Smart Farming solution for managing a dairy farm. Now this service has been implemented at farms in the Kemerovo region and Khabarovsk. The software allows monitoring the health of cows, predicting the onset of heat and calving, setting tasks for farm employees and monitoring their implementation.

MTS is also testing a system for monitoring livestock at livestock farms. The first 250 cows belong to the Village Dairy Plant group of companies. The company has introduced radio bolus sensors that animals swallow with food and collect information about the animal's health in the stomach for life, such as temperature, stomach acidity, physical activity and physiological state. Since at this stage the equipment and its maintenance cost up to 500 rubles monthly per animal, then the system is in demand in large and medium-sized dairy farms with a livestock of 300 animals.

In 2019, Tele2 announced the creation of a pilot digitalization project (in cooperation with Ericsson) at mariculture farms in Primorsk Territory, which allows using sensors installed in water areas to measure the physical and hydrochemical parameters of water and analyze them via IoT platform [17].

Megafon works in the field of Big Data and the Internet of Things offering them to manufacturers in an accessible form. The company has adopted a new development strategy focusing on becoming an operator of digital opportunities, an integrator offering integrated turnkey solutions. Megafon also provides access to the cattle monitoring system. Beeline has several projects for animal husbandry and crop production including those related to the cultivation of exotic plants in the conditions of central Russia [16].

It should be noted that both banks and telecom operators are actively mastering new forms of services for themselves while forming ecosystems for customers that blur the boundaries between them.
Such large operators as Beeline, MTS, Megafon, and Tele2 are increasingly offering their clients financial services. Megafon issues its own card, which can be either plastic or virtual one, that uses the MasterCard payment system, which combines an account with a mobile phone. A Beeline plastic card that uses the MasterCard payment system can be obtained by persons who are not subscribers of the operator. The card can be either debit or credit one with a limit of up to 300,000 rubles and a grace period of 55 days, as well as it can be given a loyalty program. The MTS Cashback card of MTS Bank also has a loyalty program. Bank cards are needed by mobile operators to retain their customers and analyze financial behavior to personalize offers of goods and services.

Some operators have expanded the range of financial services by offering consumer loans from partner banks, while, for example, Tele2 customers can get more favorable conditions due to the fact that Tele2 has a large array of customer data that can be used to assess the reliability of the borrower. The issuance of loans from partner banks to the Megafon card is being implemented.

The investment sector is developing. Thus, Megafon and BCS Broker offer everyone to buy shares of the Moscow and St. Petersburg stock exchanges, as well as the possibility of inter-currency trading through the Megafon Investments mobile application. Beeline, Tele2 and MTS provide an opportunity to invest in unit investment funds (UIF) of management companies. Beeline provides access to shares in the My Beeline application, Tele2 provides access to shares on a separate Internet page of the operator's financial services, and MTS implements a separate MTS Investmentsservice for this[18, 19].

Banks, in turn, are also mastering new services for clients. Currently, there are already four banks providing mobile communications as mobile virtual network operator (MVNO). These are Sberbank, VTB, Tinkoff, and Gazprombank. Banks are actively attracting new clients and analyzing the collected data array of their clients using big data processing technologies. The three largest banks in Russia in terms of assets (Sberbank, VTB, and Gazprombank) have their own MVNO projects. Experts say that the banking MVNO market became the main growth driver in 2020 and, in fact, the only full-fledged segment of the Russian MVNO market, which had gained relatively mass distribution [20].

4. Conclusions
The IT market in agriculture is developing rapidly and in the short term. It is expected that the agribusiness will be among the leaders in digital transformation among sectors of the economy. This determines the interest of the service sector, in particular banks and telecom operators, to ensure the growing demand for new products and services within the framework of the Strategy for meeting the needs of the agricultural sector to be implemented with state support for the digitalization of the agricultural sector. They determine, in turn, the digitalization of the service sector itself and the prospects for its growth and development. As banks went to MVNO, so telecom operators are now providing financial services, while the service sector can use all the innovations of its digital transformation to optimize its resources and create new sources of income.

Thus, the agribusiness digitalization has determined the transition of banks and telecom operators from the concept of traditional services to the concept of digital transformation centers in the Agriculture 4.0 format, which also contributes, firstly, to the digital transformation of the service sector, and secondly, to increase in the innovative activity of agricultural enterprises, especially in regions, since the service sector introduces new products, forms ecosystems and applies more and more personalized proposals for agricultural companies, which contributes to an increase in their digital and innovative activity, as well as literacy.

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