



DIGITAL TRANSFORMATION TECHNOLOGIES IN AGRICULTURE UZBEKISTAN

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ABSTRACT

The concept of "digital economy" is used in almost all sectors of the world economy. Information and communication technologies are actively spreading in production, financial and marketing processes, contributing to the formation and development of adapted technologies for managing the production cycle and optimizing business processes.

This contributes to the formation and development of adapted technologies for managing the production cycle and optimizing business processes. The development of agricultural production is largely limited by climatic, geographical and natural conditions.

Onew is largely limited by natural conditions and is associated with significant risks and vulnerabilities. Unlike other areas of industrial production unlike other industrial sectors, where it is possible to foresee possible development options and change the strategy, in the agricultural sector there is not always an opportunity to change the strategy.

Such opportunities are not always available. The purpose of this study is to analyze the benefits of digital transformation in agriculture.

The purpose of the study is to analyze the benefits of digital transformation in agriculture and develop a methodological approach for assessing the digital maturity of agribusiness enterprises.

Research objectives: 1) analysis of the expected results of the digitalization of the agro-industrial complex; 2) study of the main stages of "digital agriculture" projects; 3) development of "digital agriculture" projects; 4) development of "digital agriculture" projects; 7) development of "digital agriculture" projects.

KEY WORDS: innovations, digitalization, agriculture, agribusiness, digital economy, economic growth, digital technologies.

INTRODUCTION

The development of market relations in our country is competition and by local producers' market mechanisms and levers of increasing competitiveness creating the need for formation. National in this context in all sectors of our economy, especially in the agricultural sector increasing competitiveness remains one of the urgent issues.

It is known that the competitive priority of each industry is production scientific and technological level, qualification of labor resources and their newness determined by adaptation to knowledge and innovation.

In the recent past, investment in the agro-industrial complex has been significant limited by natural-climatic and structural risk factors, which negatively influenced stakeholder expectations economic activity. Predictable the consequences were low yields, stagnation in production and the pace of adoption of digital technologies.

Active development of innovative processes and solutions in the field of management and regulation production cycle currently has a positive impact on the state of the agro-industrial complex and its key area - agriculture. An important direction assessment of digitalization in the field of agribusiness is the degree of digital



maturity, which allows determine the quality of development and implementation of digital processes in key functional areas.

Indeed, in 2017-2021, the strategy of action on the five priority directions of the development of the Republic of Uzbekistan "... structural deepening the changes and improving agricultural production development, further strengthening of the country's food security, ecological expansion of the production of clean products, export of the agricultural sector the need to significantly increase the potential" of agriculture as a priority for modernization and rapid development specified. Ensuring the performance of these tasks in many ways from innovative, resource-saving technologies in the agriculture of our republic requires improvement of the organizational and economic basis of use.

Therefore, innovative techniques and technologies in agriculture based on the study of methods of economic evaluation of use on the optimization of all performance indicators development of methodological approach and practical recommendations, based on which they are innovative formation of an effective activity management system is of urgent importance.

Major technology companies have become show interest in project cooperation with agribusiness. We note a number of factors that influence the success of such cooperation in the near future.

State support for agricultural producers. Difficult periods of negative acroeconomic trends and sanctions pressure have led to the fact that the country's agriculture sector, with stable support state, preferential subsidizing shows a stable growth in production and export-import turnover. Profitability with Measures financial budgetary regulation is attractive for investment, accounting for up to 45% in some regions (without state financing - 8-12%). The short-term and medium-term prospects for investors make it possible to increase project-targeted cooperation, including number in technology.

Changing transport and logistics routes and agribusiness sales channels. Currently the situation makes it possible to take advantage of new opportunities for agribusiness that have opened up as a result of changes in trade relations at the macro level, forms and mechanisms of partnership. Change of export and its direction to other countries and regions make it possible to form convenient manufacturers supply chain and exclude the least effective forms of cooperation that have not justified themselves from an economic and market point of view.

Technology companies in cooperation with partners have learned to control the full crop and livestock industry cycle with the help of smart devices, capable of transmitting and processing current parameters of each object and its surrounding environment, including technical capacities and sensors for measuring the conditions of soil, plants and microclimate.

Special programs collect and analysis of information received from sensors, unmanned aerial vehicles and other innovative technology. Through mobile applications, a favorable time is determined for sowing or reaping, optimal application time soil fertilization, crop volume is predicted and etc.

METHODS

The research methods used general logical research methods, analysis of statistics in the field of innovation, modeling of economic processes.

RESULTS

As a result of the formation of a single network, it became possible to automate practical all agricultural production processes.

Almost 70% of the subjects of farm production in the USA, Canada and Europe operate on modern innovative agricultural technologies. Implementation rates innovations and digital production solutions in Russia is much lower, however, many experts believe that the active introduction of digital modern technologies in the agricultural sector economy contributes to the effective development and productivity growth despite personnel and resource risks.

Global population growth in the coming decades will lead to the need for agricultural products almost twice as much as in present time. Satisfaction of the population in products in the required quantity requires a large-scale modernization of the agricultural sector. The problem is that in many countries very limited land resources suitable for for agricultural activities.

In addition, according to the forecasts of the Food and Agriculture Organization United Nations, the amount of land used for growing agricultural cultures, per capita in the world will decrease from 0.6 ha in 2000 to 0.2 ha by 2050, while food needs will increase by 70%.

To date, development opportunities which boil down to increasing production capacity on the former technical base in agricultural industry do not bring the expected results, which makes it necessary implementation of modern digital technologies in the sector in order to increase productivity and product quality.

According to the forecasts of the Analytical Agency for Market Research, which unites professionals in the field of analysis of world markets, the volume of the global market for technologies for agro-industrial complex will increase to 12.1% per year and to 2027 will reach 41.17 billion US dollars.

In 2019, the volume of the global information technology market in the agro-industrial complex reached 17.44 billion dollars, and 39% of sales were in North America. In second place for sales worth the Asia-Pacific region, the share of which in 2019 was 29.7%, the third place in these positions is occupied by European countries.

The active development of the Asia-Pacific region in the implementation of modern technologies was facilitated by factors such as growth population of China, India, Indonesia, Japan, the Philippines and Vietnam, as well as growing demand for high-yield projects that are strategically important for the agro-industrial complex.

The crisis caused by the coronavirus pandemic had a strong negative impact on the development agriculture in North America, reducing working human resources and efficiency logistics processes. The crisis caused a halt agricultural activity in the US, Canada and Mexico, which in turn had a negative impact on the export of agricultural products, machinery and modern digital equipment. The pandemic has had a negative impact on geomarketing and trade, exacerbating economic and economic processes of the North America, where it operates many industrial and technological companies.

Given the high demand for digital model's economy in almost all spheres of production, it can be assumed that soon human resources in this area will be replaced by automated technologies. The fact is also confirmed by the high demand for

specialists with modern digital and innovative competencies, experts in the field of processing technologies for large data, data science, mathematics, analytics and robotics.

The strategy for the development of the agro-industrial complex should include measures for the highest possible rates of digitization and key agricultural processes.

Active digitalization of agro-industrial production contributes to the growth of profitability due to point optimization of costs and rational distribution of financial and material resources.



Figure 1. Digital transformation technologies in agriculture

Thus, the main directions of digitalization of agriculture are connected with a reduction in losses during cultivation, collection and storage, a reduction in non-target use of working equipment, improving product quality



through regular and rapid monitoring in livestock and agriculture, as well as the development of personalized marketing tools through automation and data management technologies.

Implementation of the digital economy together with using an integrated approach helps to reduce costs by almost 23%. Solution issues of the digital economy at the state level should be carried out taking into account long-term forecasts for the development of world markets and indicators of domestic consumption of the country, which, in its turn, it requires accurate, complete and objective data on the current state of agriculture.

DISCUSSION

According to a number of experts, in Uzbekistan, the period of active digital the transformation of agriculture will include several stages.

At the first stage (2021–2024), pilot projects are being implemented to stimulate the introduction of digital technologies, collection and analysis of quantitative data from industry representatives, reintegration and enrichment of data from government sources of information. The promise of digitalization lies in its end-to-end character, allowing through constant information flows unite consumers and producers of agricultural products, which will give the ability to reduce the cost of selling finished products and accelerate turnover in the industry. However, the extremely low level of rural digitalization limits possibilities for such a scenario.

The second stage (2025-2027) will affect large and medium-sized agricultural organizations. In other words, there will be a scaling of proven technologies, including using incentive measures, by shifting state support in favor of enterprises implementing digitalization processes and technologies using methods of objective and digital control in production. This, in its turn, will allow agricultural producers to integrate into the global space, relying on international standards for compliance with product quality and traceability requirements.

The third stage (2028–2030) involves the creation of digital production in the field of crop and livestock, which will reduce the cost and increase the availability of agricultural products, including by minimizing participation of intermediaries in sales. At all stages, private digital platforms for production management, cloud systems for managing cyber-physical systems and the Internet of things, predictive platforms for information ensuring the solution of individual production tasks.

CONCLUSION

This article discusses modern technologies for the digitalization of agriculture, analyzes the digital development of the agricultural industry, and explores the prospects for further development of digitalization technologies. In addition, the most promising areas for further research are considered.

Thus, it becomes obvious that improving the efficiency of agribusiness is inextricably linked with the use of modern technologies. Analysis of the current level digitalization allows us to conclude that, firstly, digitalization in Uzbekistan occurs without a defining document that would regulate this process; secondly, the legal framework for regulating the digitalization of the industry imperfect; thirdly, the process of digitalization is carried out unevenly as by region and by organization.

At the state level, the most promising project in the direction of the digital transformation of agriculture is the development and implementation of the national platform "Digital Agriculture". The platform will provide technological breakthrough in the country's agriculture and achieving productivity growth in digital agricultural enterprises.

Further theoretical and practical research within the framework of the considered topics may be related to the study of the problems and prospects of digitalization of agriculture economy for small and medium-sized businesses, as modern IT-manufacturers in Uzbekistan focus primarily on the needs and goals of large companies.

Another important area in the field of assessing the level of digitalization of agriculture economy is to create a unified rating of digital maturity of agro-industrial industries. Such a rating can serve as a tool for global assessment of the level digitalization in Uzbekistan.

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