



APPLICATION OF DIGITAL TECHNOLOGIES IN AGRICULTURE

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Received: 28 th February 2021	The article reveals some issues of the formation and development of the digital economy in the world and directions of strengthening the widespread use and implementation of the digital economy in the agriculture of Uzbekistan.
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INTRODUCTION.

In Uzbekistan, the development of the digital economy is one of the priority areas of state economic policy. Today agriculture occupies an important place in the economy of Uzbekistan. According to the State Statistics Committee, in 2020 the share of agriculture in the country's gross domestic product was 28.4%. Agriculture employs 27% of the working-age population.

Resolution of the President of the Republic of Uzbekistan Sh.Mirziyoyev, which states that "The state is taking large-scale measures to develop the digital sector of the economy, introducing electronic document management systems, developing electronic payments and improving the regulatory framework in the field of electronic commerce"[1].

The natural and climatic conditions of our country, together with a properly developed strategy in this area, contribute to the effective development of agriculture and an increase in export potential. Delicious, environmentally friendly fruits of the earth and the sun are grown in Uzbekistan, which are in great demand in world markets. In the context of the coronavirus pandemic in 2020, when the issue of food supply is aggravated on a global scale and some states impose bans on food exports, the issues of agriculture and food production are becoming the most urgent. Much attention is paid to the development of agriculture and the agricultural sector in our country. In particular, a number of legal documents were adopted, such as the Concept for the Development of the Agricultural Engineering Industry in the Republic of Uzbekistan for the period 2018–2021, Decree of the President of the Republic of Uzbekistan No. UP-5853 dated October 23, 2019 "On Approving the Strategy for the Development of Agriculture of the Republic of Uzbekistan for 2020– 2030 years"[2].

LITERATURE REVIEW.

Our economists conduct a lot of research on the development of the digital economy in our country.

R.Kh. Ayupov and G.R. Boltaboeva in her textbook "Fundamentals of the Digital Economy" describe the digital economy as follows: "The digital economy is a new modern form of management, in which a large set of digital data is a key factor in production. and management, and the process of their processing. Practical application of the results obtained allows achieving much greater efficiency than with the traditional form of management"[3].

Significant acceleration of informatization in agriculture as a key factor for future sustainable development in agriculture. I.A.Khasanshin, who claims that "At the present time, innovations have become the main reason for progressive economic growth in the leading countries of the world" [4]. Academic economist A.J.Vandekruce states that "We made an assessment with lettuce leaves and realized that we were reducing water consumption by 5 percent compared to traditional cultivation in the field" [5]. Scientists such as S.S.Gulyamov, O.M.Abdullayev, explain that the digital economy differs from the existing market economy in certain features, explaining this as follows:

1. Economic activity is focused on digital economy platforms.
2. Customized service models.
3. Direct interaction between producers and consumers.
4. The spread of the joint economy.

5. The contribution of individual participants is very important [6].

The digital economy in agriculture has been studied by many scholar economists like M.L. Vartanova, E.V. Drobot and others [7].

With the advent of the digital economy, the world today is undergoing truly revolutionary changes in the field of agriculture associated with new technologies that transform industries and production systems, increase productivity and give rise to new business models in the agricultural economy. [8].

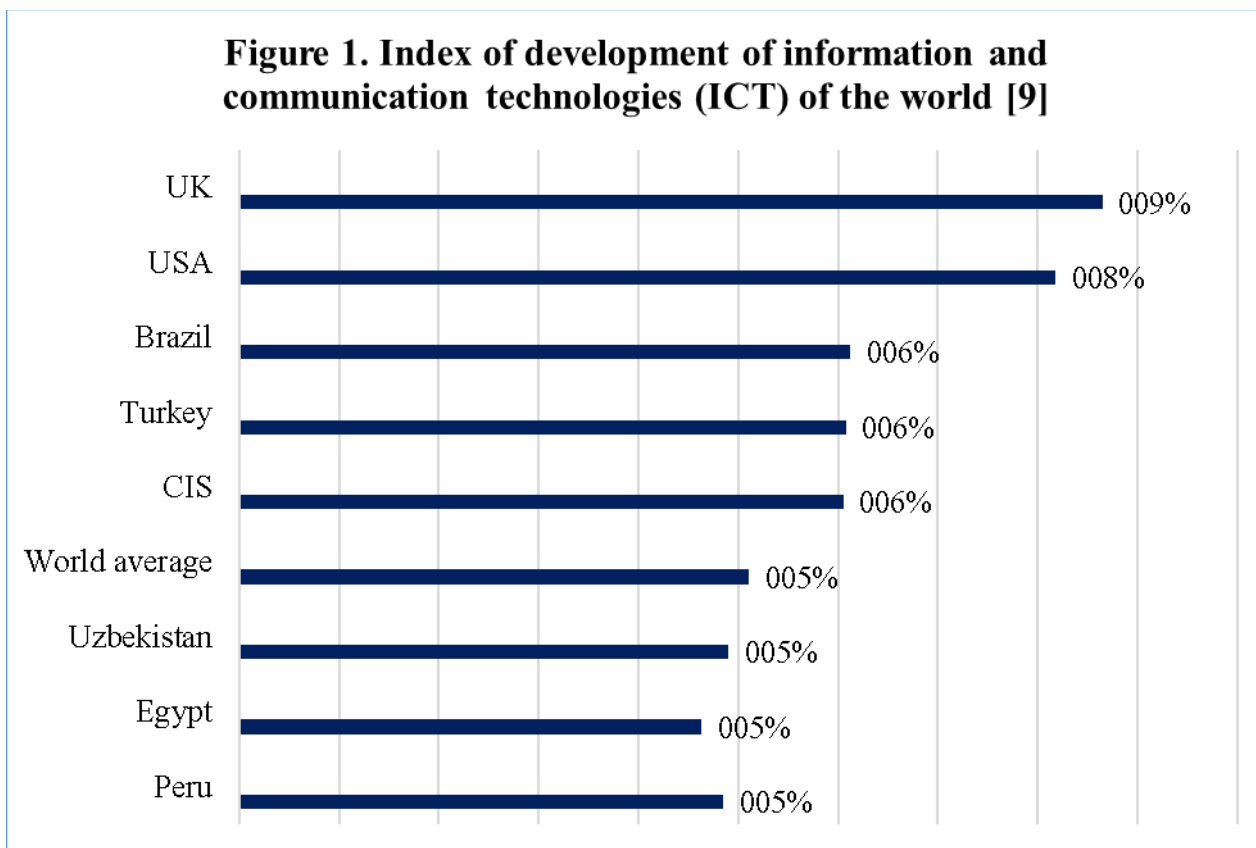
In this regard, the acceleration of economic development, international competitiveness and the integration of Uzbekistan into the world economy largely depend on the development of the digital economy in the field of agriculture.

RESEARCH METHODOLOGY.

The strategies of developed countries for the development of the digital economy, the main indicators of the digital economy of agriculture and the content of the digital economy have today been studied by our scientists when developing conclusions and proposals for the further development of the digital economy, overcoming the crisis and digitalization of agriculture and the widespread use of digital technologies, methods and the results of scientific and practical research aimed at describing the specific features, digitalization of agricultural sectors.

ANALYSIS AND RESULTS.

According to the chart, the global average informational communication technologies development index is 5.11%. The highest score was 8.65%, which corresponds to the United Kingdom contribution. In our country, this indicator is 4.9% and lags behind the average by 0.2%. This result shows that there is still a lot of work to be done in this area [Figure 1].



The above positive results are the first elements of the digital infrastructure, which still does not provide sufficient opportunities for the full implementation of the conditions for the development of the digital economy in our country.

In this regard, at the meeting of the President "On the Development of Information Technologies" on February 13, 2020, the share of the digital economy in GDP was 10.9% in the USA, 10% in China and 5.5% in India. [10].

Currently, the main obstacles to the development of the digital economy in our country are:

- insufficient formation of digital infrastructure;
- lack of digital activity;
- lack of business entities developing the digital economy;
- lack of attention to the development of human capital and the formation of digital literacy;
- lack of an effective information protection system.

One of the most essential prerequisites for the digital economy is the infrastructure that forms the backbone of these digital relationships. While the widespread use of information and communication technologies in the formation of infrastructure, the digitization of all industries and sectors, the provision of the country with full Internet services, the widespread use of the Internet in production and services, the basis of this activity is the search for large amounts of information directly related to digital technologies, storage, processing and distribution.

Digital technology has the advantage of being able to sort and analyze the information you need in no time, and keep up with the latest news from the industry you work in around the world.

Over the next five years, a priority task for Uzbekistan will be an accelerated transition to a digital economy in the field of agriculture. The formation of a digital economy in the field of agriculture will require an appropriate infrastructure, huge funds and labor resources, and this should be done today, otherwise it will be too late tomorrow. The problem of the formation and development of a new economic structure in agriculture is relevant not only in theory, but also in practical terms, including at the state level in connection with the decisive role of digital technologies in the strategic competitiveness of the country related to food security.

The digital economy in agriculture helps to reduce the cost of providing services, provides access to exports through e-commerce in agriculture, and has a positive effect on investment inflows and overall economic activity.

In order to increase the volume of production in agriculture on the basis of agricultural technology, it is necessary to increase the efficiency of digital transformation.

From our point of view, the following provisions can be noted among the priority tasks of introducing the concept of smart agriculture:

- ❖ increasing the quantity and quality of promising digital management technologies in agriculture through internal and external investment of significant funds in this vital area for the republic to ensure food security;
- ❖ introduction of a variety of modern resource-saving technologies in the field of agriculture, including the use of precise sowing mechanisms, excluding the loss of mineral fertilizers by accurately calculating their consumption per unit of sown area;
- ❖ the widespread use in the field of agriculture of the drip irrigation system on open and closed land plots with the use of modern farming technologies and appropriate digital information and communication management systems;
- ❖ the widespread use in agriculture of methods and methods of growing local and tropical crops in enclosed spaces, shelters and greenhouses using technologies developed in some developed countries;
- ❖ training and attracting modern specialists in the field of high technologies to work in various directions in the field of agriculture of the republic;
- ❖ introduction of advanced innovative technologies and advanced foreign experience in various areas of agricultural clusters of the Republic of Uzbekistan;
- ❖ the transition of agriculture to a digital method of information exchange, first at the level of regional centers with a further transition to a nationwide scale;
- ❖ reducing the number of paper, accounting and reporting forms with the subsequent transition to electronic media and electronic office work;
- ❖ improving the efficiency of interaction between workers in agriculture, agro clusters, farmers and private producers with government bodies;
- ❖ creation of a mechanism for continuous monitoring and assessment of the state of crops and land in order to ensure an effective management mechanism;
- ❖ introduction in agriculture of methods of growing various local and tropical crops using artificial substrates, including perlite and aerons;
- ❖ development of methods of growing crops by modern methods of aeroponics and hydroponics in smart greenhouses with digital program control;
- ❖ the use of agricultural machinery and technological equipment provided with navigation equipment in order to accurately record the organization and conduct of various agricultural operations;

- ❖ introduction of robotics tools for the care of agricultural machinery and equipment, animals, milk milking and meat cutting;
- ❖ the use of drones to monitor the state of agricultural land, record the use of land resources and monitor the state of the herd of animals in the fields;
- ❖ development and implementation of methods, tools and relevant consulting companies to advise agricultural workers and farmers on the cultivation, processing, storage, marketing and marketing of agricultural crops;
- ❖ creation of a digital platform in agriculture for effective management, consultation and monitoring of agriculture at the republican and regional levels;
- ❖ development of a technology for growing crops that can adapt to climate change, the external environment on the basis of modern achievements of digital technology and thereby achieve the sustainability of crops to external influences;
- ❖ development of work on genetic engineering to develop new varieties of crops that are resistant to local climatic conditions;
- ❖ development of new methods, technologies, equipment and automated devices for long-term storage and long-distance transportation of vegetables, fruits, flowers and herbs;
- ❖ the formation of a structure in agriculture focused on the market, export and ensuring the competitiveness of agricultural products on a global scale;
- ❖ ensuring the introduction of Smart Agriculture technologies based on the most advanced foreign analogues on a planned basis;
- ❖ increasing the efficiency of the logistics infrastructure of agricultural producers through the implementation of innovative solutions.

CONCLUSIONS AND OFFERS.

For the successful implementation of this concept in agriculture, it is necessary to widely use the means and methods of digital technologies in the agriculture of Uzbekistan. And also it is necessary to ensure effective planning of the implementation of the above provisions on a temporal and spatial scale. It is also planned to use artificial intelligence technologies for collecting, processing, transmitting and storing data on agriculture in Uzbekistan, as well as virtual and augmented reality technologies for modeling and managing the state and development of crops in various conditions.

Thus, based on the foregoing, in order to ensure reliable marketing of agricultural products, it is necessary to ensure the observability of these products in storage and in transit using signs, chips, identifiers, digital technologies and systems. Thus, the transition to digitalization of agriculture will inevitably lead to unrecognizability of many sectors of the economy. At present, this process is expanding in Uzbekistan, which will undoubtedly entail a change in the technological structure and production chains. In the near future, our life will change beyond recognition, and the task of everyone who is involved in this process is not to miss this technological turn, it is important to build our own priority niches for digital innovations, where at the lowest cost you can not only achieve independence in the domestic market, but also become recognized in the world community. Only in this way will the state be able to strengthen its position in the world market for data processing and storage services.

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