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Advantages of Agricultural Digitization

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A B S T R A C T

This article is devoted to the process of digitization of agriculture in the Republic of Uzbekistan and its efficiency indicators. The data are taken from the analysis of statistical reports issued by the Statistics Committee of the Republic of Uzbekistan and cover the indicators of agriculture in the Republic of Uzbekistan since 2010. We used foreign experience to solve the problem. The analysis revealed that the efficiency of the agricultural digitization process is positively correlated.

A R T I C L E I N F O

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Introduction

Today, the digital economy is penetrating all sectors of society as well as the economy. Agriculture is no exception. Further development of this sector through the digitization of agriculture is of great importance today. For modern society, the digital economy is a relatively new process. Our government is also working on a decision in this regard. Through the development of this sector, it is based on the processing of large numbers of figures, which will increase the efficiency of agricultural production, improve technological solutions and equipment, develop a system of storage, sale and delivery of finished products to final consumers. In the future, the digitalization of agriculture will lead to the further development of this sector. As a result, the opportunities they open up in the digitization process will undoubtedly solve all the problems that have arisen.

Literature review

The Presidential Decree of October 23, 2019 adopted the Strategy of Agricultural Development of the Republic of Uzbekistan for 2020-2030. Within the framework of this document, the modernization of the industry on the basis of a modern approach has begun. Using the potential of our regions, where to plant, what kind of livestock to raise, to increase meat, dairy and egg products in our markets by creating a value chain, to ensure price stability and increase income, an effective system must be produced [1,2].

According to TI Espolov, the world has already entered the era of digital globalization, which is determined by the flow of data, including information, ideas and news. Smart devices are getting smaller, faster, cheaper, more powerful, and will be the key to solving problems [3]. The introduction of digital technologies in agricultural production by VI Belsky is one of the most important elements of the strategic development of this sector. Bio- and nanotechnology, the use of genetic development, the ability to adapt agricultural products to specific categories of buyers is an important factor in increasing the

competitiveness of the industry, but without the active use of digital innovative technologies to quickly transform the local agricultural industry into a high-tech industry [4] .Nuno Geada said, "The digital economy is showing great growth potential for both individuals and transactions between companies. The Internet is the driving force behind this transition. "[5] Alshehri, M Drew. On the Slar side, it is possible to develop this system through the use of e-commerce [6].

Research methodology

The study examined and analyzed the impact of digitalization on the use of information and communication technologies for the leading economic entities in the field of agriculture, the work of foreign and domestic scientists in this area. The article effectively uses methods such as theoretical observation, systematic approach, observation, generalization, analysis, synthesis, as well as conclusions and recommendations on the problems in the process of development and digitization of agricultural activities and their solutions.

Analysis and results

In order to further develop the agricultural sector in our country, great attention is paid to digitalization. If we pay attention to the main indicators of agriculture in our country, we can see growth from year to year (see Table). Today, modern agricultural machinery and technologies designed for use in smart agriculture are used in a number of agro-clusters and farms. At the same time, there is a great need for the wider introduction and use of smart agricultural technologies. , planting, irrigation, maintenance, harvesting, processing, storage, transportation, sale of agricultural products, etc.) modern information technologies have been introduced at various levels. In particular, the importance of agricultural machinery management, trucking and other physical labor-intensive techniques and digital technologies is growing.

Table. The main indicators of agriculture [7].

	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**January - December 2020** [2)]
Arable land for agricultural crops, thousand hectares	3708,4	3601,6	3628,1	3658,6	3678,2	3694,2	3706,7	3474,5	3396,0	3309,4	3373,1
Agricultural production, bln. sum	30856,7	45285,9	55750,0	66435,3	81794,3	99604,6	115599,2	148199,3	187425,6	216283,1	249754,5
including:											
farming	18119,0	25874,6	30592,3	36237,4	43194,3	55429,2	61755,1	83303,4	98406,4	111904,8	123556,0
animal husbandry	12737,7	19411,3	25157,7	30197,9	38600,0	44175,4	53844,1	64895,9	89019,2	104378,3	126198,5
Growth rate of agricultural production in percent compared to last year	106,3	106,2	107,2	106,6	106,3	106,1	106,3	101,0	100,2	103,3	102,8
including:											
farming	105,9	104,9	107,1	106,1	105,9	105,5	105,7	98,2	95,8	104,8	103,4
animal husbandry	106,9	108,0	107,4	107,3	106,7	106,9	107,0	104,1	105,7	101,6	102,1

1) The data for 2010-2019 are presented taking into account the data included in the clarification (revalued).

2) Preliminary data for 2020

Although the agrarian sector of the economy includes many sectors, the main ones are farming and animal husbandry. Agriculture is based on the cultivation of land and the cultivation of crops (grains, vegetables, fruits, etc.). Livestock is based on the breeding of farm animals, which are usually divided into two types - beef and dairy cattle. Today, agriculture plays a major role in the country's economy. It not only provides the state and the population with food, but also forms the agricultural raw materials for the manufacturing sectors, primarily light and food products. Its level of development determines the economic security of the country. Currently, agriculture is facing many challenges. The main ones are:

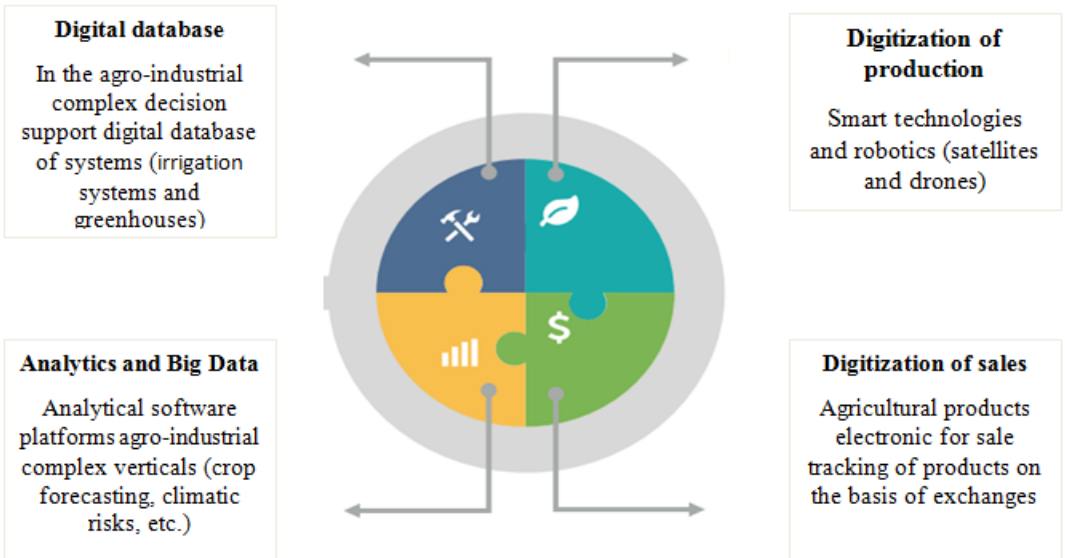
- ✓ The problem of land degradation;
- ✓ high dependence on climatic factors;
- ✓ seasonality of production;
- ✓ reduction of overproduction of food products, etc.

Given the role of agriculture in the national economy, its development is one of the priorities of the state. The government is actively supporting the agricultural sector of the economy. The current stage of socialization of agricultural informatization is characterized by high-speed technological progress. Over the past 30 years, computers and, with them, information technology have entered the life of society, including the manufacturing and non-manufacturing sectors of the economy. Agriculture was no exception. Today, the acceleration of informatization is the basis for ensuring the sustainability of future development.

Agriculture, as one of the key sectors of the national economy of many countries, faces many challenges and problems. To solve them, you need to solve the following problems:

- ➢ reducing the burden of anthropogenic environment on agriculture;
- ➢ Improving the technology used;
- ➢ Increased human capital to increase food safety during food production.

This will help in the transition to digital agriculture, which will increase the efficiency of agriculture. Modern information technologies have an impact on agricultural culture, from crop planning, irrigation automation and digital modeling of crops, to the calculation of feed for cattle. Including; One of the developed countries, Italian vineyards, is actively using a system of remote monitoring of organic vineyards, developed by the world-famous company Ericsson. Due to the use of wireless sensors, farmers are significantly reducing the amount of pesticides they use. Due to the development and introduction of modern information technologies in agriculture, not only its productivity will increase, but also financial and time costs will decrease. As a result, product quality increases and profits increase. The key elements of agricultural digitalization are the solution to this problem (Picture) [8].



Picture. Digitalization of agriculture: key elements

To meet existing and future threats to biological and food security in agriculture, society needs a new agrarian economy based on the use of modern information technologies consistent with the principles of sustainable development and a waste-free economy model. The modernization of agriculture is based on the transition to “smart” agriculture. “Smart” agriculture is agriculture based on the use of integrated production automation and robotization, automated decision-making systems, modern ecosystem modeling and design technologies. The intellectualization of agriculture, on the one hand, will reduce the overuse of external resources (agrochemical, inorganic fertilizers, fuel, etc.), on the other hand, will reduce the use of local factors of production (organic fertilizers, biofuels). i, renewable energy sources, etc.). The use of modern technologies of "intellectualization" of agriculture allows: For example, the preservation and restoration of useful properties of groundwater and soil; ensuring environmentally friendly and effective control of pests, remote control of compliance with the requirements of certification of organic agriculture. As a result, the potential of agriculture, including production, is expanding, and the efficiency of agricultural resources is increasing. In the following years, it is planned to implement the program "Digitalization of Agriculture" [9]. In particular, it is planned to create a system of accounting for agricultural land and accounting for all agricultural products. Experts say that the introduction of digital technologies will increase the efficiency of agriculture and attract young people to agribusiness. One of the goals of the agricultural digitization program is to create a single information system for accounting of land used in agriculture. This allows us to observe in which areas agricultural crops are actually grown and how many hectares are insignificant. The development of measures to support farmers in terms of covering the cost of purchasing software and computer hardware will alleviate the situation in this regard [10]. Such research will allow us to more accurately determine how much fertilizer to apply and on which plots - this will reduce the costs to agricultural producers and increase productivity.

Conclusions and suggestions

It should be noted that today private business is actively involved in the introduction of digital technologies in agriculture. In particular, the Monterra project was developed by the residents of the Digital City Techno park to gradually implement the digitization of arable land using satellite imagery. If the project is implemented, the export potential of farms will be expanded.

Currently, the platform is integrated with the system "Land Information" of the Cadastre Agency under the State Tax Committee of the Republic of Uzbekistan. 64.74% of the areas were formed for the formation of analytical data. At the same time, there is no doubt that further development of this sector will bring great results [12].

The tasks that need to be digitized in the development of agriculture in our country are:

- management of departmental and interdepartmental information systems related to agriculture, water use and management;
- Fully electronic delivery of services provided by organizations in the agro-industrial complex, as well as public services;
- Implementation of targeted projects on the basis of the terms of the state program for the introduction of modern ICT in agriculture;
- introduction of technology for online control of water use in reservoirs and irrigation systems;
- Review of water resource start-up planning, water use and water consumption accounting, and database creation;
- It is necessary to support enterprises to implement business startup projects and systematize the results of innovative projects.

Today, with the digitalization of agriculture, we can achieve another great result - the development of exports.

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