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Buoysha Abdulhamitovna Qulmatova

Andijan Institute of Agroculture and Agrotechnology
Andijan, Uzbekistan

Dilfuzaxon Anvarovna Buranova

Andijan Institute of Agroculture and Agrotechnology
Andijan, Uzbekistan

THE ROLE OF DIGITAL TECHNOLOGIES IN AGRICULTURE

Abstract: On this paper examines foreign experience in the implementation of digital technologies in smart agriculture, as well as the need to use automated systems in agriculture.

Key words: Digital technologies, digitization, smart agriculture, automated systems, technology, agriculture, modernization, automation, water resources, land resources, farmers, consumers, agro-industry, crops, productivity.

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Introduction

Entrance department.

The emphasis placed by the President on education and the development of the digital economy is an important step towards building a democratic state with strong socio-economic, political and market economy.

Digital technology is a modern form of management. in which the main factor of production and management is a large set of data in digital form and the process of their processing. Applying the results in practice will allow to achieve greater efficiency than traditional forms of management. Examples are various automated production processes, 3D technology, cloud technology. the provision of remote medical services, the production and delivery of products using smart technologies, the storage and sale of a variety of goods. The transition to digital technology means building a whole new kind of social and economic development based on computers and knowledge.

Mobile social networks, cloud technologies, which work with data as a key component of the transition to digital technology. Examples include sensor networks, the Internet of Things, and artificial intelligence technologies.

Digital transformation reaches different levels, and the difference between them is the same as the difference between the two terms - "digitalization" and "digitization". Digitization is the transfer of information from physical to digital media. Examples of digital conversions include e-books, video courses, digital photocopying, and more. There is no change in the structure of information, it is only in electronic form. Digitization is often used to improve an existing business model and optimize business processes. And digitization is the creation of completely new products in digital form. For example. a dynamic animated course or an interactive document interpretation system is digitization.

Department of Methods

It is estimated that by 2050 the population of the planet will reach 9.6 billion, which will require 70% more products than today. However, deteriorating environmental conditions, rising energy costs and declining land productivity are also said to be serious obstacles to food production. These problems can be solved through the management of agricultural activities in a unique way, in particular, the introduction of modern technologies and innovative solutions in the industry, such as the concept of the Internet of Things, in short, "smart" agriculture.

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In general, analysts at the Goldman Sachs Group confirm that many countries are actively developing their agriculture through the transition from "analog" to "smart". They predict that with the introduction of new technological solutions, by 2050, agriculture can grow by 70% worldwide. That's almost \$ 800 billion. dollars more.

Of course, to work on these we need completely different machines and units. It should be noted that the world's leading manufacturers of agricultural machinery have already begun to define their development strategies based on the need for digitization and automation of agricultural processes. one of the world leaders in the production of techniques. The company has begun to implement on its tractors a set of IoT (Internet of Things) sensors and web interfaces.

Results section

In addition to reducing the impact of the human factor, self-propelled systems installed on tractors and trucks have another important advantage: they allow to reduce grain and fuel theft.

Intelligent farms can use not only driverless vehicles, but also unmanned aerial vehicles equipped with cameras and high-sensitivity sensors. They spend several hours researching agricultural plots, transmitting data collected by cameras and sensors to the farmer, creating an electronic map of the fields in 3D, calculating the standardized vegetation index for effective fertilization of crops, the work being done. storage, land protection and other capabilities. Currently, drones are widely used in agriculture in the United States, China, Japan and Brazil.

The use of sensors and sensors in agriculture is an important step in setting up an intellectual farm. From tens of square kilometers away, they can continuously transmit information about the status of controlled objects through radio channels - mainly soil moisture, temperature, plant health, fuel reserves and other important parameters.

For example, sensors installed at control points are designed to detect basic systems of soil properties. The sensors provide advance information on natural diversity (relief, soil type, light, weather, amount of weeds and pests), diseased plants, and productivity. Sensors and sensors not only help to grow crops, but also to preserve the full harvest. All of this makes for a sensible approach to plant care.

In Chile, sensory irrigation of fruit plantations can reduce water consumption by 70%. Of course, such research is being conducted around the world. For example, NASA, in collaboration with the U.S. Geological Survey, has obtained satellite data on soil moisture in the states.

Discussion.

The consumers of the introduction of intelligent technologies in agriculture are, of course, farmers and

farm managers. Technology providers are suppliers. They are responsible for developing innovative applications or mobile applications for consumers, M2M equipment, sensors and tracking devices, communication channels, data analysis tools and other smart solutions. However, not every farm (every farmer) is connected to the internet. Even a small farm needs enough investment to connect to the network. For example, in Africa, where there are 10 million low-income farms, local development Esoko came to the rescue. The development provides farmers with important information about the condition of their farms, the weather, and recommendations for growing crops. The system also includes an eBay online store. Its most popular function is to show farmers the current prices of various products. In this way, they can sell their products at reasonable prices. As a result of this system, the income of private households increased by 12% in two years.

Japan's SoftBank has tested a flight of smart sensors in Colombia. Designed for rice fields, the device measures the nutrient content of soil and water, humidity and temperature, and sends the collected data to each farmer individually via smartphones.

For all its advantages, smart agriculture is still in its infancy. According to Trimble of the United States, only one in four farms in the world uses a database. This is due to financial factors (the establishment of such infrastructure requires a significant initial investment by farmers). In addition, data security, specific farming policies, and the weather make many farmers hesitant.

Of course, the use of technology in agriculture is not new. While the first gas tractors and chemical fertilizers appeared in the 19th century, the use of satellites in agriculture dates back to the second half of the 20th century. John Deere's GPS-sensing tractors have been around for almost two decades.

Long-distance technology is still evolving. Today, web-based devices and services have become more popular, which is why the interest in the Internet of Things is at a record high. Traditional farming methods cannot keep up with the growing demand for food, so farmers are increasingly turning to smart agriculture.

In advanced agricultural systems, various "smart sensors" are installed, depending on the crop and the environment. Examples include pest and disease predators, climate control, temperature, humidity, carbon dioxide levels, nutrient supply, and irrigation equipment. Their use guarantees at least a 30% increase in productivity. In addition, improved systems will be introduced in the production and sales chains of agricultural products, which will eventually allow the collection of large amounts of electronic data. Their storage and analysis can ensure efficient use of water, land and other limited resources, as well as food quality and safety.

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The convenience of the electronic system is that even after the harvest, its activities continue in the areas of processing, packaging, cleaning, sorting, delivery and other value chains. In short, Smart Agriculture technologies play an important role in achieving high yields and quality, reducing water consumption and product costs, and planning and forecasting yields. At the same time, the introduction of smart technologies is of interest to the younger generation. This will create new jobs in the industry. But there is also the issue of the organization and use of digital agriculture, which creates a demand for qualified personnel with in-depth knowledge of the industry and modern technical and technological knowledge. First of all, agriculture will need new professionals - programmers, ITo (instrument Internet) engineers, IT specialists.

It can be said that the emergence of many advanced technologies will radically change people's lives. It will lose a number of old professions and create new ones, and will undoubtedly turn the world into a digital world. This digitalization of the world will lead to great changes in all areas, and most importantly, as a result, many new companies will emerge. Not only will it find a place in the digital

transformation, but it will also become a leader in the companies that drive it.

Conclusion.

Based on the above, we would like to conclude with the following points. First, digitization is a real reality that is observed everywhere. Examples of the emergence of a "everyone's economy" through the creation of new digital ecosystems are now emerging in various industries.

Second, digitalization is already global - examples of digital ecosystems are available in a variety of industries and companies. We are approaching from year to year that our lives and activities are carried out within these systems.

Third, there are major changes in the economy today that can significantly change market relations between companies. The crackdown is due to the emergence of new "digital ecosystems" that unite all participants in the Internet market - from companies to consumers, products, services and other processes and services. Over the last 50 years, with the development of computer technology, information technology has also grown to some extent.

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