DIGITAL DEVELOPMENT STRATEGY IN AGRICULTURE

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Abstract. The article analyzes the relevance of introducing digital technologies in agriculture, issues of increasing production efficiency and rational use of resources with the help of these technologies. The possibilities of digital solutions, including smart monitoring systems, analytical platforms based on artificial intelligence and automated management tools, are widely covered. The article also substantiates the advantages and impact on results of using econometric approaches in the formation of a digital development strategy in agricultural enterprises. Ways to increase productivity, reduce costs and ensure environmental sustainability through the use of innovative technologies are indicated. At the end of the article, practical recommendations are developed for agricultural enterprises and proposals are made to accelerate the digital transformation process.

Keywords: agriculture, digital technologies, digital transformation, smart agriculture, econometric model, digital development strategy, efficiency improvement, innovative solutions, resource management, environmental sustainability.

Introduction. Nowadays, digital technologies are bringing about fundamental changes in all economic sectors, including agriculture. Agriculture plays an important role in ensuring economic stability, strengthening food security and improving the living standards of the population. At the same time, issues such as limited efficiency of traditional production methods, economic use of resources and environmental problems require new approaches.

Digital technologies, in particular artificial intelligence, IoT (Internet of Things), big data and automation systems, allow optimizing processes in agriculture, efficient use of resources and increasing productivity. In addition, digital development opens up new opportunities for farms and agro-clusters, increasing their adaptability to market demands and climatic conditions.

Literature review. Recent scientific studies on the implementation of digital technologies in agriculture show that the digitalization process is one of the main factors in increasing production efficiency and efficient use of resources. For example, studies by Deichmann et al. (2016) noted a significant increase in agricultural production and productivity in regions with developed digital infrastructure.

Also, FAO (Food and Agriculture Organization of the United Nations) reports have extensively analyzed the possibilities of digital technologies for managing land and water resources, pest control, market information systems and optimizing logistics. According to FAO (2019), with the help of smart technologies and IoT devices, farmers can monitor in real time and make

effective decisions.

In Uzbekistan, a number of measures are being implemented at the state level to digitize the agricultural sector. In particular, in accordance with the Presidential Decrees, consistent work is being carried out on the digitization of agrotechnical services, the development of electronic logistics systems, and the provision of farms with information and communication technologies (Resolution No. RP-4996, 2021).

In the scientific literature, digital technologies are indicated as an important tool for increasing climate change adaptation in agriculture, increasing labor productivity, and reducing costs (Sundmaeker et al., 2016). In addition, with the help of digital marketing tools, producers have the opportunity to communicate directly with consumers, creating the opportunity to quickly respond to market demands (Klerkx & Rose, 2020).

In general, the existing literature shows the high potential for the introduction of digital technologies in agriculture and justifies the possibility of sustainable development, innovative approaches, and increased competitiveness through their implementation. Therefore, the development and implementation of scientifically based strategies in this area is recognized as an urgent task.

Research methodology. This study used a comprehensive methodological approach to assess the effectiveness of the introduction of digital technologies in the agricultural sector and develop a development strategy. Scientific and theoretical analysis, statistical and economic analysis, questionnaires and interviews, econometric models were used, and strategic recommendations were developed.

Analysis and results. A number of measures are being implemented in our country to digitize the agricultural sector. In this context, the development and implementation of a digital development strategy in agriculture is considered an urgent issue. This article highlights the main directions of the digital development strategy in agriculture, the advantages and practical mechanisms for introducing modern technologies.

Fundamental changes in the field of informatization of agriculture began with the arrival of large capital, ready to invest in the economy - significant funds from technical and technological modernization - the growth and development of proven innovative solutions, ensuring - increasing the efficiency of agricultural production, the formation of sustainable competitive advantages, including those associated with the use of information technologies.

It is worth noting that the development of the main integration relations in the processes of milk processing, at the same time - taking into account the sharp increase in the level of concentration of production, the complexity of organizational processes. The national structure of agro-industrial structures and management systems has effectively increased the demand for effective (RT) solutions for farmers. Sensing the growth of demand, large (RT) companies have intensified their activities, began to promote new tools for the development of agriculture and solving problems - traditional tasks of management of

agricultural production and information of separate production processes, but in the absence of a single strategy, reflecting the set of priorities for the informatization of agriculture, which is typical for the industry and the functionality of individual information - by technologies, integrated platform solutions, the information needs of agricultural producers of individual categories, so far such and not proposed.

Similar problems are inherent in the public sector system. The main processes of dairy products. At the beginning of the realization of the lag in the field of informatization, the processes of managing the development of the agro-food complex in Uzbekistan for decades began to form their own ideas - information technologies, which determine the composition, structure and means of government management information systems.

In addition, each region, based on its own understanding of the strategic goals of informatization, their financial capabilities, the level of qualification of managers, the development of informatization of agriculture and industry, decides on the development of informatization. The absence of a common ideology of informatization, a single design of office informatization systems for agricultural production, the definition of standard rules for the development and use of information technologies, according to:

a) digitization of product production;

b) delivery of products to the consumer through a digital system;

c) provision of electronic information about food products.

in the public sphere, which has led to the fact that agricultural management, information management, has developed its own - the creation of a single information space for the agro-food industry, significantly complicating the process of formation of the country's complex and reducing the efficiency of agricultural management processes.

According to the Center for Forecasting Monitoring of the Scientific and Technological Development of the Agro-Industrial Complex of the Samarkand Region, only 789 economic entities in 2022 - 35 regions used various elements of technologies for livestock farming in specific farms and livestock complexes. The basis of an optional subject is its subject. The subject of a subject shows what this subject studies, and the method - how it studies, that is, what methods are used in studying this subject of research.

Economic analysis as a science reflects a system of special knowledge related to:

- study of interconnected economic processes that occur under the influence of objective economic laws and subjective factors;

- scientific substantiation of business plans and objective assessment of their implementation;

- identification of positive and negative factors and quantitative measurement of their impact;

- clarification of trends and proportions of economic development,

identification of unused domestic economic reserves;

- generalization of best practices, making optimal decisions.

Economic analysis is an important part of economic science, which consists of economic work in enterprises. It has its own subject, object, and methods of studying economic processes, phenomena, and situations.

An enterprise using precision livestock farming technologies in Samarkand region region formed 4 590.9 Purpose., by Bashkortostan - 1402.8 Purpose., by – Tashkent region - 1822.3 goals, which shows a significant difference - give up regions by level concentration of shares cattle.

– Scientists group existing definitions of the subject of economic analysis, which are frequently found in the literature and more or less consistent with its essence, as follows:

- economic activities of enterprises;
- economic processes and events.

It should be noted that the rating compilers apparently made a mistake, since the first, which took second place, rating in general no.

Official statistical monitoring of information use - mation and telecommunications technologies, in 2024, in the study of ICT processes by economic types Agricultural activities were not separately identified, which led to a realistic assessment of the level of informatization of economic entities. agricultural products based on objective statistical data turned out to be impossible.

Information on the use of telecommunications technologies.

In general, only. Available for organizations in Uzbekistan The increase in the number of personal computers per 100 employees and Along with the expansion of access to the Internet, qualitative changes in it are associated with the use of new information technologies - The hyena is practically not observed. except for the implementation electrical systems - flow of throne documents.

Observed enough significant distinction regions by their level of computerization. Thus, among the regions of the Central Asian region leader positions by share organizations, use personal computers.

Uzbekistan can develop digital platforms to improve its economy by providing it with new technologies and analyze the new principle in more depth using complex formulas. These formulas provide a more accurate representation of platform processes and allow for analysis and statistical indicators. First, let's look at the data collection process.

It is collected from many sources on the new platform and it is important to integrate them. The following formula can be used to express this process:

We can introduce variables in our study in the following forms:

lnx1 = dairy products

lnx2= volume of services

lnx3= melon products

Correlation analysis results

	lny	*lnx2*	*lnx3*	*lnx4*
lny	*1*			
lnx1	*0.95781*	*1*		
lnx2	*0.98673*	*0.737646*	*1*	
lnx3	*0.986612*	*0.666589*	*0.777358*	*1*

Correlational analysis to the results according to our model exogenous indicators gross territorial to the product strong connected is . In addition, there is no strong correlation between the model variables. From this we can conclude that we can build a regression model with these variables .

Results of the regression model of agricultural products in Samarkand region

	Coefficients	Standard error	t-statistic	P-value
ln y	-2.972458891	2.618161906	-1.135322795	0.028037254
lnx 1	1.105957861	0.713354455	1.55036231	0.014933088
lnx2	0.463161164	0.153572874	3.015904771	0.01174132
lnx 3	0.531230438	0.634558384	2.837165581	0.042031591

From the results in this table, we developed the following model.

$$\ln y = 1.1*lnx1 + 0.46*lnx2 + 0.53*lnx3$$

According to our analysis , a 1% increase in dairy products, other variables remaining the same, leads to a 1.1% increase in the gross regional product of Samarkand region. A 1% increase in the volume of services in the region, other variables remaining the same, leads to a 0.46% increase in the gross regional product. For a 0.53% increase in the gross regional product of Samarkand region, 1% more melon products need to be produced.

According to the results of our study , 98% of the changes in the model are explained by the variables in the model. The standard error in our model is small at 0.12. All variables participating in the model are statistically significant. In addition, the t-statistics of the variables in our model are larger than the table value. All factorials participating in our analysis are statistically significant. For

example, the p-value of lny is 0.02, the p-values of lnx1 and lnx2 are 0.01, and the p-value of lnx4 is 0.04. From this, we can conclude that all our variables are statistically significant at the 5% significance level.

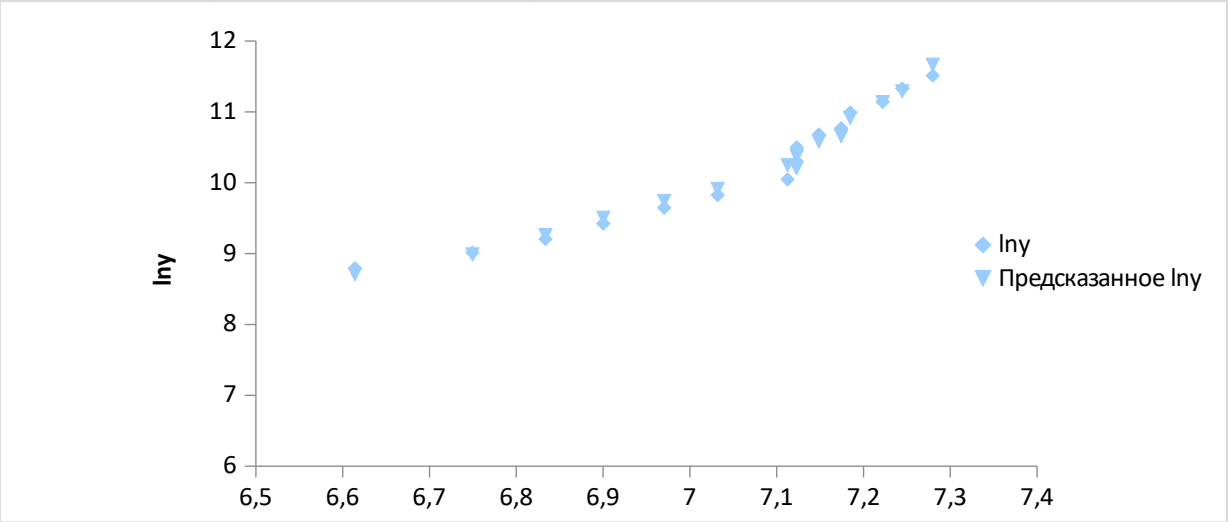

Figure 2.10. Trend between regression model and table values

The approximation error was 0.6%. The fact that the model's actual values are very close to the table values indicates that the approximation error is small.

The goal of this platform is to create a powerful tool that can adapt to different needs and provide high-resolution data to support decision-making at the country level. To ensure consistency, accuracy, and efficiency in the digital platform of the statistical system, it is necessary to establish clear and standardized protocols for data collection, storage, and analysis.

Table 2.6

Q Analysis of data to assess the level of development of digital technologies in the agricultural sector in 2015–2024
In the case of [1]Samarkand region

No.	Years	Products being produced	Transportation process	Consumers
1	2014	4 7 450.7	1302.5	4315.5
2	2015	4 9 384.2	1372.6	4652.7
3	2016	533 51.9	1292.9	5058.0
4	2017	5 1 0 45 .0	1271.4	6442.1
5	2018	5 4 318.3	1235.9	6060.3
6	2019	5 6 057.8	1191.1	10891.9
7	2020	581 07.7	1207.9	11449.3
8	2021	61 072.2	1191.5	11667.3
9	2022	64 329.6	1214.4	12194.1
10	2023	66 736.7	1225.3	12045.8

[1] Developed by the author

11	2024	67 986.5	1194.3	12222.5
	Forecast of food processing processes in Samarkand region			
12	2025	69 368.6	1166.3	12548.7
13	2026	73 605.2	1165.9	11195.7
14	2027	75 180.8	1222.2	12779.8
15	2028	77 502.8	1474.6	13593.8
16	2029	78 844.0	2115.0	13478.8
17	2030	81 021.1	1058.0	15549.5
	Total	1010219.3	18728.8	147117.5

2.6 shows the main processes of products manufactured in the Samarkand region, which will help increase the ability of enterprises to operate on the basis of digital technologies.

Promote data governance: It is essential to implement data governance practices to ensure data quality, integrity, and security throughout the entire lifecycle of data.

Fair value is aimed at reflecting the true value of the Agromir enterprise, which allows it to reflect the current price.

This is a theoretical concept that summarizes all related data and forecast indicators and is based on fundamental factors such as growth prospects, risk profile, and dairy product flows.

In this case, fair value is considered as the discounted value of future cash flows associated with all types of products. The fair value formula (based on the Gordon model) [2]reflects the main factors of value creation. This indicator meets the requirements of the leading principles of integrated reporting, such as information coherence, strategic focus and future orientation.

Conclusion

The results of the study showed that the introduction of digital technologies in the agricultural sector is important not only for increasing production efficiency, but also for rational use of resources, increasing labor productivity and reducing costs. Based on scientific literature and practical analysis, it was determined that digitalization processes are creating opportunities for high-precision monitoring, remote control, automation and decision-making based on artificial intelligence.

The results of a survey among industry experts and producers showed that agricultural enterprises are highly interested in digital solutions, but there are infrastructural and financial constraints. Therefore, it is recommended to strengthen state support mechanisms for technological modernization, expand training and educational programs based on international experience.

[2] Novozhilova Yu.V. Model of information-analytical obespecheniya integrirovannoy otchetnosti s position istinnoy stoimosti kompanii / Yu.V. Novozhilova // Mejdunarodnyi bukhgaltersky uchet. - 2017. - No. 15 (429). - t. 20. - S. 880-896. DOI : https://doi.org/10.24891/ia.20.15.880.

The econometric model developed during the study clearly demonstrated the economic efficiency of implementing digital technologies. The model results proved that each investment in digitalization has a significant positive impact on productivity and profitability indicators.

In conclusion, comprehensive approaches such as continuous strategic planning, introduction of innovative technologies, staff training, and development of public-private partnerships were recognized as important factors for the consistent implementation of digital development in agriculture.

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