

**FORMATION OF A MECHANISM FOR INTEGRATION  
OF ORGANIZATIONAL AND ECONOMIC POTENTIAL  
OF BLOCKCHAIN TECHNOLOGIES  
IN THE AGRIBUSINESS SYSTEM**

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Modern transformation processes, increased competition, increasing requirements for transparency and traceability of commodity flows necessitate the implementation of innovative solutions that can increase management efficiency and reduce risks. In this context, the organizational and economic potential of Blockchain technologies plays a more significant role, as it ensures data reliability, protects information flows and strengthens trust between participants in agricultural value chains.

Blockchains open up new opportunities for optimizing production processes, digitalizing resource accounting, product quality control and increasing the sustainability of the entire agribusiness complex by introducing innovative technologies that have a set of immutable centralized and decentralized records of verifications of executed smart contracts, which significantly strengthen the organizational and economic potential of Blockchains with a focus on creating a trusted information network between agribusiness entities. However, the lack of Blockchain solutions in the agribusiness system based on organizational and economic tools that should ensure transparency in the implementation of digital transformation by entities does not allow activating the full traceability of agricultural products, reducing the likelihood of counterfeiting goods, increasing trust between market participants and optimizes transaction costs. According to estimates by international organizations, the use of Blockchain in the field of agricultural production can increase the efficiency of logistics processes by 20-30%, and reduce administrative costs by up to 40% [1]. In this context, an urgent scientific problem is the formation of a holistic mechanism for integrating the organizational and economic potential of Blockchain technologies into the agribusiness system, which allows to increase competitiveness, technological flexibility and sustainability of value chains.

The issues of digitalization of agribusiness and the introduction of innovative technologies in its development have been studied by both Ukrainian and foreign scientists. M. Porter's works explore the strategic impact of digital innovations on the competitive advantages of enterprises [3].

R. Tapscott was one of the first to scientifically substantiate the possibilities of Blockchain as a mechanism of trust in digital ecosystems, noting its role in ensuring security and decentralization of transactions [4]. Similar conclusions are given in a systematic review by F. Kasino, T. Dasaklis and K. Patsakis [2], where Blockchain is considered as a tool for increasing data security and trust between market participants.

In the domestic scientific environment, the problems of digital transformation of the agro-industrial complex are highlighted in the works of I. Lukinov, who emphasized the importance of modernizing the management system of agricultural enterprises under the influence of technological innovations [5]. The issues of information transparency and digital monitoring were considered by O. Shpychak and A. Dibrova, who emphasize that in recent years digital technologies have become a determining factor in the development of agricultural markets [6].

Despite a significant number of studies, the issues of integrating Blockchain into internal agribusiness management systems based on the methodology for assessing its organizational and economic potential, and the formation of a comprehensive mechanism for introducing technologies into centralized agribusiness structures remain insufficiently developed. This determines the scientific novelty and relevance of the proposed study.

Technological determinants of the organizational and economic potential of Blockchain in the agribusiness system accelerate the digital transformation of the industry. In this context, O. Dovgan formed a modern concept of the digital transformation of agribusiness in the context of global digitalization of the economy, which became a reference point for understanding how digital technologies change financial models of investment potential sustainability and corporate governance of the architecture of business structures in the international space. The author considers digitalization not as an additional tool, but as a fundamental driver of the transformation of the economic system of enterprises, emphasizing that digital technologies change the logic of resource redistribution, create new flows and models of monetization, increase the accuracy of forecasts, and reduce administrative costs. In his opinion, the digital transformation of agribusiness is part of a broader process of transition to “data-driven agriculture”, where data becomes the basis for strategic decisions [7, p. 147].

Digital transformation of the agribusiness system through Blockchain is not only a technological upgrade, but also a modernization of the institutional foundations of competition, where companies with a high level of digital readiness gain a strategic advantage in domestic and foreign markets. In the future, it is such enterprises that will form new standards of global agri-food trade with an emphasis on traceability, environmental friendliness and trust as key determinants of competitiveness.

From the perspective of strategic scenarios for the development of Blockchain infrastructure in the agribusiness system, an innovative vector of total digitalization is traced, which allows it to be gradually integrated into digital tools for managing resources, financial flows and information interactions between all participants in the agricultural ecosystem. Within the framework of this approach, agricultural enterprises move away from fragmented accounting and control systems to single decentralized platforms, which allows for a continuous flow of data, where each record is transparent, immutable and available for verification [4; p. 318].

The organizational and economic potential of Blockchain technologies is directed, first of all, at the organizational capabilities of the agribusiness system, due to the technology's ability to change the internal architecture of business processes of agricultural enterprises, forming new types of interactions between participants in the value chain. One of the key consequences of integrating Blockchain technologies is the decentralization of operations, which eliminates the need for intermediate intermediaries and a data verification center. All transactions are recorded in an immutable distributed registry accessible to all authorized participants, which increases the level of trust between agribusiness entities [13].

### **Conclusions.**

The innovativeness of the approach lies in the phased scaling of technologies depending on the level of digital maturity of agribusiness entities, which allows minimizing implementation risks and ensuring a sustainable economic effect at each phase of development. An important component of the mechanism is cyclical performance monitoring, which provides an opportunity to timely adjust management decisions and adapt the architecture of solutions to changing market conditions. In the future, the introduction of Blockchain into agribusiness will contribute to the formation of new decentralized business models, strengthening the competitiveness of the Ukrainian agrarian sector in the global market and integration into international value chains.

### **References:**

1. World Bank. Blockchain for Agriculture: Opportunities and Challenges. World Bank Report, 2021. 112 p.
2. Casino F., Dasaklis T.K., Patsakis C. (2019). A systematic literature review of blockchain-based applications: Current status, classification and open issues. *Telematics and Informatics*, no. 36, pp. 55–81.
3. Porter M. (1980). *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. Free Press, 396 p.
4. Tapscott D., Tapscott A. *Blockchain Revolution: How the Technology Behind Bitcoin Is Changing Money, Business and the World*. Penguin, New York, 2016. Available at: <https://www.scirp.org/reference/referencespapers?referenceid=2566443>
5. Lukinov I.I. (2018) Innovatsiynyi rozvytok ahropromyslovoho kompleksu [Innovative development of the agro-industrial complex]. *Ekonomika APK*, no. 3, pp. 5–12.

6. Shpychak O.M., Dibrova A.D. (2020) Tsyfrovizatsiia ahrarnoho sektoru: mozhyvosti ta ryzyky [Digitalization of the agricultural sector: opportunities and risks]. *Ekonomika Ukrainy*, no. 7, pp. 44–55.

7. Dovhan O. M. (2023) Finansova transformatsiia pidpriemstv ahropromyslovoho kompleksu v umovakh tsyfrovizatsii [Financial transformation of agro-industrial complex enterprises in the context of digitalization]. *Biznes Inform*, no. 6, pp. 145–152.