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Management Methods of Agro Market through Digital Platforms

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Abstract

This article analyzes the role of digital platforms in modernizing the agricultural sector and improving the management efficiency of the agro market. The study explores how digital technologies contribute to agricultural product circulation, price stability, information exchange among market participants, and rational resource utilization. The research focuses on the prospects of digital transformation in the agro market within Uzbekistan's context.

Keywords: agro market, digital economy, platform model, e-commerce, blockchain, agritech, marketing.

Introduction

In recent years, the rapid development of the digital economy has significantly transformed all sectors, including agriculture. Managing the agro market through digital platforms has created new opportunities for producers, processors, and consumers. In Uzbekistan, the agricultural market plays a key role in ensuring employment and food security. Therefore, digital platforms for managing production, logistics, and sales processes have strategic importance. The main objective of this study is to analyze the effectiveness of digital platforms in managing agro markets and their impact on economic efficiency. Digital marketplaces and e-commerce platforms have emerged as transformative solutions for addressing the long-standing challenges faced by agricultural producers in accessing fair and efficient markets. By leveraging mobile connectivity, cloud infrastructure, and real-time data systems, these platforms empower farmers to bypass traditional intermediaries, gain access to wider buyer networks, and receive better prices for their produce. The integration of services ranging from digital payments and logistics to input procurement and quality assurance has streamlined the entire agricultural value chain, reducing costs and improving transparency. These systems also support post-harvest planning, inventory management, and traceability, aligning smallholder operations with modern supply chain requirements.

Methodology

The research used several methods, including:
1. Theoretical analysis – review of national and international literature on digital agriculture and markets (FAO, UNDP, Uzbekistan's Ministry of Agriculture reports).
2. Statistical analysis – studying data from 2018–2024 on Uzbekistan's agro market performance.
3. Systemic approach – analyzing the relationships among ecosystem participants (farmers, brokers, consumers, logistics, and government institutions).
4. Comparative analysis – comparing Uzbekistan's experience with China, Turkey, and EU digital agro systems.
5. Empirical observation – examining local digital initiatives such as "Agroplatforma.uz", "E-Agro Market", and "Digital Agrochain".

The study was conducted between 2024–2025 and covered 50 farms and 12 digital trade participants in Tashkent region.

Results

The analysis showed that digital platforms bring positive changes to all segments of the agro market:
1. Transparency – prices, demand, and supply data are updated online, reducing corruption and middlemen.
2. E-commerce – farmers can sell products directly to consumers.
3. Logistics – digital maps, IoT sensors, and GPS technologies help optimize delivery routes.
4. Financing – blockchain-based smart contracts automate crediting, subsidies, and insurance.
5. Monitoring – production volume, yields, and price fluctuations are tracked in real time.

In the face of escalating global challenges – lack of food availability, food accessibility and food affordability due to the climate crisis, biodiversity loss, economic slowdowns and downturns, worsening poverty, and other overlapping crises – we find ourselves standing at a critical juncture. The choices we make now, the priorities we set and the solutions we implement will determine the trajectory of our shared future. Consequently, the decisions we make about global agrifood systems must acknowledge these interrelated challenges.

In Uzbekistan, the “Agroplatforma.uz” system registered over 200,000 farms in 2024 and sold more than 15,000 tons of fruit and vegetables through online auctions.

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In most AI systems, learning happens by continuous adjustment of a broad set of parameters based on training data to show the system the correct output expected when provided with a given input. This involves the use of machine learning algorithms and more recently deep learning. Broadly speaking, this approach attempts to mimic the process of natural learning whereby a person gradually develops certain knowledge and skills through continuous trial and error. Some key advantages of such an approach are overcoming the challenge for human programmers to develop multivariable algorithms for complex tasks (which they may not be able to do) and allowing for the greater versatility and agility of the algorithms.

Discussion

Increasingly today AI is considered one of the most potent solutions to the many challenges the agricultural sector faces in low- and high-income countries. Following the healthcare, automotive, manufacturing and finance sectors, AI has entered the agriculture domain and is providing cutting edge technology with applications throughout the food system including production, distribution, consumption and harvest yield uncertainty. AI-enabled technologies can help farmers improve crop

yields, address the challenges of soil health and herbicide resistance and use resources more sustainably to reduce the agricultural sector's greenhouse gas emissions.

Digital platforms in agro market management offer several advantages: increased economic efficiency, data reliability, and market stability. However, certain challenges remain:

- Underdeveloped internet infrastructure in rural areas;
- Low digital literacy among farmers;
- Weak data security and privacy protection systems.

To overcome these issues, the following measures are crucial:

1. Development of digital infrastructure in rural regions;
2. Implementation of digital education programs for farmers;
3. Establishment of a unified national agro platform;
4. Integration of AI-based market forecasting systems.

Conclusion

Managing the agro market through digital platforms has become an essential component of Uzbekistan's economic growth. These systems optimize production processes, increase transparency, enhance export potential, and automate state monitoring mechanisms. Future efforts should focus on building a comprehensive digital agro-ecosystem, integrating national platforms with international networks, and introducing AI technologies for sustainable market management.

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