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Article

Developing the Financial Management System of Farming Enterprises in the Digital Economy

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Abstract: This article examines the economic and organizational mechanisms for developing financial management systems in farming enterprises under conditions of the digital economy. Particular attention is given to digital financial accounting, electronic payments, mobile banking services, electronic subsidy platforms, digital insurance, and the use of data analytics in agricultural financial management. The study highlights the importance of improving the accessibility and timeliness of financial information, monitoring cash flows digitally, automating production cost accounting, and identifying financial risks in advance. According to the National Statistics Committee of the Republic of Uzbekistan, 93.9% of the rural population used the internet during January–August 2025. This indicator demonstrates the expanding opportunities for adopting digital financial services in farming enterprises. The article proposes an integrated digital financial management model that combines financial accounting, electronic payments, subsidy administration, insurance services, and financial monitoring.

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Keywords: Digital Economy, Farming Enterprises, Financial Management, Digital Financial Services, Electronic Payments, Mobile Banking, Electronic Subsidies, Digital Insurance, Automation, Financial Monitoring

1. Introduction

The development of the digital economy creates new opportunities to improve management processes and increase the efficiency of economic resources across all sectors. In agriculture, the application of digital technologies is transforming not only production processes but also the methods through which financial activities are organized and managed.

The traditional financial management systems used by farming enterprises are often based on manual accounting, paper documentation, separate financial spreadsheets, and periodic reporting. Such approaches may lead to delays in obtaining financial information, accounting errors, difficulties in monitoring expenses, and insufficiently informed managerial decisions.

Digital financial management enables farming enterprises to record income and expenditure electronically, monitor banking transactions remotely, submit applications for subsidies online, and track production costs in real or near-real time.

The expansion of digital infrastructure in rural areas of Uzbekistan is creating important conditions for this transformation. According to the National Statistics Committee, the proportion of rural residents using the internet increased from 72.3% in

2021 to 93.9% during January–August 2025 [1]. This creates broader opportunities for farming enterprises to use electronic financial services.

Therefore, introducing digital accounting, electronic document management, and integrated financial information systems has become an important direction for improving financial management in agricultural enterprises.

Literature Review

Digital financial management in farming enterprises is closely connected with the theories of agricultural economics, financial management, and digital transformation [2], [3].

Research by the World Bank on digital financial services in agriculture emphasizes that electronic payments, digital accounting systems, mobile financial services, and data exchange can improve the efficiency of financial operations for farmers and agricultural businesses [4].

FAO studies also highlight that the importance of digital technologies in agriculture extends beyond the automation of production processes. They can improve access to financial services, support agricultural marketing, and strengthen the management of supply chains [5].

In Uzbekistan, the digitalization of the agricultural sector is progressing through electronic subsidy systems, digital insurance services, and integrated information platforms. In particular, the Digital Agriculture Integration Platform is designed to connect more than 20 departmental information systems and databases [6], supported by dedicated subsidy portals and updated agricultural insurance regulations [7], [8].

Recent studies on agricultural fintech and rural financial inclusion further confirm that cloud-based accounting, automated risk scoring, and mobile payment ecosystems significantly reduce transaction costs and credit constraints for smallholder and commercial farms [9]–[11].

Based on these approaches, digital financial management in farming enterprises should not be viewed as a collection of separate electronic services. Instead, it should be developed as an integrated system connecting financial planning, accounting, payments, subsidies, and risk monitoring.

2. Materials and Method

The theoretical and methodological foundations of the research are based on the principles of classical and neoclassical schools of economic thought concerning land, rent, capital, and investment; the Keynesian theory of liquidity preference; the concepts of the cost of capital and discounted cash flows in corporate finance [12]; the Myers–Majluf pecking order theory of financing; Williamson's institutional economics approach; and the concepts of agrarian transformation and induced innovation developed by Schultz and Hayami–Ruttan.

In the recognition, valuation, and functional classification of assets, the research draws upon the conceptual provisions of IAS 16 *Property, Plant and Equipment*, IAS 38 *Intangible Assets*, and IAS 41 *Agriculture*, as well as methodologies for applying financial indicators such as Net Present Value (NPV), Internal Rate of Return (IRR), Modified Internal Rate of Return (MIRR), Weighted Average Cost of Capital (WACC), and the Cash Conversion Cycle (CCC) in corporate finance. In particular, these instruments are interpreted and adapted to the seasonal, biological, and climatic characteristics of agricultural production.

The methodological framework of the research encompasses the systemic and reproductive approach, the dynamic-functional approach, the institutional and risk-oriented approach, and the principles of asset portfolio management and

complementarity. These approaches make it possible to assess the financial resources, assets, cash flows, financial performance, and state support mechanisms of farms not as isolated elements, but as components of an interconnected financial management system.

The regulatory and methodological framework of the research is based on the theoretical concepts concerning the deepening of economic reforms presented in the works of the President of the Republic of Uzbekistan, Sh. M. Mirziyoyev; the legislative and regulatory acts of the Republic of Uzbekistan governing the activities of farms, agricultural insurance, investment, and state financial support; the *Strategy for the Development of Agriculture of the Republic of Uzbekistan for 2020–2030 [13]*; official statistical and sectoral data provided by relevant government authorities; and materials published by the Food and Agriculture Organization of the United Nations (FAO), the Organisation for Economic Co-operation and Development (OECD), and the World Bank [14].

3. Results and Discussion

A **three-contour dynamic-functional architecture** for managing the assets of farms has been developed.

The **result- and risk-oriented institutional model** of state financial support for farms has been improved.

The **methodological approach to managing financial performance in farms** has been improved through a shift from maximizing the absolute amount of profit to a management paradigm focused on **"profit quality and sustainability."**

The **mechanism for making strategic decisions on attracting investments for the intensive development of farms** has been improved based on a multi-criteria and risk-adjusted portfolio approach.

Table 1. Key Indicators of Digital Financial Management Infrastructure for Farming Enterprises in Uzbekistan

Digital system or area	Official indicator or capability	Importance for financial management
Digital Agriculture Platform	Integration of more than 20 departmental information systems and databases	Improves the exchange of financial and agricultural information
Electronic subsidy system	29 subsidy directions and 91 types of subsidies; UZS 2.7 trillion allocated in 2026	Supports electronic administration and monitoring of public funds
Agrosafe digital insurance system	Digital applications, contracts, policies, monitoring, assessment, and compensation	Improves insurance administration and financial risk management
Agricultural insurance target for 2027	Coverage of 45,000 agricultural enterprises	Helps reduce unexpected financial losses
E-subsidy and electronic services	Remote applications, electronic signatures, SMS notifications, and online tracking	Reduces administrative costs and processing time

The table demonstrates that the institutional infrastructure required for digital financial management in farming enterprises is gradually developing. In particular, electronic subsidy and insurance systems can simplify financial transactions and increase transparency in the administration of government support.

In the author's opinion, the next stage should involve integrating these systems with the internal financial accounting of farming enterprises. For example, farmers should be

able to record subsidies, bank loans, and their own financial resources within a single digital financial planning system.

The main objective is to reduce the need to enter the same information repeatedly into separate platforms and enable financial decisions to be made using a unified information base.

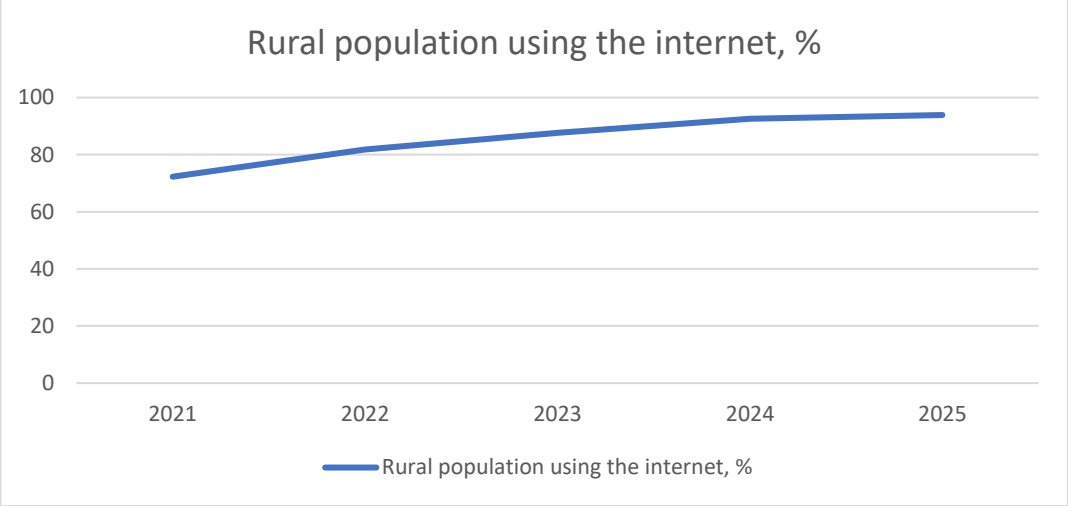

Figure 1. Dynamics of Internet Usage among the Rural Population of Uzbekistan

The data demonstrate that the proportion of rural residents using the internet increased from 72.3% in 2021 to 93.9% during January–August 2025. This indicates that the technological opportunities for using digital services in rural areas are expanding.

However, internet accessibility does not necessarily mean that farming enterprises fully use digital financial management systems. Digital literacy, technical skills, user-friendly software, and the availability of financial services tailored to farmers' needs are also essential.

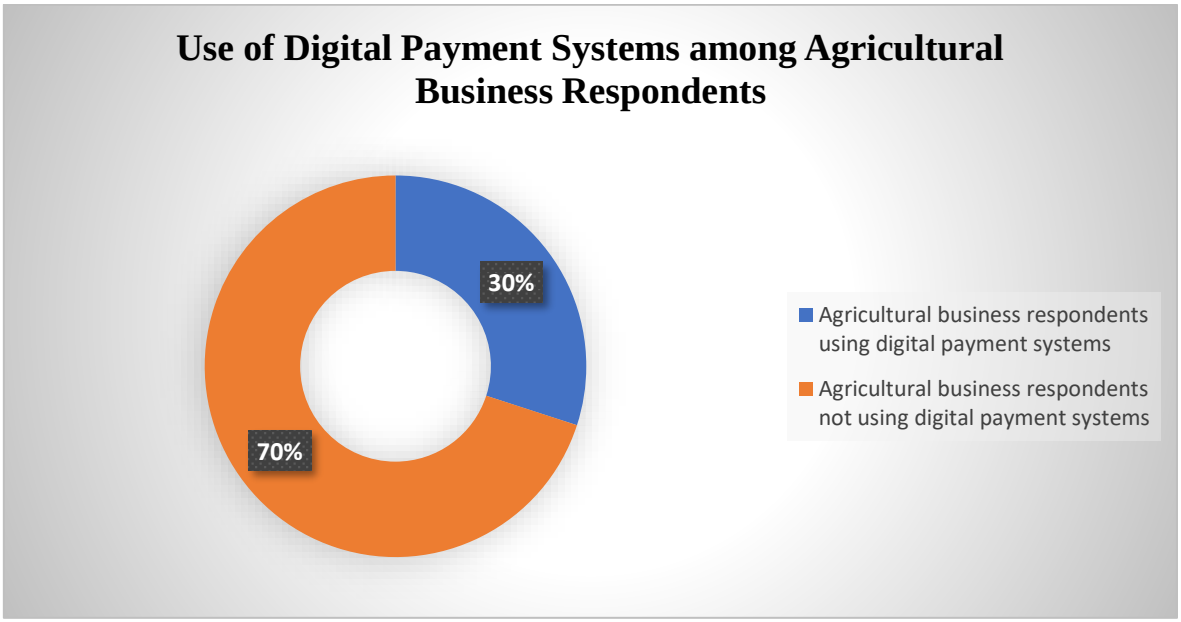

Figure 2. Use of Digital Payment Systems among Agricultural Business Respondents

In August 2026, the Center for Economic Research and Reforms, together with the Chamber of Commerce and Industry, conducted a survey involving more than 5,000 entrepreneurs across all regions of Uzbekistan. According to the survey, 30% of respondents engaged in agricultural activities reported using digital payment systems [15].

The diagram indicates that digital payment systems have not yet been fully adopted among the agricultural respondents included in the survey. This highlights the need to expand mobile banking, electronic settlements, digital payments, and financial monitoring tools in farming enterprises.

It should be noted that respondents from agriculture, forestry, and fisheries accounted for 2% of the overall survey sample. Therefore, the 30% indicator should not be interpreted as a comprehensive national adoption rate for all farming enterprises. It represents the situation among agricultural respondents included in the sample survey.

Improving the Digital Financial Management Model for Farming Enterprises

Based on the research findings, the following integrated digital financial management model is proposed:

Digital financial accounting → integration of banking transactions → consolidation of subsidy and insurance information → cash flow monitoring → expenditure analysis → financial risk assessment → optimization of managerial decisions.

The main advantage of this model is that different financial operations of a farming enterprise can be reflected within a unified digital management system.

First, farming enterprises should introduce digital financial accounting platforms. These platforms should separately record bank accounts, revenues, payments, loan obligations, subsidy funds, and production expenditures.

Second, digital cash flow forecasting should be developed. In farming enterprises, most production costs arise before the beginning of the agricultural season, while revenues are mainly generated after harvesting and selling products. A digital cash flow calendar can help identify potential funding shortages in advance and determine financing requirements.

Third, subsidy and insurance systems should be integrated with internal financial accounting. This would allow farming enterprises to monitor government support funds, insurance payments, and their intended use electronically.

Fourth, automated analytical tools should be applied in digital financial management. For example, previous expenditure data, product prices, and expected cash receipts can be used to prepare financial forecasts for the next production season.

Fifth, information security should receive particular attention. Banking information, personal data, and financial documents of farming enterprises must be stored in secure digital environments, with clearly defined access permissions.

4. Conclusion

The research findings demonstrate that developing digital financial management systems in farming enterprises is important for improving the timeliness of financial information, simplifying accounting procedures, reducing financial risks, and making more effective use of government support programs.

The proportion of rural residents using the internet in Uzbekistan reached 93.9% during January–August 2025, indicating that favorable infrastructure conditions are emerging for expanding digital financial services. At the same time, the fact that only 30% of agricultural respondents in the 2026 business survey reported using digital payment systems indicates that significant development potential remains in this area.

Based on the research, the following recommendations are proposed:

1. Introduce digital financial accounting systems that integrate revenues, expenditures, debts, and banking transactions in farming enterprises.
2. Expand the use of mobile banking and electronic payment services.
3. Integrate the Digital Agriculture, Agrosubsidy, and Agrosafe systems with the internal financial management of farming enterprises.
4. Develop digital cash flow forecasting mechanisms based on seasonal agricultural production cycles.
5. Expand electronic financial document management and automated expenditure monitoring in farming enterprises.
6. Improve the digital and financial literacy of farmers and expand access to affordable, user-friendly software, particularly for small farming enterprises.
7. Strengthen information protection and cybersecurity measures for digital financial data.

In conclusion, an effective model for developing digital financial management in farming enterprises should integrate **digital accounting, electronic payments, subsidy and insurance systems, cash flow monitoring, and financial analysis into a unified management mechanism**. Such an approach can improve financial transparency, reduce management costs, and strengthen the long-term economic sustainability of farming enterprises.

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