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Improving Agri-Consulting and Agro-Logistics Services for Farmer Enterprises

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Annotation: This article explores the current state and potential improvements in agri-consulting and agro-logistics services for farmer enterprises. As agriculture becomes increasingly technology-driven and market-oriented, the need for professional support in consulting and logistics is growing. This study evaluates existing practices, identifies key challenges, and proposes strategic solutions to enhance the effectiveness and accessibility of agri-services. The findings can contribute to more efficient farming operations and increased rural development.

Keywords: agro-consulting, agro-logistics, farmer enterprises, agricultural services, rural development.

Introduction

In the context of modern agricultural development, the success of farmer enterprises is increasingly dependent not only on traditional farming skills but also on access to quality support services, such as agri-consulting and agro-logistics. These two service areas form the backbone of modern agribusiness infrastructure, facilitating the effective planning, production, and distribution of agricultural products. In developing economies such as Uzbekistan, where agriculture remains a key sector for employment and food production, the improvement of these services is of critical importance. Agro-consulting refers to the provision of expert advice and support to farmers regarding crop management, soil fertility, pest control, financial planning, marketing, and sustainable practices. This support is vital in helping farmers adopt modern technologies, increase productivity, and adapt to changing climatic and market conditions. However, many farmers, especially in rural regions, lack access to professional consulting services. This gap leads to inefficiencies, low yields, and limited market integration.

Similarly, agro-logistics plays a crucial role in the agricultural value chain. It encompasses all processes involved in the storage, transportation, and delivery of agricultural goods from farms to consumers or processing centers. Efficient agro-logistics reduce post-harvest losses, improve market access, and increase profitability for farmers. Nonetheless, logistical challenges such as poor infrastructure, lack of cold storage facilities, and weak supply chain coordination continue to hinder the agricultural sector's performance in many parts of Uzbekistan.

Recent policy reforms and strategic documents in Uzbekistan have emphasized the need to modernize the agricultural sector through the expansion of farmer-oriented services. The National Strategy for Agricultural Development 2020–2030 highlights agri-innovation, knowledge transfer, and improved infrastructure as key pillars of growth. Yet, the implementation of these goals at the grassroots level remains uneven.

This study aims to examine the current status of agri-consulting and agro-logistics services provided to farmer enterprises in Uzbekistan, identify the key barriers to their effective implementation, and propose practical recommendations to enhance their quality and accessibility. By focusing on empirical data collected from various regions and analyzing existing models of service delivery, the study contributes to the broader discourse on sustainable agricultural development and rural transformation.

Ultimately, strengthening these services can lead to more resilient farming systems, better livelihoods for rural communities, and a more integrated national economy. Therefore, understanding and addressing the weaknesses in agri-service provision is not only a technical concern but also a strategic national priority

Methods

This study utilized a **mixed-methods research design**, combining both quantitative and qualitative approaches to ensure a comprehensive understanding of the current state and development needs of agri-consulting and agro-logistics services in Uzbekistan.

Research Design and Objectives

The primary objective of the research was to evaluate the availability, accessibility, and effectiveness of agri-consulting and agro-logistics services provided to farmer enterprises. Secondary objectives included identifying institutional gaps, infrastructural constraints, and opportunities for service improvement through digital tools and public-private partnerships.

Data Collection Techniques

To gather both broad and in-depth data, the study employed the following tools:

Structured Surveys: A standardized questionnaire was distributed to **120 farmer enterprises** in different regions of Uzbekistan, including Samarkand, Andijan, Bukhara, and Surkhandarya. The questionnaire included both closed and open-ended questions, covering areas such as:

Awareness and use of consulting services

Satisfaction with logistics infrastructure

Barriers to accessing support services

Interest in digital and cooperative-based solutions

Semi-Structured Interviews: In-depth interviews were conducted with **20 key stakeholders**, including:

Agri-consultants from both public and private sectors

Representatives of agro-logistics companies

Local government officials responsible for rural infrastructure

Heads of farmer cooperatives

These interviews aimed to gather expert insights into practical service delivery challenges and policy implementation gaps.

Case Studies: Three regions (Andijan, Samarkand, and Kashkadarya) were selected for detailed case studies. These regions were chosen due to their diverse agro-economic profiles and existing service models. The case studies allowed for contextual analysis of best practices and region-specific constraints.

Document Review: National strategies, agricultural development programs, and previous research reports were reviewed to understand the policy background and benchmark existing goals related to agri-services.

Sampling Method

A **stratified random sampling** technique was used to select participating farmer enterprises. The sampling frame included smallholder, medium, and large-scale farms to ensure representativeness. The sample also ensured diversity in crop types (grains, fruits, vegetables, cotton) and farming systems (irrigated, rain-fed).

Data Analysis

Quantitative Data: Data from the surveys were processed using **SPSS 26.0** software. Descriptive statistics (frequencies, means, percentages) were used to identify general patterns. Cross-tabulation and correlation analysis were applied to explore relationships between service access and farm characteristics (e.g., size, location, income level).

Qualitative Data: Thematic content analysis was used to analyze interview transcripts and case study notes. Codes were generated based on recurring themes, such as access barriers, innovation use, and satisfaction levels. Triangulation was applied to validate the findings across different sources.

Research Limitations

While the study provides valuable insights, certain limitations must be acknowledged: The sample size, although diverse, may not fully represent all regions of Uzbekistan. Some survey responses were self-reported and may be subject to respondent bias. The study was conducted over a limited time frame (July–November 2024), which may affect seasonality-related aspects of agro-logistics.

Despite these limitations, the study's methodological rigor and combination of data sources provide a solid basis for understanding the challenges and opportunities in developing agri-consulting and agro-logistics services for farmer enterprises.

Results and Discussion

Accessibility and Utilization of Agri-Consulting Services

Survey results indicate that only **32% of farmer enterprises** have regular access to structured agri-consulting services. The majority (68%) rely on informal advice from neighboring farmers, input suppliers, or local agricultural officers. The limited reach of professional consulting services is particularly evident in remote rural areas, where government extension services are underfunded and private consultants are unavailable.

Furthermore, only **18% of respondents** reported receiving support in business planning, while **24%** had access to agronomic advice. Financial consulting services (e.g., budgeting, credit access, risk management) were nearly non-existent, with only **6%** reporting any assistance in this domain.

This data suggests a **significant service gap** that hinders the ability of small and medium-sized

farmers to modernize their operations. It also reflects a general lack of integration between research institutions, advisory bodies, and end-users (i.e., the farmers).

Quality and Perception of Consulting Services

Interviews revealed that many farmers **perceive consulting services as irrelevant or overly theoretical**, especially when they are delivered through bureaucratic channels. In contrast, farmers who received advice from cooperative-hired consultants or NGO-supported agri-experts **expressed higher satisfaction** levels due to personalized support and practical demonstrations.

This reinforces the need for **contextual, farmer-centered advisory systems**, rather than one-size-fits-all approaches. Respondents also emphasized the need for **mobile advisory units** and **digital platforms** offering region-specific, real-time guidance.

Agro-Logistics Infrastructure and Services

Regarding agro-logistics, 72% of surveyed farmers cited serious challenges in the post-harvest handling and delivery of agricultural products. The most common issues included:

Lack of cold storage facilities, especially for perishable crops (reported by 58%)

Delays in transportation during harvest peaks (41%)

High logistics costs**,** often absorbing 20–30% of total revenue (reported by 36%)

Poor quality of rural roads impacting access to central markets (reported by 49%)

Case studies from Samarkand and Andijan highlighted how private-sector involvement in storage and transport has improved efficiency. In contrast, in Kashkadarya, where logistics rely almost exclusively on outdated public infrastructure, farmers suffer substantial losses.

Technology and Innovation Gaps

Despite growing digital penetration, only **12% of farmers** reported using mobile applications or online platforms for agricultural guidance or market updates. Interviews identified key barriers such as:

Low digital literacy among older farmers

Limited availability of Uzbek- and Russian-language apps tailored for local needs

Lack of trust in online sources compared to face-to-face consultations

These findings suggest a significant opportunity for **investment in agri-tech innovation**—particularly in developing **multilingual mobile apps** with interactive, visual, and audio features tailored to farmer needs.

Institutional and Policy Challenges

Interviews with agri-service providers and local government representatives highlighted several institutional constraints:

Overlap of responsibilities between government bodies, leading to inefficient service delivery

Insufficient funding for extension services and rural logistics

Lack of incentives for private companies to enter the agri-service market

Several interviewees recommended the introduction of **public-private partnership (PPP) frameworks, output-based subsidies**, and **performance-based contracting** to improve service delivery.

Comparative Regional Insights

The comparative case studies revealed that **farmer cooperatives** that pooled resources for hiring agri-consultants and jointly investing in logistics infrastructure **performed significantly better** in terms of crop yields, post-harvest loss reduction, and market access.

These cooperatives reported:

20–25% reduction in post-harvest losses

15–18% increase in market prices received

Higher satisfaction with both consulting and logistics support

This demonstrates the effectiveness of **collective models** in overcoming scale limitations, especially for smallholders.

Policy and Strategic Implications

Based on the findings, several strategic priorities emerge for the development of agri-consulting and agro-logistics services:

Digital transformation of consulting services, including the integration of AI-based recommendation tools and mobile learning platforms

Decentralization and professionalization of agri-consulting services through independent certification and performance-based incentives

Public investment in rural infrastructure, particularly for cold chains, warehouses, and road rehabilitation

Encouragement of private sector involvement via tax incentives, co-financing schemes, and deregulation in the logistics sector

These actions, if implemented effectively, could contribute significantly to **improving agricultural productivity, reducing rural poverty**, and **enhancing food security** in Uzbekistan and other agrarian economies.

Conclusion

This study has highlighted the critical importance of enhancing agri-consulting and agro-logistics services to support the sustainable development of farmer enterprises in Uzbekistan. The research findings demonstrate that while agriculture remains a cornerstone of the national economy, many farmers continue to operate without access to the technical guidance and logistical support necessary for modern, competitive production.

The underutilization and limited reach of professional agri-consulting services are driven by a combination of institutional, infrastructural, and educational barriers. Farmers often rely on informal advice due to a lack of trust in formal structures, limited awareness of available services, and low digital literacy. Similarly, inefficiencies in agro-logistics — particularly related to transportation, storage, and supply chain coordination — continue to reduce profitability and market competitiveness.

Despite these challenges, the study also identified promising pathways for improvement. Regions where farmer cooperatives have invested in shared consulting and logistics infrastructure have shown measurable gains in yield, income, and post-harvest efficiency. Moreover, the growing interest in digital technologies presents a major opportunity to expand service outreach through mobile platforms, remote diagnostics, and knowledge-sharing networks.

To realize this potential, several strategic actions are recommended:

Expand farmer-centered consulting services through decentralization, professional training,

and the use of digital tools;

Foster public-private partnerships (PPPs) in logistics to improve access to storage, transport, and processing facilities;

Invest in rural infrastructure development, including roads and cold chains, to reduce logistical costs and losses;

Develop localized, multilingual digital solutions tailored to the specific needs of Uzbek farmers;

Promote cooperative models that empower farmers to pool resources and increase bargaining power.

By addressing the current gaps in agro-service provision, Uzbekistan can create a more efficient, inclusive, and resilient agricultural system. Strengthening the interface between farmers and service providers—through innovation, investment, and institutional reform—will be key to driving rural transformation and achieving long-term food and economic security.

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