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ENHANCING THE COMPETITIVENESS OF AGRICULTURAL VALUE CHAINS IN MOLDOVA: NATIONAL STRATEGIC DIRECTIONS

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Abstract

Moldova's agricultural sector is a key economic pillar, yet its potential remains underutilized due to technological gaps, infrastructure deficits, market fragmentation, and financial constraints. This study examines strategies to enhance four key value chains—vegetable production, soft fruits, apiculture, and sheep/goat farming—through improved infrastructure, policy reforms, cooperative strengthening, and expanded financial access. The research integrates an extensive literature review, statistical analysis, and primary data from 100+ respondents via surveys, guided interviews, and participatory consultations. Sources include reports from the National Bureau of Statistics, FAO- Food and Agriculture Organization, GIZ- Deutsche Gesellschaft für Internationale Zusammenarbeit, IFAD- International Fund for Agricultural Development and others. Additionally, consultations with policymakers and industry leaders provided critical insights into investment needs and regulatory barriers. The study employs a mixed-methods approach, combining thematic qualitative analysis with quantitative statistical interpretation. By triangulating data from multiple sources, this research offers a comprehensive assessment of Moldova's value chains, delivering evidence-based recommendations for stakeholders, policymakers, and development partners to drive competitiveness, sustainability, and market expansion.

Key words: *value chains, cooperation, competitiveness, policy, Republic of Moldova*

INTRODUCTION

Agriculture holds a central position in Moldova's economy, contributing substantially to GDP and employment. Despite this, the sector faces persistent challenges that restrict its capacity for growth and market competitiveness. These include outdated agricultural practices, inadequate infrastructure, limited financial resources, and disjointed cooperative efforts among small and medium-sized farms. No less important, lack of trust and cooperation between smallholders and other categories of farmers hinders the development of the sector.

Studies highlight the importance of aligning national agricultural policies with global standards to ensure competitiveness in the face of crises and trade fluctuations [20]. To address these challenges, this study identifies critical agricultural value chains with high potential for the Republic of Moldova and highlights the macroeconomic interventions that would positively impact these value chains and the sector as a whole.

Research indicates that improving infrastructure, enhancing production quality, and establishing robust market linkages are key to achieving sustainability in agricultural value chains [15]. These elements align with the objectives of this study, which seeks to identify strategic measures to strengthen Moldova's agricultural sector through improved policies, financial support, and cooperative structures.

A fundamental aspect of enhancing agricultural value chains is the need for transformative interventions. Value chain transformation requires re-engineering traditional approaches and integrating innovative solutions to increase efficiency, inclusivity, and environmental sustainability [13]. Moldova's agricultural sector can benefit from adopting such an approach by investing in modern farming techniques and expanding access to markets.

In addition, the role of competitiveness and product quality in market expansion cannot be

overlooked. Research on agrifood products emphasizes that competitiveness is driven by both quality improvements and compliance with international standards, which enhances the success of export promotion initiatives [12]. Moldova's agricultural products must therefore meet stringent quality benchmarks to gain access to high-value markets and increase their share in global trade.

The potential of Moldova's agricultural products in international markets has been recognized, but harnessing this potential requires targeted interventions. Studies suggest that focusing on specific value chains and developing tailored strategies can significantly enhance agricultural exports and economic returns [2]. By prioritizing value chains with high growth potential, Moldova can strengthen its agricultural competitiveness and foster rural economic development.

The focus on vegetable production, soft fruits, apiculture, and sheep/goat farming stems from their economic promise, employment potential, and the current lack of comprehensive support. Enhancing these value chains can catalyze broader agricultural improvements, drive rural development, and foster sustainable practices that align with global environmental and social standards.

In this context, the purpose of the paper is to highlight the most important measures and regulatory directions that would ensure the development of the analyzed value chains and, at the same time, facilitate the replication of best practices to other sectors with growth potential.

MATERIALS AND METHODS

To set up this research work, there were used various information sources and secondary data which include reports from the National Bureau of Statistics [16], FAO [5, 6, 7], GIZ [8], USAID [21], IFAD [11], scientific articles and national policy documents.

The study employs a mixed-methods approach, combining qualitative and quantitative research techniques.

Also, primary data were gathered through structured questionnaires (100+ respondents), guided interviews, and two participatory consultation sessions with at least 20 participants representing the selected value chains.

Discussions covered sector challenges, policy tools, donor support mechanisms, integration into value chains, optimal business models, and the government's role.

The questionnaire disseminated to four value chain associations covered key topics, including production constraints, financial access, policy impact, export potential, market dynamics, and technological adoption. The specific questions have been:

(Q1)What are the key barriers to production growth in your value chain?

(Q2)How accessible are financial instruments for your business operations?

(Q3)What policy measures would best support sectoral development?

(Q4)What are the main obstacles to expanding exports and entering international markets?

(Q5)How does your business integrate into value chains, and what challenges do you face?

The guided interviews with decision-makers in the agri-food sector were focused on policy frameworks, regulatory challenges, and investment priorities. The key questions have been:

(Q1)What are the most pressing policy gaps in Moldova's agrifood sector?

(Q2)What government initiatives exist to support value chain integration?

(Q3)How can donor funding be more effectively allocated to strengthen the sector?

(Q4)What role do cooperatives and producer groups play in improving competitiveness?

The consultation sessions with stakeholders, including farmers, processors, traders, and exporters, explored practical challenges and opportunities. The discussions addressed:

(i)Key factors limiting sectoral growth and value chain integration

(ii)Policy interventions needed to enhance competitiveness

(iii)Potential donor-supported mechanisms to facilitate value chain development

(iv)The most effective business models for sector expansion

(v)The role of public-private partnerships in strengthening market access.

A sampling method ensured sectoral representation in the data collection. The respondents of the questionnaires and the participants to the consultation sessions have been selected using a stratified method. The respondents and participants are members of the 4 value chains and also are geographically representative, including women and youth participation. Statistical analysis included descriptive statistics to interpret the survey results. Qualitative data was processed through content analysis. Findings were validated through expert consultations, including academy and policy makers, ensuring relevance for policy framework.

RESULTS AND DISCUSSIONS

The study's results indicate that targeted investments in key agricultural value chains can significantly enhance Moldova's competitiveness.

The findings align with similar studies conducted in Central and Eastern Europe, where investments in infrastructure, technology adoption, and cooperative structures have led to increased efficiency and profitability [18], [4].

The study emphasized the selection of four key agricultural value chains that show significant potential for enhancing Moldova's competitiveness. These are:

-Vegetable Production (in open fields and protected environments).

-Soft Fruits (including strawberries, raspberries, and currants).

-Apiculture.

-Sheep and Goat Farming.

These chains were chosen based on their economic feasibility, market potential, and the active participation of small and medium-sized farms as mentioned by [22], [17]. The selection was made after a thorough pre-selection process involving 18 potential sectors, from which these four were highlighted as most promising for sustainable development. Table 1 presents a comparative analysis of the four selected agricultural value chains, highlighting key indicators such as productivity, profitability, and market potential.

Table 1. Key Performance Indicators of selected value chains

Value Chain	Productivity (tons/ha)	Profitability (%)	Market Potential
Vegetables	25	35	High
Soft Fruits	15	45	High
Apiculture	N/A	50	Medium
Sheep/Goat Farming	N/A	40	Medium

Source: Own calculation.

The results show that soft fruits and apiculture have the highest profitability, while vegetable production demonstrates significant market potential.

Survey and Interview Responses

To gain deeper insights, structured questionnaires and interviews were conducted with key stakeholders, including farmers, agribusiness representatives, and policymakers. The findings from these methods are summarized in Table 2.

Table 2. Summary responses from surveys and interviews

Question	Stakeholder Responses	% of Respondents
What are the main challenges faced in the selected value chains that you operate?	Limited technology adoption, lack of modern storage facilities, financial constraints, and poor cooperative structures.	82%
What are the key factors driving profitability?	Access to markets, investment in modern farming techniques, cooperation and partnership among farmers and government support.	95%
What are the best model that would help the small scale farmers integrate into a value chain?	Integration through regional clusters and hubs; integration with the support of driving verticals of the sector	75%
What policies would improve your sector's competitiveness?	Incentives for sustainable practices, streamlined regulations, financial incentives like VAT and taxes revision, and enhanced financial support programs.	100%

Source: Own results.

Challenges Identified during the surveys and interviews

-***Technological Barriers*:** Limited adoption of modern farming practices and insufficient access to advanced agricultural tools.

-***Infrastructure Deficits:*** Lack of facilities such as cold storage, sorting centers, and pre-cooling tunnels.

-***Financial Access Issues*:** Significant hurdles in securing affordable funding for necessary investments.

-***Cooperative Weaknesses*:** Poor organization among farmers reduces their market power and efficiency.

-***Market and Quality Constraints*:** Issues related to product quality and outdated varieties affect market access.

Opportunities Identified:

-Increasing competitiveness through targeted investments in infrastructure and technology.

-Strengthening cooperative and partnership models.

-Leveraging Moldova's natural resources to develop value-added agricultural products.

Innovation

The article proposes innovative solutions for transforming Moldova's agricultural sector into a more competitive, sustainable, and profitable industry.

The innovation lies in the integrated approach that combines modern technology, cooperative models, policy advocacy, and sustainable practices, tailored to the specific needs of priority value chains such as vegetables, soft fruits, apiculture, and sheep/goat farming [5], [19], [1].

The key answers and conclusions have been selected during the 2 consultation sessions organized with the representatives of the selected value chains. The opened discussions allowed to identify key drivers that would improve sectoral competitiveness and value chains development. Here are key aspects of innovation:

(a)Technological Advancement in Farming:

Precision Agriculture: Introduction of GPS-guided equipment, automated irrigation systems, and advanced crop monitoring sensors represents a leap forward for Moldovan farmers. These tools optimize the use of inputs, reduce labor costs, and improve overall productivity.

Digital Platforms for Market Access: Utilizing e-commerce and digital marketing platforms to bridge the gap between farmers and consumers. This digital shift allows farmers to sell products directly, enhancing profit margins by minimizing intermediaries.

(b)Sustainable Agricultural Practices:

Integrated Farming Models: The article recommends blending traditional farming with new practices such as intercropping with medicinal plants that support biodiversity and soil health.

Renewable Energy Initiatives: Encouragement of solar-powered irrigation systems and energy-efficient cold storage facilities contributes to the sustainability of these innovations.

(c)Enhanced Cooperative Frameworks:

Cluster Development: Creating agricultural clusters connects farmers, processors, and logistics providers, fostering innovation and ensuring efficient product movement. This integrated approach reduces individual farmer risk and promotes shared investment in technology and infrastructure [14].

(d)Training and Knowledge Transfer: Establishing partnerships with universities and research institutions supports continuous education and exposure to international best practices [10].

(e)Policy and Legislative Support:

Eco-Friendly Policy Incentives: The adoption of laws that provide tax breaks or subsidies for farmers implementing sustainable methods can accelerate the shift toward eco-friendly farming practices.

Simplified Regulatory Processes: By streamlining bureaucracy, farmers can adopt modern practices and access necessary certifications more swiftly.

Key recommendations

(i)Investing in Infrastructure and Technology

Expanding Cold Storage and Post-Harvest Facilities*:* One of the most immediate needs is the development of regional cold storage facilities and packaging centers. Shared-use facilities can lower individual costs for farmers and ensure that products maintain quality and freshness longer, opening doors to higher-value markets.

Upgrading Irrigation Systems*:* Only a small portion of Moldova's farmers currently benefit from efficient irrigation. Investments in modern, climate-resilient irrigation systems will help stabilize yields, especially under conditions of climate variability. Simplified processes for obtaining irrigation permits and

incentives for water-efficient technologies are essential [3].

***Promoting Advanced Farming Tools**:* The adoption of precision agriculture technologies, such as automated irrigation, crop sensors, and GPS-guided machinery, can optimize input use, boost yields, and reduce labor costs. The government should pilot these technologies through subsidies and partnerships with private tech companies to demonstrate their benefits.

(ii)Enhancing Human Capital

Developing Comprehensive Training Programs: Nationwide training programs are needed to improve farmers' technical and managerial skills. Workshops on sustainable farming practices, integrated pest management, crop rotation, and organic methods should be core components. This training can help farmers enhance productivity while reducing environmental impact.

***Knowledge Transfer through Partnerships**:* Partnerships with agricultural universities and international research institutions can facilitate knowledge exchange, bringing global best practices to Moldovan farms. This collaborative approach ensures that farmers can learn the latest techniques and apply them effectively.

(iii)Strengthening Cooperative Structures

Encouraging Cooperative Formation: Supporting the establishment and operation of cooperatives will empower farmers to pool resources, share knowledge, and collectively market their products. Initial financial support for the first few years of cooperative formation is essential to build momentum and achieve sustainable operations.

***Developing Integrated Agricultural Clusters**:* Creating agricultural clusters that connect farmers, processors, and logistics providers fosters a more cohesive supply chain. Clusters can drive innovation and facilitate the movement of products from farms to markets more efficiently.

(iv)Policy and Legislative Reforms

***Streamlining Regulations**:* Reducing bureaucratic hurdles related to permits and certifications will enable farmers to adopt modern practices faster and more efficiently. Streamlined processes for securing water rights and agricultural permits will also support more widespread use of intensive and innovative farming practices [9].

***Promoting Eco-Friendly Practices through Legislation**:* Incorporating incentives such as tax breaks and subsidies for adopting sustainable farming methods (e.g., renewable energy, organic fertilizers) will encourage farmers to implement environmentally friendly practices that preserve soil health and biodiversity.

(v)Expanding Access to Finance

Creating Tailored Financial Solutions: Developing financial instruments tailored to the specific needs of small and medium-sized farms is crucial. These could include government-backed loans at lower interest rates and flexible repayment options. Expanding microfinance initiatives with reduced collateral requirements can also address the needs of smaller farms that lack conventional assets.

***Strengthening Guarantee Funds**:* Expanding existing guarantee funds to support a broader range of financial institutions can make credit more accessible to farmers. This approach reduces the perceived risk for lenders, encouraging them to offer loans for equipment and infrastructure upgrades.

(vi) Marketing and Value Addition

***-Developing a National Agricultural Brand**:* Moldova should create a cohesive branding strategy, such as "Authentic Moldova," to market high-quality products like medicinal honey and soft fruits. This will enhance the visibility of Moldovan goods in international markets, building consumer recognition and trust.

-Diversifying Product Offerings: Encouraging farmers to engage in value-added production, such as making preserves, essential oils, and herbal products, can diversify income sources and increase profitability. Training on processing techniques and providing access to processing equipment can support these efforts.

-Utilizing Digital Market Platforms: Digitalization offers opportunities to expand market access. The development of e-commerce platforms for direct sales to consumers and wholesalers can increase profit margins by cutting out intermediaries. Training

farmers on digital marketing and the use of such platforms can maximize their impact.

CONCLUSIONS

The research reveals that Moldova's agricultural sector possesses untapped potential that, with strategic intervention, can be realized.

Strengthening value chains through targeted investments, cooperative development, policy support, and training will enable Moldova to boost competitiveness, ensure sustainability, and increase profitability across priority agricultural sectors. These findings are in accordance with [6], [7].

Strategic Insights:

-Prioritizing infrastructure investments, such as cold storage and advanced irrigation, is crucial for enhancing product quality and market access.

-Cooperatives and clusters should be supported to enable collective action and shared resource use, improving farmers' market power and access to economies of scale.

-Expanding tailored financial solutions, including microfinance and government-backed loans, will help farmers invest in modernization and innovation.

Training and educational programs, alongside partnerships with research institutions, will empower farmers with the knowledge to adopt sustainable and efficient farming practices

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