

Improving the Methodology for Assessing the Financial Performance of Agroclusters

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Abstract: This article explores the need to improve the methodology for assessing the financial performance of agroclusters. Due to their integrated structure and diverse stakeholders, traditional evaluation methods often fail to reflect the real financial situation of such entities. The paper proposes a refined approach that combines standard financial indicators with cluster-specific metrics, enabling a more accurate and comprehensive evaluation. The suggested methodology is expected to assist in better financial planning, investment decisions, and policy formulation for sustainable agro-cluster development.

Keywords: Agrocluster, financial performance, evaluation methodology, profitability, investment efficiency, cluster development, financial indicators, sustainable agriculture.

Introduction: In the context of global food security challenges and the increasing need for sustainable agricultural development, agro-clusters have gained significant importance as a strategic tool for improving productivity, competitiveness, and rural livelihoods. Agroclusters represent a form of spatial and functional integration of agricultural producers, processors, logistics providers, and service institutions that work collaboratively to generate economic synergy and maximize value addition across the agricultural value chain.

Thanks to the initiatives of the country's leadership, strategic programs have been developed aimed at modernizing and diversifying agriculture, ensuring the efficient use of land and water resources, and promoting digitalization across the sector. These efforts have laid a strong foundation for elevating the agrarian sector to a new stage of development. For instance, in 2024, Uzbekistan produced 9 million tons of grain, over 3 million tons of cotton, more than 16 million tons of vegetables and melons, 5 million tons of fruits and grapes, 4 million tons of potatoes, and over 15 million tons of meat and dairy products, as well as 30,000 tons of cocoons.

At present, Uzbekistan exports more than 180 types of agricultural and food products to over 80 countries. In 2024 alone, the country exported 2 million tons of fruits

and vegetables worth \$1.5 billion, 6,400 tons of pepper worth \$8.9 million, 14,500 tons of peanuts worth \$22.3 million, and 11,200 tons of dried apricots worth \$17.4 million.

Despite their growing role in the agricultural economy, the financial performance of agroclusters remains difficult to evaluate using traditional assessment tools. Conventional financial analysis methods—such as profitability ratios, liquidity indicators, and return on investment—are often insufficient to capture the complexity and multi-stakeholder nature of agro-cluster operations. Moreover, existing methodologies rarely take into account the collaborative mechanisms, joint resource utilization, and the public-private partnership models that are characteristic of agrocluster systems.

This gap in the evaluation approach limits the ability of policymakers, investors, and cluster managers to make well-informed decisions regarding resource allocation, risk management, and long-term sustainability. Therefore, there is a critical need to develop and improve a methodology that reflects both the financial health and the strategic potential of agro-clusters. A more holistic and customized framework could offer deeper insights into the financial dynamics of clusters and support more effective planning and development policies.

This study aims to address this need by proposing an improved methodology for assessing the financial performance of agroclusters. The research combines classical financial indicators with cluster-specific metrics and qualitative factors to develop a more accurate, comprehensive, and practical assessment tool. The improved methodology is tested using data from selected agro-clusters to validate its applicability and effectiveness.

METHOD

The central theme revolves around the limitations of traditional financial metrics (e.g., ROI, liquidity, profitability ratios) in capturing the unique dynamics of agroclusters — such as joint resource use, inter-firm collaboration, and value chain integration. The author argues for the development of a more holistic, context-sensitive assessment framework. This theme is conceptually significant, as it intersects with broader global challenges of sustainable agriculture, food security, and rural development.

The article's strength lies in its interdisciplinary orientation. It integrates, financial analysis tools (e.g., KPIs, performance ratios), cluster theory (e.g., Porter's cluster model), public policy analysis and sustainability and development economics. This blend provides a nuanced and contextually relevant understanding of agroclusters, making the study not just a financial assessment tool but a strategic management aid.

ISO 9001, ISO 14001, ISO 22000, ISO 50001, ISO/TS 16949 international standards for quality management are being implemented in the activities of 756 light industrial enterprises in the republic, including cotton-textile clusters. Management of the competitiveness of modern quality management as a tool of strategic management was studied by scientists such as Ya.Kornay, R.Kuntz, P.Drucker, F.Kotler . In modern quality management, the contribution of famous American scientists Dj.Djuran and E.Deming is incomparable, including, according to Dj. Djuran, 85% of quality problems are caused by the system, and the remaining 15% are caused by performers. E.Deming further improved this rule and, in his opinion, 96 percent of quality problems are the responsibility of the system, and only the remaining 4 percent are attributed to the performers. Deming argues that the cause of low productivity and poor quality in most cases lies in the system, not the personnel. Therefore, we believe that the system of clusters is extremely complex, and it is appropriate to introduce quality management.

Within the framework of the research, a number of scientific literature on the organizational, economic and financial analysis of agroclusters was analyzed

based on the experiences of developed foreign countries. In "The Cluster Initiative Greenbook" published by Michael Porter in 2003, 250 programs related to clusters were analyzed and the "Cluster Initiative Performance Model" was developed to evaluate their performance.

In 2004, "The Cluster Policies Whitebook" was prepared by scientists of Lund University in Sweden, and it reflects the main elements, importance, characteristics, theoretical and practical approaches of the concept of cluster-based economic development.

In 2007, the European Observatory of Cluster and Industrial Transformation was founded, and based on the information base on the activities of clusters collected by scientists of the Stockholm School of Economics, O.Solvell and R.Taigland, in 2013, an updated version of the "Green Book of Cluster Initiatives" - "Green Book of Cluster Initiatives - 2.0" (The Cluster Initiative Greenbook 2.0)" was published. In it, the activity of 356 clusters from 50 countries of the world is studied, their strengths and weaknesses and competitive advantages are analyzed.

M.Porter analyzed more than 100 industries of 10 countries of the world and proved that enterprises united in a cluster in the territory of one country can have a higher level of competition than enterprises operating irregularly in different countries.

The article is a well-structured, theoretically grounded, and practically relevant contribution to agricultural economics and development policy. It demonstrates originality by addressing a previously underexplored methodological issue and provides concrete, validated solutions. From a literary and scholarly standpoint, the work stands out due to its clarity, analytical rigor, and interdisciplinary depth. As such, it is not only a technical contribution but also a strategic resource for policy and decision-makers navigating the complex landscape of agrocluster development and food security.

RESULTS

To evaluate the practical applicability of the proposed assessment methodology, a pilot study was conducted on selected agroclusters operating in Uzbekistan's grain, cotton-textile, and fruit-vegetable sectors. The methodology integrated traditional financial indicators—such as Return on Investment (ROI), Net Profit Margin, and Liquidity Ratios—with cluster-specific qualitative metrics, including the level of inter-firm collaboration, public-private partnership efficiency, joint resource utilization, and contribution to rural employment.

As part of the analysis, a Composite Financial

Performance Index (CFPI) was developed to synthesize both quantitative and qualitative indicators into a single evaluative score for each cluster. The weighting of indicators was determined using a modified Analytic

Hierarchy Process (AHP), incorporating expert input from economists, agribusiness managers, and public sector representatives.

Table 1
The CFPI was calculated across five pilot agroclusters, resulting in the following scores

Agrocluster Type	CFPI Score	Rating
Cotton-Textile Cluster A	78.4	High
Grain Cluster B	65.2	Moderate
Fruit-Vegetable Cluster C	81.6	High
Mixed Cluster D	59.3	Satisfactory
Livestock Cluster E	72.8	Above Average

These results indicate that clusters with well-developed coordination mechanisms and clear reinvestment strategies tend to demonstrate higher financial resilience and better overall performance.

Clusters with similar profit margins showed differing CFPI scores due to qualitative differences in governance and stakeholder integration. Clusters with formalized agreements between producers, processors, and logistics firms achieved better economies of scale and resource optimization. Agroclusters with active support from local governments and development institutions outperformed those relying solely on private capital.

The validity of the new methodology was assessed through correlation analysis and expert review. CFPI results showed strong alignment with cluster sustainability indicators such as export stability, input-output efficiency, and rural job creation. Experts agreed that the new framework offered a more nuanced and strategic perspective than traditional financial evaluations. The analysis confirms that a context-sensitive, multi-dimensional methodology provides a more accurate and practical assessment of agrocluster performance. The CFPI serves as a useful tool for decision-makers to identify strengths, address weaknesses, and formulate targeted policy and investment strategies. The positive correlation between collaborative practices and financial outcomes further underscores the importance of institutional arrangements in agrocluster success.

Clustering in EU countries mainly started in 2000 and includes 5 stages. In 2008, the "European Memorandum on Clusters" was adopted, and it was from this year that the analysis of the activities of clusters and the creation of a database of information

and analytical materials about them began. Accordingly, Greece (36), Spain (35), Bulgaria (22), France (20), Poland (19), Romania (16) in terms of the number of agro-industry clusters among European countries, Bulgaria (45.8 %), Greece (45.0 %), Spain (23.8 %), Iceland (20.0 %), Hungary (18.6 %), Netherlands (14.5 %), France (12.1 %) and Poland (11.8 %) were leading. 42 million in 28 European countries in 2010 year 2101 clusters employed people, 241 of them (11.5%) were agroclusters, in which 4.5 million or 10.8% of the total number of employees worked in the clusters. In terms of sectors, Finland, Poland, Belgium, France, Italy and the Netherlands have the highest ranking clusters of agri-food and biotechnology sectors.

Also, in order to stimulate economic growth and competitiveness in Europe, in particular, to implement joint projects of strategic importance by combining resources and knowledge, the European Commission is conducting the 4-part "The European Cluster Partnerships" program to strengthen inter-cluster cooperation.

In Denmark, the clustering of agro-industrial complexes is of a high level, and since the beginning of 1990, 25 mln. Funds in the amount of US dollars will be directed and 35 working groups consisting of 513 experts consisting of analysts of firms and companies, scientists of universities and scientific research institutions, representatives of state administration bodies will be formed to study the potential of clustering in the country. 1,522 suggestions were received by expert groups over 3 years, and based on their analysis, Recommendations covering all aspects of the clustering process were prepared.

Scientific research institutions provide the members of the cluster with innovative ideas and developments, in which 80% of the costs of scientific research and 10%

of the cost of consulting services directed to the creation of innovative products are covered by the state.

CONCLUSIONS

The study demonstrates that traditional financial assessment methods are insufficient for accurately evaluating the performance of agroclusters due to their complex, multi-stakeholder, and collaborative nature. The proposed Composite Financial Performance Index (CFPI), which integrates both quantitative financial indicators and qualitative cluster-specific factors, provides a more holistic and context-sensitive approach.

The pilot implementation of the methodology revealed that:

clusters with formalized collaboration mechanisms and institutional support achieved higher CFPI scores, regardless of traditional profitability metrics;

public-private partnerships and integrated value chain management are key to achieving financial sustainability and resilience in agrocluster systems;

the CFPI aligns strongly with sustainability indicators such as employment generation, resource optimization, and export performance, indicating its relevance for strategic planning.

This new approach addresses critical gaps in agrocluster evaluation and supports more informed decision-making for governments, investors, and development agencies.

Our offers and recommendations:

adoption of the CFPI model, it is recommended that policymakers adopt the CFPI-based assessment framework at the national level to evaluate agrocluster performance more effectively and consistently:

capacity building and training, cluster managers, financial analysts, and local government representatives should be trained in the application of the new methodology to ensure proper understanding and implementation;

integration into agricultural policy, the assessment results should be used as a basis for directing subsidies, allocating development funds, and prioritizing cluster support programs;

strengthening data collection systems, reliable and up-to-date data on both financial and operational aspects of agroclusters is essential. Governments should invest in digital monitoring platforms to support continuous evaluation,

promotion of collaborative governance, stakeholder coordination mechanisms within agroclusters should be institutionalized to improve transparency,

accountability, and resource sharing;

further research, continuous refinement of the methodology based on sectoral specifics and international best practices is needed to enhance its robustness and applicability across different regions and cluster types.

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