International Journal Of Management And Economics Fundamental (ISSN – 2771-2257)
VOLUME 04 ISSUE 01 PAGES: 26-37
SJIF IMPACT FACTOR (2021: 5. 705) (2022: 5. 705) (2023: 7. 448)
OCLC – 1121105677
Publisher: Oscar Publishing Services

Journal Website: https://theusajournals.com/index.php/ijmef

Research Article

A MULTI-INDICATOR METHOD OF EVALUATING FINANCIAL PERFORMANCE OF CLUSTERS

Submission Date: January 01, 2024, Accepted Date: January 06, 2024,
Published Date: January 11, 2024
Crossref doi: https://doi.org/10.37547/ijmef/Volume04Issue01-05

Ochilov Ilhom Sayitkulovich
Associate Professor, TSUE, Independent Researcher (Doctor Of Science), Uzbekistan

ABSTRACT

In this article, a multi-indicator method for assessing the financial efficiency of clusters, including the results of research conducted in cotton-textile clusters, as well as proposals and recommendations for improving the assessment of financial efficiency, has been developed.

KEYWORDS

Financial efficiency, multi-indicator evaluation, cotton-textile clusters, economic efficiency, evaluation methods, evaluation methodology, evaluation criteria, product evaluation.

INTRODUCTION

Regions where food production provides a significant share of the gross regional product should formulate a regional development strategy, focusing on the quality of local competitive advantages of regional food systems. Such a policy is aimed at ensuring the competitiveness of the regional economy. One of its possible forms is the development of economic integration based on the creation of agro-industrial clusters.

In accordance with the Decree of the President of the Republic of Uzbekistan dated December 12, 2023 No. PF-205 "On additional measures for the further development of free market relations in agriculture", from January 1, 2024, the introduction of international

International Journal Of Management And Economics Fundamental (ISSN – 2771-2257)
VOLUME 04 ISSUE 01 PAGES: 26-37
SJIF IMPACT FACTOR (2021: 5. 705) (2022: 5. 705) (2023: 7. 448)
OCLC – 1121105677
Publisher: Oscar Publishing Services

standards of financial reporting in clusters, which attracted prestigious international audit organizations to clusters In this case, the tasks of conducting an independent external audit of their performance and financial indicators were determined [1].

We believe that when evaluating cotton-textile clusters, it is necessary to pay attention to the following important features of their activity:

quick return on investment; high mobility of production (the possibility of changing the product range); dominance of small and medium-sized businesses in the network; low organization of entrepreneurship; the high importance of geographic location for the success of a textile enterprise; weak innovative component in products; prospects of redirecting production to technical textiles; extensive use of industrial branding; provision of qualified personnel; rapid obsolescence of production facilities; high resource intensity of the used technologies; low rate of export of finished products; weak connections between enterprises and scientific institutions; lack of infrastructure elements to support industrial business (business incubators, technology parks, etc.); high dependence of textile workers on imported raw materials.

These characteristics of the textile industry should be taken into account when developing methods for evaluating the efficiency of clusters. Focusing on these characteristics, during the analysis, we can monitor the progress of the cluster development and direct the efforts of the participants in the right direction. In our opinion, the approach to evaluating the effectiveness of the textile cluster should meet the following conceptual requirements:

1) methodological approach should be based on quantitative indicators, while not excluding qualitative assessment (the scope of expert assessment should be limited);

2) open information of indicators;

3) differentiation of indicators according to their value;

4) grouping of indicators according to the main aspects of activity;

5) taking into account the specific characteristics of the cotton-textile industry;

6) careful selection of experts to increase the objectivity of the overall assessment of efficiency.

Literary analysis. If we follow the research of scientists from foreign countries, the methods of evaluating the financial efficiency of clusters are presented in the works of I.Ferova, F.Shutilov, N.Klepikova, O.Nesmachnikh, E.Patrusheva [2-10]. In particular, the method based on the private effect of the cluster (the method of evaluating the synergistic effect and its types; the method of evaluating the effect of reducing transaction costs and infrastructure synergy; the method of evaluating the effect of innovation diffusion); methods of evaluating the economic efficiency of the cluster as investment projects (net present value indicator method; real options method); indicator methods of cluster efficiency assessment

International Journal Of Management And Economics Fundamental (ISSN – 2771-2257)
VOLUME 04 ISSUE 01 PAGES: 26-37
SJIF IMPACT FACTOR (2021: 5. 705) (2022: 5. 705) (2023: 7. 448)
OCLC – 1121105677
Publisher: Oscar Publishing Services

(method of main indicators of cluster activity; method of multi-indicator approach); methods based on the assessment of the competitiveness of the cluster (assessment of various aspects of the competitiveness of the cluster, in which the position in the market, technological leadership and the ability to renew; assessment of the factors of the current and strategic competitiveness of the cluster).

In our opinion, it is extremely important to take into account the specific characteristics of one or another industry when creating economic clusters. The above methods, taking into account the specific characteristics of the network, provide opportunities for comparison on the directions of formation of competitive advantages, what should be paid special attention to when evaluating cluster efficiency, and individual evaluation criteria.

Research methodology. Systematic approach, analysis and synthesis, comparison, categorization, grouping, absolute and relative quantitative methods of statistical and financial analysis were used in the research process.

Analysis and results. If we come to specific algorithms for the development of the methodology for evaluating the efficiency of cotton-textile clusters, first of all, it is necessary to determine the specific characteristics of economic clusters in the cotton-textile industry. The cotton-textile industry of our country has certainly maintained a positive trend in recent years.

According to research, with the introduction of the cluster method, the average yield increased by 4.9 centners compared to the lands outside the cluster. In 2020, the average yield of raw cotton was 2.89 t/ha, which is 0.53 t/ha compared to outside the cluster, and compared to 2018 0.77 t/ha is higher. But compared to other cotton-exporting countries like Uzbekistan, this yield is still very low, such as 3.1 t/ha in the USA, 4.4 t/ha in Egypt, 5.3 t/ha in Turkey, 5.6 t/ha in Brazil and In China it is equal to 5.8 t/h.

We believe that in the financial evaluation of cotton-textile clusters, it is necessary to pay attention to the following important features of their activity:

quick return on investment; high mobility of production (the possibility of changing the product range); dominance of small and medium-sized businesses in the network; low organization of entrepreneurship; the high importance of geographic location for the success of a textile enterprise; weak innovative component in products; prospects of redirecting production to technical textiles; extensive use of industrial branding; provision of qualified personnel; rapid obsolescence of production facilities; high resource intensity of the used technologies; low rate of export of finished products; weak connections between enterprises and scientific institutions; lack of infrastructure elements to support industrial business (business incubators, technology parks, etc.); high dependence of textile workers on imported raw materials.

International Journal Of Management And Economics Fundamental (ISSN – 2771-2257)
VOLUME 04 ISSUE 01 PAGES: 26-37
SJIF IMPACT FACTOR (2021: 5. 705) (2022: 5. 705) (2023: 7. 448)
OCLC – 1121105677
Publisher: Oscar Publishing Services

Our methodology is based on a multi-indicator approach, and evaluation should be carried out in 11 main areas (Table 1). In this case, we get the indicators that represent the specific characteristics of the cotton-textile industry, which gives us the opportunity to make a comprehensive assessment of the cluster's activity.

Table 1

Criteria for assessing the efficiency of the cotton-textile cluster

№	Criteria name	Criterion content	Criterion weight	Grade
1.	**Estimating the composition of cluster members**			
1.1.	The share of cluster participants in the total number of network representatives	The ratio of the number of textile enterprises in the cluster to the total number of textile enterprises in the republic	1-3	1-5
1.2.	Dynamics of share of new enterprises	The growth rate of the number of new companies in the cluster	1-3	1-5
1.3.	Non-production organizations share	The ratio of the number of non-production enterprises in the cluster to the total number of participants	1-3	1-5
1.4.	Dynamics of share of foreign (joint) companies	Growth rate of the number of foreign companies in the cluster	1-3	1-5
1.5.	Share of small business and entrepreneurship	The ratio of the number of small businesses and entrepreneurial entities to the total number of participants	1-3	1-5
1.6.	Share of research institutes	The ratio of the number of research institutes to the total number of participants	1-3	1-5
1.7.	Territorial concentration of participants	If the main participants are located in the same region (territorially close), 1 point is given, otherwise 0 points.	1-3	1-5
1.8.	Industry concentration of participants	A score of 1 is given if all participants are engaged only in the textile industry, and 0 otherwise	1-3	1-5
1.9.	Experience of market participants	A score of 1 is given if most companies have sufficient experience, and 0 otherwise	1-3	1-5
2.	**The position of the cluster in the market**			

International Journal Of Management And Economics Fundamental (ISSN – 2771-2257)
VOLUME 04 ISSUE 01 PAGES: 26-37
SJIF IMPACT FACTOR (2021: 5. 705) (2022: 5. 705) (2023: 7. 448)
OCLC – 1121105677
Publisher: Oscar Publishing Services

2.1.	Cluster share in the domestic market	The ratio of the volume of cluster production to the total volume of supply in the domestic market	1-3	1-5
2.2.	Dynamics of share in the global supply of textile products	The growth rate of the share of cluster products in the world market	1-3	1-5
2.3.	Market dynamics	The growth rate of the number of foreign markets mastered by the cluster	1-3	1-5
2.4.	Profitability of geographical location of the cluster	A score of 1 is given if the location of the cluster is useful for the development of its activities, otherwise a score of 0 is given.	1-3	1-5
3.	**Production potential of the cluster**			
3.1.	Load production capacity	Using current cluster capabilities	1-3	1-5
3.2.	Depreciation of Fixed Assets (AF)	The level of wear and tear of the cluster's main tools	1-3	1-5
3.3.	Price level	Production and selling costs per unit of product	1-3	1-5
3.4.	Labor productivity	The level of labor productivity in the main (resolver) enterprises of the cluster	1-3	1-5
3.5.	AF refresh rate	The share of updated funds in the total structure of AF	1-3	1-5
3.6.	The degree of import substitution of textile raw materials	Share of local raw materials used in the production of finished products of the cluster	1-3	1-5
3.7.	The share of the cluster AF in the total size of the network AF	The share of the cluster AF in the total size of the network AF	1-3	1-5
4.	**Evaluation of the cluster product**			
4.1.	Product quality	Expert assessment of consumer products based on quality, environmental friendliness, aesthetics, etc.	1-3	1-5
4.2.	Share of synthetic products	The share of products with added synthetic materials in the total product of the cluster	1-3	1-5
4.3.	Competitiveness of products in the world market	Expert assessment of the demand for cluster products in the world market	1-3	1-5

International Journal Of Management And Economics Fundamental (ISSN – 2771-2257)
VOLUME 04 ISSUE 01 PAGES: 26-37
SJIF IMPACT FACTOR (2021: 5. 705) (2022: 5. 705) (2023: 7. 448)
OCLC – 1121105677
Publisher: Oscar Publishing Services

4.4.	Brand presence	1 if the cluster uses one brand for selling products, 0 otherwise	1-3	1-5
5.	**Evaluating the effectiveness of cluster management**			
5.1.	Have a strategy	1 is set if an activity development strategy has been developed for the cluster, 0 otherwise	1-3	1-5
5.2.	Existence of coordinating body	If a single body for coordinating the activities of the participants is formed in the cluster, 1 is set, otherwise, 0.	1-3	1-5
5.3.	The level of development of cooperative relations	If the organizational structure of the cluster contributes to its development, 1 is assigned, otherwise 0	1-3	1-5
6.	**Assessment of infrastructure provision of the cluster**			
6.1.	Availability of industrial business support infrastructure	1 if the cluster interacts with industrial parks, 0 otherwise	1-3	1-5
6.2.	Availability of innovative infrastructure	1 if the cluster interacts with technology parks, business incubators, engineering centers, venture funds, etc., otherwise 0	1-3	1-5
7.	**Evaluation of the financial component**			
7.1.	Profitability of cluster activity	Profitability of sales	1-3	1-5
7.2.	Investment profitability	The ratio of profit to invested capital	1-3	1-5
7.3.	Dynamics of transaction costs	The degree of reduction of transaction costs for the organizations included in the cluster is described	1-3	1-5
7.4.	Indicator of financial stability of the cluster	The main (solvent) in the cluster is evaluated on the example of azo	1-3	1-5
8.	**Evaluation of the innovative component of the cluster**			
8.1.	Dynamics of investments directed to research and experimental design (IDRE) developments	Growth rate of investments directed to IDRE developments	1-3	1-5
8.2.	Commercialization of innovations	The number of successfully implemented developments in the total volume of annual IDRE works	1-3	1-5
8.3.	Number of new cluster products	The number of new (improved) products created by the cluster	1-3	1-5

International Journal Of Management And Economics Fundamental (ISSN – 2771-2257)
VOLUME 04 ISSUE 01 PAGES: 26-37
SJIF IMPACT FACTOR (2021: 5. 705) (2022: 5. 705) (2023: 7. 448)
OCLC – 1121105677
Publisher: Oscar Publishing Services

8.4.	Share of high-tech products	The ratio of the volume of high-tech products to the total volume of products	1-3	1-5
8.5.	Innovative awarding per unit of cluster employees	The ratio of the number of awardees for innovation to the total number of employees of the cluster	1-3	1-5
9.	**Investment evaluation**			
9.1.	NPV	Determining the profitability of investing in a cluster project	1-3	1-5
9.2.	Return period	Calculation of the average return period of invested funds	1-3	1-5
9.3.	The dynamics of the volume of foreign investments	Growth rate of foreign investment in the cluster	1-3	1-5
10.	**Evaluation of personnel policy**			
10.1.	Salary level	The ratio of the average wage in the cluster to the specified minimum wage	1-3	1-5
10.2.	The percentage of production employees in the cluster	Share of employees in the total number of employees in the cluster	1-3	1-5
10.3.	Share of personnel with higher education	Share of highly educated personnel in the cluster	1-3	1-5
10.4.	Share of highly productive jobs	The share of high-performance jobs in the total composition of cluster employees	1-3	1-5
11.	**Evaluation of efficiency from the perspective of the state**			
11.1.	Budget efficiency of the cluster	It is determined on the basis of the difference between tax and non-tax budget receipts and the cluster support costs of the competent authorities.	1-3	1-5
11.2.	Share of the cluster in the gross regional product (GRP).	The ratio of the volume of output produced by the cluster to the Gross Regional Product	1-3	1-5
11.3.	Population employment in cluster enterprises	Sum of jobs in all cluster members	1-3	1-5
11.4.	Regional investments	The share of investments received by cluster participants in the total volume of regional investments	1-3	1-5

International Journal Of Management And Economics Fundamental (ISSN – 2771-2257)
VOLUME 04 ISSUE 01 PAGES: 26-37
SJIF IMPACT FACTOR (2021: 5. 705) (2022: 5. 705) (2023: 7. 448)
OCLC – 1121105677
Publisher: Oscar Publishing Services

Now we will explain the stages of implementation of the cluster efficiency evaluation methodology created by us on the conditional "Researcher" example.

1. The object of analysis is defined (that is, a cotton-textile cluster with a certain range of participants).

2. Determination of selection criteria and selection of experts based on it (respondents' experience in the studied field is taken into account, if necessary, rating coefficients are determined for different experts).

3. Preparation of form for expert evaluation and development of final form for analysis.

4. Completing the cluster efficiency assessment form by experts. In doing so, they are asked to consider a set of evaluation criteria for 11 areas and assign a weight to each of the indicators according to its importance in order to evaluate the efficiency of the cluster. For this, in column 3 of the form in Table 2, the approximate weight of the indicator according to the three-point system is defined as follows: 3 - the indicator is very important for evaluation (has a high weight); 2 - the indicator is of average importance for evaluation (has an average weight); 1 - the indicator is of low importance for evaluation (has a low weight).

5. Evaluation of cluster efficiency by experts. In this case, the assessment is carried out on a five-point scale (table 2, column 4) against the defined average values of the criteria: 5 points (the highest score) - if it clearly exceeds the average values in the industry specified for the textile industry; 4 points - if it is slightly above the average values in the network; 3 points indicate the approximate equality of the network average and cluster indicator; 2 points means that there are a number of worse cluster indicators compared to the network average; 1 point - the cluster shows a significant lag in this indicator. At the same time, it should be noted that only a two-point evaluation system can be used for some evaluation criteria, because it is difficult to evaluate the criteria perfectly, but their use in the methodology is important, which is important for the correct evaluation of the cluster activity.

6. Collection of questionnaires filled out by the researcher. The weight coefficients set by the experts should be transferred from the three-point system to the decimal point (parts of one) and the sum of the weights attached to each of the 11 criteria should be equal to 1.

7. Multiply the evaluations of each of the experts by the weight coefficients given in fractions of one and calculate the sum of points for each of the 11 criteria. Obtaining the final score of all experts (each completed questionnaire will have its own final score).

8. Calculation of the General (total) score of cluster efficiency:

8.1. The average is calculated according to the arithmetic formula as usual, if the rating coefficients are not assigned to the experts.

8.2. If the rating coefficients for experts are set, according to the weighted average arithmetic formula. In this case, it is necessary to calculate not only the

International Journal Of Management And Economics Fundamental (ISSN – 2771-2257)
VOLUME 04 ISSUE 01 PAGES: 26-37
SJIF IMPACT FACTOR (2021: 5. 705) (2022: 5. 705) (2023: 7. 448)
OCLC – 1121105677
Publisher: Oscar Publishing Services

total evaluation, but also the total scores for 11 groups of indicators (Table 2).

9. The results of the final form are used in the process of strategic and tactical planning of cluster activities.

10. To re-evaluate the effectiveness of the cotton-textile cluster at the end of the planning period to determine the level of achievement of the goals.

Table 2

The final form of cluster performance evaluation

№	Indicator groups	Total score
1.	Estimating the composition of cluster members	5
2.	The position of the cluster in the market	5
3.	Production potential of the cluster	5
4.	Evaluation of the cluster product	5
5.	Evaluating the effectiveness of cluster management	5
6.	Assessment of infrastructure provision of the cluster	5
7.	Evaluation of the financial component	5
8.	Evaluation of the innovative component of the cluster	5
9.	Investment evaluation	5
10.	Evaluation of personnel policy	5
11.	Evaluation of efficiency from the perspective of the state	5
Total (total) score:		55

CONCLUSIONS

In conclusion, we can say that the methodology proposed by us for evaluating cluster performance has its own characteristics, which are important in performance analysis. First, it reflects the indicators that take into account the characteristics of the studied network clusters, where the weights of the criteria are placed on the basis of similar judgments (based on the study of experts' opinions) and analyzed, a systematic classification is formed and conclusions are made easier. Secondly, the period of application of the methodology is limited, because the situation in the modern economy can change dramatically in one direction or another (for example, a ban on the import of foreign textile products as a result of the tightening of sanctions policy), which requires adjustments to the assessment procedure. Taking into account these concluding recommendations allows for a correct assessment of the effectiveness of local textile clusters. Thus, in order to increase the efficiency of the measures taken by the state to support clusters, there is an increasing need to

International Journal Of Management And Economics Fundamental (ISSN – 2771-2257)
VOLUME 04 ISSUE 01 PAGES: 26-37
SJIF IMPACT FACTOR (2021: 5. 705) (2022: 5. 705) (2023: 7. 448)
OCLC – 1121105677
Publisher: Oscar Publishing Services

improve the methods of correct assessment of cluster activity, taking into account the peculiarities of the industry. In our opinion, the issue of evaluating the effectiveness of cluster structures will not lose its relevance in the near future. Due to limited financial resources in modern conditions, there are serious problems of choosing the most profitable investment option. The proposed methodology for cluster evaluation solves this problem to some extent.

In order to improve the assessment of the financial efficiency of clusters, the following should be implemented:

use of financial efficiency criteria and improvement of assessment methodology;

establish the use of a complex indicator of financial efficiency assessment;

introduction of international standards of financial reporting in clusters;

establishing the practice of conducting an independent external audit of their activity efficiency and financial indicators by involving prestigious international auditing organizations in clusters;

establishing assessment practices based on the indicators of the "European Memorandum".

REFERENCES

1. Decree of the President of the Republic of Uzbekistan dated December 12, 2023 No. PF-205 "On additional measures to further develop free market relations in agriculture"
2. Ферова И.С. Подходы к формированию и оценке эффективности промышленных кластеров // Инициативы XXI века. 2010. № 2. С. 35-39.
3. Шутилов Ф.В. Методы оценки эффективности и синергетический эффект кластеров // Научный вестник Южного института менеджмента. 2013. № 2 (2). С. 81-85.
4. Клепикова Н.И. Оценка эффективности создания отраслевого кластера // Фундаментальные исследования. 2013. № 4-4. С. 934-939.
5. Маклахов А.В., Гулый И.М. Оценка эффективности кластерной формы организационно управленческих инноваций (на примере машиностроительного комплекса) // Региональная экономика: теория и практика. 2010. № 7. С. 32-43.
6. Несмачных О.В. Оценка эффективности инновационного кластера // Известия высших учебных заведений. Серия: экономика, финансы и управление производством. 2013. № 3 (17). С. 44-53.
7. Несмачных О.В., Назарова О.В. Методология оценки эффективности стратегии функционирования промыщленного кластера// Ученые записки Комсомольского-на Амуре государственного технического университета. 2015. Т. 2. № 2 (22). С. 117-121.

8. Патрушева Е.Г., Большакова Е.А. Оценка экономической эффективности регионального инновационного кластера// Управление экономическими системами: электронный научный журнал. 2015. № 4 (76). С. 1-22.
9. Тюкавкин Н.М. Методы оценки эффективности функционирования кластеров в промышленности // Основы экономики, управления и права. 2013. № 3 (9). С. 109-113.
10. Гакашев М.М. Подходы к формированию и оценке эффективности экономических кластеров // Вектор науки Тольяттинского государственного университета. Серия: экономика и управление. 2013. № 1 (12). С. 25-27.
11. Ochilov I.S. (2022). Improving the efficiency analysis of agroclusters in the context of transformation and digital economy. Monograph. Publishing house "Ozkitob, trade, publishing, printing, creative house". Tashkent: 2022. B 172.
12. Ochilov I.S. (2024). Issues of improving financing of agricultural clusters. BIO Web of Conferences 82, 02035. MSNBAS2023. eISSN: 2117-4458. – 03 January 2024. - pp. 1-7.
13. Ochilov I.S. (2023). Improving the analysis of the mezzanine financing in Uzbekistan clusters. The American Journal of Management and Economics Innovations. ISSN: 2693-0811. OCLC – 1176275019. September, 2023. Volume 05. Issue 09. pp. 25-29.
14. Ochilov I.S. (2023). Methodology for assessing the financial efficiency of agro clusters. The American Journal of Social Science and Education Innovations. ISSN: 2689-100X. OCLC – 1121105668. September, 2023. Volume 05. Issue 09. pp.81-85.
15. Ochilov I.S. (2023). Analysis of principles for improving the financial
16. mechanism of agroclusters. Frontline marketing management and economics journal. ISSN: 2752-700X. Volume 03, Issue 10. October, 2023. pp.15-24.
17. Ochilov I.S. (2023). Methodology for Practical Analysis of Economic Efficiency Indicators of Clusters. International Journal of Multicultural and Multireligious Understanding. ISSN: 2364-5369. Volume 10, Issue 10. October, 2023. pp. 302-308.
18. Ochilov I.S. (2023). Analysis of financing of innovative activities of agroclusters. American Journal of Public Diplomacy and International Studies. ISSN (E): 2993-2157. Volume 01, Issue 08, 2023. pp.6-11.
19. Ochilov I.S. (2023). Analysis of foreign experiences of evaluating the efficiency of organizational and economic mechanisms of agroclusters. Frontline marketing

management and economics journal. ISSN: 2752-700X. Volume 03, Issue 11. November, 2023. pp.28-40.