

ECONOMIC AND STATISTICAL METHODS IN EVALUATION OF COMPETITIVE ADVANTAGES OF REGIONAL AGROSYSTEMS

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Abstract

The article considers the possibility of using economic and statistical methods to evaluate the level of competition and competitive advantages of producers of agricultural products, the formation of which significantly depends on climatic conditions, the duration of the production cycle, seasonality of production.

Using the index method allows, using the integral index of competitiveness, highlight the benefits of each commodity producer on manufacture, sales of products based on its concentration in the regional market. Integrated indicator combines a number of criteria which indicate producer benefits by the level of productivity and production costs (index of production efficiency); on a price level and business costs (efficiency index of sales); the level of concentration of production refers to the produce's share market.

The proposed methodological approach to the analysis of the competitiveness of the agricultural production in the region and the obtained results make it possible not only to identify reserves of competitiveness, but also effectively using it in the preparation of management decisions at the regional level.

The presented material provides an opportunity for further research in evaluating the competitiveness of rural agricultural production. Based on them it is possible to form specific areas of monitoring the effectiveness of agricultural production and agri-food policy.

Key words: agribusiness, competitiveness, evaluation, the integral index, regional competitive advantage.

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Introduction

Agri-food system at the regional level is a complex, developing system having certain characteristics and structure, which aims to provide food and feed to industry. Market mechanism dictates the necessity to improve the efficiency of managing the whole agro-industrial system. In connection with this very relevant is the identification of the mechanism

of competition, competitiveness, assess the competitive advantages and their use in agribusiness.

Significant contribution to the theory of competition has made by the American economist Michael Porter. Generalizing the views of different economic schools, he proposed a model of the five basic competitive forces that help to identify and exploit competitive advantage. "Competitive advantages of the system - is any exclusive value, which has a system and that gives it an advantage over its competitors, the implementation of which generates a certain level of competitiveness of production» - (Porter, 2005). Complementing the ideas of Michael Porter, a Russian professor R.Fathutdinov defines competitiveness as "... property objects characterizing the degree of satisfaction of specific needs compared with the best similar objects represented in this market at the level of the organization, region, industry, any sphere of the macro in the country a whole. "(Fatkhutdinov, 2005). Several articles M.Gelvanovsky emphasizes that "the carriers of these properties can be different actors of competitiveness: products, companies and organizations or groups which form industry or conglomerate associations and finally, individual countries' (Gelvanovsky, 2005). Identification and exploitation of competitive advantage is reflected in the theory of clusterization of M.Porter: "Clusters represent a new way of thinking about national, state and local economies, and they require new roles for companies, governments and other institutions to increase the competitiveness» (Porter, 2000)/ The state's economy "clusters act as points of growth" of the domestic market, which in turn increase the country's competitiveness, as it keeps it a strong position of individual clusters, without them can take a mediocre place in the world economy. In his research I.Turok indicates the need to find a competitive advantage business, cities, territories, "which arise from the concentration of economic activity and quality of interaction between firms» (Turok, 2004). In his research I.Turok indicates the need to find a competitive advantage of business, cities, territories, "which arise from the concentration of economic activity and quality of interaction between firms» (Turok, 2004).

The role of analysis and evaluation of competitiveness and competitive advantages of business entities, including various kinds of enterprises, districts and regions increases as the distribution and increasing competition between them. In this case competitive analysis and competitive advantages in business becomes systematic and comprehensive.

To analyze the competitive advantage at the level of enterprises and associations have long and successfully applied SWOT-analysis disclosed in the textbook "Strategic Management: Concepts and situations" (Thompson, 2001). It consists in considering the

object of economic management from four principal positions: strengths and weaknesses of its activities, opportunities and threats of the future development. Such structural analysis, as long-term practice shows, allows identifying reserves denote potential threats, calculate the optimal trajectory for the future and, ultimately, significantly improve the competitiveness and efficiency. However, at the macro level to analyze and prognosticate the development of industries and sectors of national economies SWOT-analysis has rather limited use. The method of "Boston Consulting Group," takes into account the product life cycle. Their qualitative methods are based on the ratio of "price-quality", they allow to Identify competitive advantages.

System of competitive factors is open, and the set of factors of competitiveness is almost infinite. Therefore, no matter how extensive their list, it will still be based on an incomplete list of criteria competitiveness. "At the forefront of an exhaustive list of factors of competitiveness, the researchers come to a standstill, because such list is impossible in principle» (Huggins, 2003).

Through a comparative analysis of methods for the evaluation of competitiveness and competitive advantage, we believe that cost parameters is more demonstrative. To do this, "it is important to justify their assessment benchmarks (Budd 2004)."

There are many approaches to the assessment of regional competitive advantages, which are aimed at the calculation of the composite index. However, the latter do not always allow you to fully assess the situation, as they give an overview of the object being studied. Integral indicator of competitiveness underlines irregularity of economic conditions as separate objects being studied, as well as certain areas. For more accurate analysis necessary to consider components calculated index.

Moreover, various indexes competitive advantages of regions can be designed for different purposes notes R.Huggins. For example, to determine the investment attractiveness or appropriateness of the establishment and development of a business, organize assessment, specialization, etc. In accordance with the need to identify who is a consumer of information in in making whar decisions they may be useful and those involved in their calculation (Huggins, 2010.)

Effectiveness of agribusiness depends on climatic factors that affect the cost of production. Regional Management Policy should be directed on identifying and using territorial advantages of the region. V. Becvarova underlines the need to find comparative advantage not only "on the horizontal level, but also in the integration with processing enterprises, ie vertical level, throughout the supply chain of added value formation

»(Becvarova, 2008). Monitoring of search queries of competitive advantages and effectiveness of agribusiness should be the basis of government regulation in setting clearer priorities and achieving competitiveness at the micro and macro levels. "The choice of indicators for measuring the competitiveness of rural is based on the concept of sustainable development of rural areas (Mikuš, 2010)."

Despite many publications on the problem of analysis methods developed of competitive advantages are not fully. This applies, above all, regional sectoral aspects of the assessment of forming competitive advantages of enterprises agroindustrial complex. Tools and indicators to effectively evaluate the competitive advantages of the industry, of the company are not enough developed and on this basis to develop effective strategies to improve the competitive status.

1. Methodology Research

For the organization of monitoring the evaluation of competitiveness and to identify of competitive advantages of agricultural production, we developed a methodological approach based on using economic and statistical analysis methods.

Using the index method of statistical analysis as an evaluation criterion we used the integral indicator. Proposed coefficient of competitiveness by types of products of a business entity is compared with the average of its value in the region. The higher the ratio, the higher level of competitiveness, and accordingly, the level of competitive advantages of its manufacturer on a specific product type.

As a criterion, the methodology of analysis of competitiveness of agricultural production areas can be based on three components: efficiency of production, implementation efficiency and concentration of production.

Efficiency of product production (K_p^{ij}) is characterized by the level of productivity (yield) and production costs and is determined by the formula:

$$\hat{E}^{ij}_p = \frac{I^{ij}_\delta}{I^{ij}_{ps}} = \frac{P^i_j}{P^i_s} \cdot \frac{\tilde{N}^i_j}{C^i_s}, \quad (1)$$

where I^i_j - index livestock productivity (yield) i-th type of output of the j-enterprise;

I^{ij}_{ps} - the index of unit cost of i-th type of output of the j-enterprise;

$P^i_{j(s)}$ - the productivity of animals (or crop yields) i-th type of output of the j-enterprises (regional average);

$C_{j(s)}^i$ - unit production cost of i-th type of output of the j-Enterprise (the regional average).

Efficiency of products (K_{s}^{ij}) characterizes cost recovery on territories:

$$\hat{E}^{ij}_s = \frac{I^{ij}_{tsr}}{I^{ij}_{\hat{e}s}} = \frac{TS^i_j}{TS^i_c} : \frac{\tilde{N}S^i_{\hat{e}j}}{CS^i_{\hat{e}s}}, \quad (2)$$

where I^{ij}_{tsr} - price index of sales of i-th species in the j-products sector;

I^{ij}_{ks} - index of commercial unit cost of i-type products in the j-th enterprise.

$TS^i_{j(s)}$ - selling price of i-th type of output of the j-enterprises (regional average);

$CS^i_{kj(ks)}$ - the commercial cost of production units of i-type products in the j-Enterprise (the regional average).

The level of concentration of production (K^{ij}_v) shows the share of the enterprise in total output:

$$K^{ij}_v = \frac{V^i_j}{V^i}, \quad (3)$$

In expanded form index formula characterizing the competitive advantages of a business entity can be represented as follows:

$$K^{ij} = K^{ij}_p \times \hat{E}^{ij}_s \times K^{ij}_v = \left(\frac{D^i_j}{P^i_s} : \frac{C^i_j}{C^i_s} \right) \times \left(\frac{TS^i_j}{TS^i_s} : \frac{CS^i_{kj}}{CS^i_{ks}} \right) \times \left(\frac{V^i_j}{V^i} \right), \quad (4)$$

Using the algorithm of cluster analysis (method of economic groups) realized by in the software package STATISTIKA, reveal a group of companies on competitiveness level and use of competitive advantages of production or certain entities (regions) areas.

Unlike combinational groups cluster analysis leads to a grouping with all the grouping characteristics simultaneously, which allows to perform multiple groups that will analyze the competitive advantages of agricultural production, using climatic factors accommodation, the level of concentration and specialization of production, financial condition and solvency organizations, etc.

2. Research results

Comparing agricultural enterprise with the same type of industry sector or scale of activities enables us to determine its place among the competitors, ie ascribe some importance among other businesses.

In table 1 presents the results of a survey of agricultural enterprises in terms of competitiveness of milk production. The calculations of all the studied companies

performance level assigned to three groups. Received groups (clusters) of agricultural organizations are characterized by homogeneity and similar disabilities, have common problems that affect the financial result.

Table 1. Analysis of the economic indicators of organizations, depending on the level of competitiveness expressed by an integral index K^{ij} (in% to the average level)

Indicators	More than 1,0	0,8 to 1,0	Less than 0,8
Quantity of the organizations in the group	32	26	150
At one organization:			
area of farmland	172	103	84
population of cows	242	129	65
marketable products	325	180	61
productivity	134	123	73
production cost	81	89	131
selling price	115	102	89
profitability (loss) of production	41,9	14,5	-19,8
Group's share of total production	48,5	17,1	34,4

The first group of farms (with K_{ij} PKU 1.0 above), the most successful set of indicators for agricultural enterprises of the region. They contain 37% of dairy cattle area, and produce 48.5% of the milk. Organizations of this group are distinguished by high indicators of financial stability and solvency, which promotes innovative development of agricultural production.

The second group of farms (with K_{ij} folder on 0.8 to 1.0) from a position of competitiveness can be considered as a boundary between the first and third groups. The Group's share in the production of milk is 17-20%. With its low cost per unit of production quality of products gives farming of the first group, which affects the decrease in sales prices and the level of marketability.

The third group is the biggest . With a huge production capacity (61.1% of land, 45.2% of fixed assets, 49.3% of workers) produces a 1/3 of the total production. Increased cost and low quality of products leads to the loss of most industry business entities.

Competitiveness of index value less than unity inherent in most of the studied objects and indicate unused reserves to enhance of competitiveness and missed opportunities to

increase production. Noteworthy is the apparent downward trend in the concentration of production, depending on the level of competitiveness of reducing milk production by groups of households. The volume of trade on average for the organization of the first group is more than in three times the average. Clear trend can be seen depending on the concentration of the competitive advantages of production.

As a result of studies there were identify various trends and correlations that can be, in our opinion, be regarded as the presence or absence of certain competitive advantages.

The influence of natural factors on the efficiency of allocation.

With the help of the integral index, we also investigated the influence of climatic factors on the efficiency of agricultural production. Most favorable for agriculture allocated forest-meadow and steppe zones. This is confirmed by the production and economic performance of agricultural enterprises (Table 2).

The table data demonstrate certain competitive advantages of the grain industry steppe zone, where as an average over three years, and for individual data yields compared to other climatic zones was highest. In the production of dairy and fattening cattle for meat stand mountain-forest and forest-steppe zones. Best results are shown and production cost.

Table 2. Factor production and commercial success of the main types of production in the context of climatic zones

Indicators	Mining and Forestry	Forest	Forest-meadow	forest steppe
Grain	0,62	0,28	0,91	1,09
Milk	1,08	0,43	0,79	1,13
Cattle for meat	1,09	0,57	0,74	1,13

Values of the integral indicator of the main products point out the benefits of agricultural producers steppe zone.

Identify the benefits of specialization

Depending on the combination of principal (main) and other agro-commodity sectors of the study region, now we have various types of industrial specialization of agricultural enterprises. The highest number of households is mainly specialized in the production of milk and meat (31.1%), meat and grain (13.5%), milk and grain (12.1%), grain (8.6%)

(Poshekhonova, 2011).

Operation performances of all agricultural holdings in the context of specialization show the unevenness of their development. In terms of profitability, productivity, farm stand suburban specialization development of vegetable and potato growing. The lowest level of intensity different farms with grain oriented (grains, grain meat, grains and dairy). The best position, agricultural producers are located to the markets, specializing in the production of milk, vegetables and potatoes. The most profitable are agricultural enterprises (30.1%) milk - (28.0%) and vegetable and dairy (23.5%).

Lower the efficiency of grain farms (2.8% margin), where the grain structure takes into marketable products over 70%. This is explained by the fact that without a developed dairy farming grain obtained from the mass of profit is not enough to cover all costs for the fund, transport, payment of wages to workers employed mainly only in the summer. Obvious unprofitable farms beef specialization. For these groups of households observed dynamics reduction.

Corrections of specialization in farms (especially animal husbandry) require corresponding changes in the structure of productive assets, personnel, etc. This specialization is associated with significant additional capital costs and a prolonged period during which the possible reorientation of production. So here is particularly important to identify areas of specialization in the production region, which increasingly will be responsible in the long term requirements of food security areas.

Our results suggest that the right combination of primary and secondary branches at agricultural producers is essential for realizing the potential of agriculture in the region and brings certain advantages.

Conclusion.

Competitive advantages - it is only the potential for production of competitive products, related primarily to the efficient use of resource potential (climatic, technological, technical, human, organizational and other factors of production).

The presence of certain competitive advantages in individual agricultural producers, some areas can be set by comparing such basic output indicators, as the productivity of livestock and poultry (or crop production), production cost and return on total costs.

This approach allows not only fully assessing the level of competitiveness of the enterprise, but at the same time and getting quantitative value of competitiveness. In assessing

the competitive advantages listed indicators can be used both individually and in the form of integrated indicators.

The above methodological approach in the study of the competitiveness of the agricultural production in the region and the results obtained indicate certain reserves in search of competitive advantages that can be used in the preparation of management decisions at the regional level. They also indicate the possibility of formation of separate areas of monitoring, implementation of which can improve the management of agricultural production.

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