

LEASECON 2021
Conference on Land Economy and Rural Studies Essentials

**GRAIN PRODUCTION AT MICRO LEVEL: QUALITY
EVALUATION AND REALIZATION EFFICIENCY**

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Abstract

Strategic management of grain production development is the general method of the coordination of purposeful influences on steady achievement of the desirable condition, the ability of the branch to form a steady position of agrarian business at a micro level. This process would be successful if the transforming strategy were developed taking into consideration the abilities of foreign economic advantages, overcoming the “bottlenecks”. It involves transforming weak sides in agro business running into strengths and its advantages, finding new resources, introduction of new products, production and management technologies. From this point of view, the problem of application of efficiency evaluation in agro business efficiency gains great importance. This will allow one to interpret uniquely multidirectional changes in indications of economic activities, and to make adequate comparison between planned and actual developmental characteristics. In this article, to evaluate the realization of the agro business developmental strategy, we suggest using a system of indices the foundation of which is a unit order of integrated indices of creating the developmental strategy and efficiency quality. This fact determines the indices consistency and possibility of adequate comparison in dynamics, as well as in statics. It should be noted that each producer of goods could be used as initial indices of integrated counting magnitudes of the data, which are critical for fulfilling strategic landmarks at each time moment. The approbation of the method has been carried out on the basis of OOO “South-Eastern agro group”, Kirsanov district, Tambov region.

2357-1330 © 2022 Published by European Publisher.

Keywords: Agriculture, grain production, strategic production



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1. Introduction

The strategic approach to agricultural development management has principle importance for agricultural producers, as it means the presence of close relationship between strategic, tactical and operational plans, control over their complex fulfillment with account of their dynamics of environmental changes and possibilities of correcting of intermittent transformation aims in agro business (Alvi et al., 2021). At this point, getting maximum results in farming activities can be ensured only under condition of combined efforts in realization of the development strategy on the part of the state. This allows one to regulate the socioeconomic situation with the possible gaining of profit by all members of economic field. This will create the mechanism of their self-reproduction, insurance of country food security and each producer, providing filling of markets with farm product commodity mass created by using efficiently the land, labor and material resources.

2. Problem Statement

In the Russian Federation, the legal basis for strategic development approach to justification of development perspectives is Federal law “Strategic planning in the Russian Federation” No. 172-FL (On strategic planning in the Russian Federation, 2014; Zhidkov, 2018).

An agricultural development strategy is a general direction, transformation vector of the agro business condition for approaching final goals of realizing coo-partners. It consists in strengthening market positions on the farming raw materials market through gaining coo-partners of competition advantages: on the part of the state on home and foreign markets, on the part of farming subjects at the micro economic level of existence. It is realized in the frames of strategic management. It is the basis of development of almost all agricultural branches (Terentyev et al., 2021; Verkhovtsev, 2019).

Strategic management is a concept of the system approach, assuming modern adaptation to external threats of violation in a stable position in the economic field for the account of deep regulation inner organizational processes, transformation of weak sides of agro business into its competitive advantages, and finally, the achievement of socio-economic goals of its development. The fulfillment of this purpose should be done during definite stages:

- 1) strategic analysis of internal and external conditions of agro business development;
- 2) determination of strategic goals and their binding with short-term goals of agro business development;
- 3) working out, analysis of strategic alternatives and choosing the most suitable variants of strategic development;
- 4) strategy realization;
- 5) strategy evaluation, its adequate correction.

Each of the described stages of strategic farming management, without changing its nature, gains its own specificity, defined by farming running peculiarities. Thus, the analysis of environment should be aimed at studying the possibilities of reducing production and commercial risks of farming activities, using state support. This includes the questions of crediting, taxation from the point of view

purposefulness of using special or general regimes, introduction of innovational technologies and recourses. It is wise to estimate the internal environment from the point of view of human potential (age, the degree of qualification, education level etc.), optimal combination of production resources, complete utilization of land ability for self-reproduction, production structure, and other aspects of economic activity. Recently the whole complex of strategic analyses methods has been elaborated. SWOT-analysis, PEST-analysis and SNW-analysis are mostly in use at present. Each of them is aimed to forming objective factors estimation, influencing the strategy of farming object development. Taking into consideration finiteness of farm bearers of interests, their interrelation and interdependence, it is important to highlight strategic and tactical goals. The difference between them can be found in hierarchy of multilevelness in their definition (Bugai et al., 2019).

The strategic goals are the development guidelines for indefinite perspective in time terms, and this will demand full use of internal opportunities and forming an internal strategic potential, enough for ensuring of transformational processes. Their successful achievement depends on the degree of interrelation of organizational, functional, collective and personal goals, that is, the organization of the goal tree according to management system levels – horizontal slice (Samokhvalova et al., 2019). One should point to the presence of the vertical organization of strategic goals, suggesting a correlation of landmarks in the context of “priority – subordination”. This is the foundation for elaboration of strategic alternatives in agribusiness development and the choice of a proper way of strategic changes.

Kanashchenkov et al. (2019) highlight the following principles in the strategy elaboration:

- goal orienting;
- strategic vision;
- foreseeing ability based on intuition and gained experience;
- informational security;
- reality;
- activity regulation;
- personnel active participation.

The next stage in strategic management is strategic development itself. This is the most complex process, demanding constant effort from all divisions and involved employees.

The organization development strategy is defined by the owners, and after its approval – by a supreme management body. It becomes an official document, having a recommendation character. However, its postulates become a base for forming intermediate goals, set for short-term periods for all functional levels of management and production divisions. We can say that the strategy adopted is the basis for definition of a “picture” of agribusiness development (Smagin, 2020; Zhidkov, 2019).

Every stage of strategic management can be estimated from the position of realization efficiency. Pasmurtseva, having analyzed the systems applied in estimation of strategy realization, underlines the necessity of complex strategy research from the point of view of its finiteness and ability of organization for its realization by innovations introduction (as cited in Kanashchenkov et al., 2019).

As a rule, the problems of unambiguous interpretation of the results obtained can be overcome with the help of calculation of integrated indication, taking into consideration degrees the application of all production resources. Thus, it is based on the principle of complexity, as a development efficiency

category has a number of expressions. Besides, the period of the development strategy realization can cover not a single decade, so continuity in system transformation demands the application of the united estimation method. And in the case of its perfection on the base of deeper knowledge in the field of strategic planning and management, it will require new algorithms.

3. Research Questions

The solution of the problems influencing the managed and non-managed factors on the realisation of the development strategy requires consideration of a number of questions:

- to determined stages of strategic management to achieve socio-economic goals of its development;
- to establish the indicators system of monitoring and their interrelation ton realize the agribusiness strategies;
- to assess the adequacy of application of chosen indicators by the example of a specific enterprise.

4. Purpose of the Study

The purpose of the study is the use of the indicators system, which is based on a unique order of calculation of integrated values of the quality of development and efficacy of realizing the development strategy to assess its realization.

5. Research Methods

For the monitoring of realization of the agribusiness development strategy, it is necessary to use indications system, including:

- coefficient of efficiency of development strategy realization (C_e) (1);
- coefficient of quality development strategy elaboration (C) (1);
- coefficient of quality of development strategy realization (C creat) (1);
- coefficient of ratio in coefficients of development strategy realization and elaboration (C_c) (2).

Each of them should be calculated using the same methodology, the difference between them will be seen in different initial informational base. Thus, coefficient of quality of farm strategy development will show every stage of transformation processes in the field of strategic planning. The strategy of quality realization will show real data of the previous period or base year. Both of these indicators can be calculated in dynamics in variations of base and chain methods of calculation (Kusicheva, 2010; Pasmurtseva, 2018; Tyupakov et al., 2019).

Comparison of quality coefficients of elaboration and realization in the development strategy (ratio coefficient) will be adequate only under the condition of the uniform approach to dynamic calculations.

The coefficient of quality of the development strategy realization shows the level of achievement of planned indications of the socio-economic and production type. It is calculated only on the basis of the chain calculation method.

In formula terms, the indicators of monitoring in realization of the agribusiness development strategy will look as follows:

$$K_e = \frac{\sum_{n=1} \frac{a_i}{a_{i-1}} + \sum_{m=1} \frac{b_{i-1}}{b_i}}{n} \quad [1].$$

where a is a value of indicators oriented on the growth expressed in absolute increasing; b is a value of indicators oriented on the growth expressed in absolute decreasing; n is a number of indications oriented on growth expressed in absolute increasing; m is a number of indicators oriented to the growth expressed in absolute decreasing; i is a given time moment; $i-1$ is a previous time moment.

Approbation of the method of estimation of the strategy realization efficiency has been carried out on the data of grain production of OOO “South-East agro group” in Kirsanov district of Tambov region. As a particular indicator, some indication have been used for calculating of integrated coefficients of efficiency realization strategy, quality of its development realization:

- production cost of material and monetary recourses accounting per 1 hectare of grain crops;
- wages per 1 man-hour in grain production;
- production cost of fertilizers per 1 hectare of grain crops;
- input for pest and diseases control per 1 hectare of grain;
- grain yeilding capacity.

The main condition of particular indications application is their logical non-contradiction. Between them there can be close relation and interrelation. Besides, they can be multidirectional in action. The method allows correction of the influence vektor of such indications. The important point while carrying out research with the help of this method of estimation of efficiency of the development strategy realization, is necessity of performing comparative calculations according to a given moment (a year). Cost indicators should be put to a comparable form by correcting their actual numbers with account of indications of prices on farm produce growth and on production resources applied in farming.

Such demands concern only calculation of integral monitoring indications of branch development strategy realization, which are calculated with the help of indications “plan-plan” (coefficient of quality of the strategy development), “fact-fact” (coefficient of quality of the strategy realization).

6. Findings

The carried out analysis according to these integrated indications shows that strategic plans of grain production development on a farm are oriented to step-by-step increase of branch stable developmet. This conclusion was made on the base of steady increase of the coefficient of the quality development strategy, which presents on avarage 6.7 %. The increase of the coefficient of quality in the development strategy realization in grain production went on quickly. The amount of this indication grew in 2019 up to 1.366, and this fact shows the “jerk” in actually obtained production results of the branch.

It should be noted that indications of quality development and the realization strategy in grain production in OOO “South-East agrogroup” in Kirsanov district exceeded a single value, and their

constant increase during 2016-2019 shows the presence of progressive transformational processes in retrospective (Figure 01).

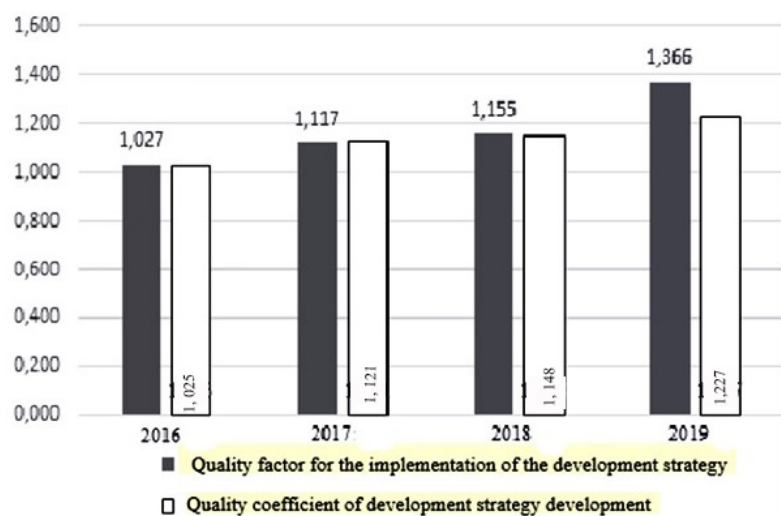


Figure 1. Coefficient of quality development and the realization strategy in grain production in OOO “South-East agrogroup” of Kirsanov district, Tambov region in 2016-2019

But it is not possible to make conclusions about successful realization of quality development and the realization strategy in grain production only on the base of coefficient analysis of quality development and the realization strategy. Comparison of these integral indications should be complemented by the coefficient of realization efficiency of development plans. This indication reflects the level of goals attainment. Dynamics of its indications in 2015-2019 can be seen in Figure 02. The analysis carried out showed that in comparison with the planned level of indications of grain production efficiency in the production field, actual quantities in the aggregate, while constantly exceeding a single value, gained a downward trend. This is connected with the emergency of economic problems of reconstruction in grain production on low-efficient farms in OOO “South-East agrogroup” in 2012-2014. On the one hand, such changes of organizational character demanded the correction of the farm development strategy, but on the other hand, they needed high intensity of production processes.

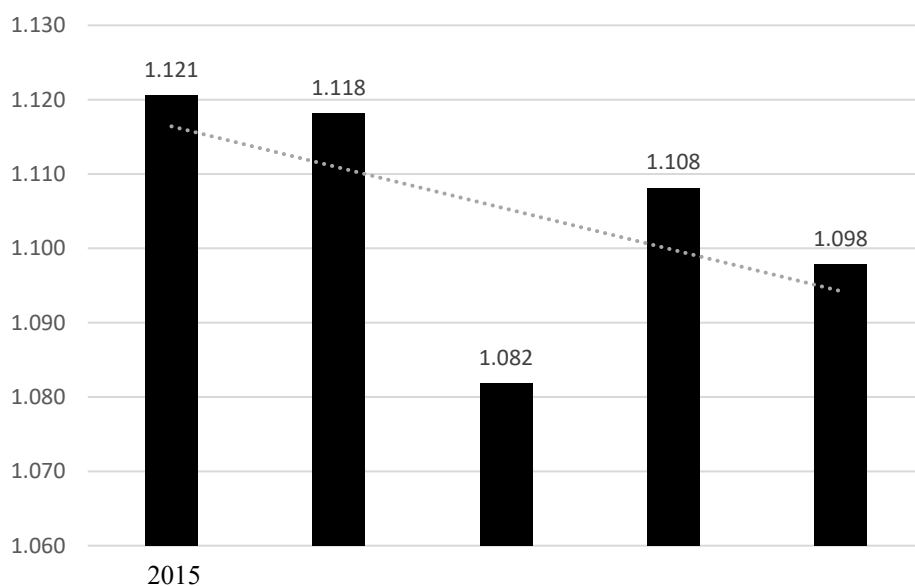


Figure 2. Coefficient of efficiency development and the realization strategy in grain production in OOO “South-East agrogroup” of Kirsanov district, Tambov region in 2016-2019

7. Conclusion

On the whole, the application of the strategic approach to foundation of development perspectives of the branch is a highly effective tool of transformation processes management, but it should be accompanied by constant monitoring and analysis of situations with application of unequivocally interpreted and pictorial control indications.

References

- Alvi, S., Roson, R., Sartori, M., & Jamil, F. (2021). An integrated assessment model for food security under climate change for South Asia. *Heliyon*, 7(4), e06707.
- Bugai, Y., Minenko, A., & Khorunzhin, M. (2019). State and problems of exporting the products of the agro-industrial complex in the Altai region. *IOP Conference Series: Earth and Environmental Science*, 395(1), 012105.
- Kanashchenkov, A. I., Novikov, S. V., & Veas, I. D. (2019). Of Model and principles of development of the development strategy of the enterprises of micro-level management. *Moscow economic magazine*, 2.
- Kusicheva, N. U. (2010). Estimation of efficiency of strategy development realization in gardening. *Gardening and Grape Growing*, 4, 27-29.
- On strategic planning in the Russian Federation (2014). Federal Law: adopted by State Duma On June 20, 2014: on state of July, 2014). *Russian Paper*. 3 July 2014. No. 146 (6418). Retrieved from: <https://rg.ru/2014/07/03/strategia-dok.html>
- Pasmurtseva, N. N. (2018). Economic efficiency of realization strategy of enterprise development: approaches to realization and efficiency indications. *Azimuth of scientific investigations: economics and management*, 7, 4(25), 226-229.
- Samokhvalova, E. V., Kutilkin, V. G., & Zudilin, S. N. (2019). Analysis of natural agro potential for territorial organization of agriculture in the Samara region. *IOP Conference Series: Earth and Environmental Science*, 341(1), 012031.

- Smagin, B. I. (2020). Some issues of forecasting grain production in the region. *Bulletin of Michurinsk State Agrarian University*, 2(61), 154-160.
- Terentyev, S. E., Gnezdova, Y. V., & Semchenkova, S. V. (2021). Analysis of Agricultural Production for Alcohol Production in the Light of World Trends. *IOP Conference Series: Earth and Environmental Science*, 666(6), 062048.
- Tyupakov, K. E., Reznichenko, S. M., Shichiyakh, R. A., Mikhailushkin, P. V., & Belova, L. A. (2019). Priority directions for regional grain market development. *International Journal of Engineering and Advanced Technology*, 9(1), 3875-3880.
- Verkhovtsev, A. A. (2019). The grain market: essence, structural content, economic development potential. *Bulletin of Michurinsk state agrarian university*, 2, 185-189.
- Zhidkov, S. A. (2018). Theoretical Aspect of Development of Market Environment in Grain Farming. *The Journal of Social Sciences Research, Special Issue 3*, 414-422.
- Zhidkov, S. A. (2019). Organizational Potential of the Cluster Structure in Grain Farming. *International Journal of Engineering and Advanced Technology*, 6, 2596-2600.