Specific Requirements and Characteristics of the Assessment of the Development and Transformation of Agriculture in the Process of Economic Modernization

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Abstract: It is natural that in the initial, present and future stages of the development of society and humanity, agriculture was and will remain a strategic sector in terms of providing the population with food products and raw materials for other sectors of the economy. Accordingly, structural and organizational reform, modernization and diversification of agriculture not only in the countries of the world, including in our republic, forms of ownership and management in accordance with market requirements, as well as the development of private sector and public-private partnership activities, agricultural crops in the regions' natural - placement and specialization in accordance with climate and soil conditions, infrastructure organization in all areas are given priority attention. Research shows that in today's conditions, the activities of all state, higher education and scientific-research institutions of the world are mainly directed to the problems of meeting the needs of the population for environmentally friendly products and ensuring food safety, and taking appropriate market segments by adapting to the competition in the consumer market.

Keywords: Agriculture, structural and organizational reform, modernization and diversification, intensification, food market, forecasting, economic-mathematical methods, productivity, promoting price, global climate change.

Introduction. Currently, at the time of global climate change, one of the main tasks is to increase the volume of production through the intensification of agriculture, including ensuring food security. I addition, expansion of the market of manufactured products, stimulation of access to international markets, increases the income of farmers and villagers on the one hand, and accelerates the industrialization of the agrarian sector on the other hand. It is one of the important directions of increasing competitiveness in the international food products market not only at the level of countries, but also in the activities of economic sectors and economic entities, the importance of the concepts of modernization of production through the introduction of innovative techniques and technologies and the development of relations between economic entities in accordance with market requirements is increasing.

Methods. In particular, when developing the concept of competitiveness of the agro-industrial complex, the development stages of the national economy and their specific directions, goals and tasks should be taken into account. In this regard, for example, the World Economic forum, based on the theory of competitiveness, divides the development status (rating) of the countries of the world into the following three stages:

- ➢ "factor stage" - this stage is characteristic of relatively weakly developed countries, for which the main production factors (land, raw materials, unskilled labor) are considered the main conditions of macroeconomic growth;

- ➢ "investment stage" - This stage is characteristic of countries that have achieved average income due to ensuring economic growth and competitiveness by attracting investments, using modern technologies in domestic production;

"innovation stage" refers to countries with a high speed and level of development, which have moved from the status of a technology-importing country to an innovative technology-creating economy[1].

Prioritizing the above-mentioned forward-looking directions, solving existing problems and, most importantly, ensuring the achievement of the set goal should include the following:

- ✓ Ensuring the competitiveness of the economy based on the innovative development of ASM and its branches, taking into account the promising factors of the rational distribution of production forces, and developing measures for its implementation (clusters, high-value specialized zones, etc.);

- ✓ Stimulating innovation and investment activities, organizing large-scale high-tech and high-science, cost-effective production, creating industry clusters, developing complexes and centers that meet world requirements and real material production sectors of the economy;

- ✓ to develop measures to increase the potential of the agrarian food market and develop its infrastructure, to accelerate trade turnover, to improve and improve the efficiency of technical and technological means and methods of transporting agricultural products, to create wholesale trade, marketing and logistics centers;

- ✓ development of organic agriculture in the process of gradual transition to the formation of "green economy", etc.

At the same time, it is necessary to pay special attention to its specific features when predicting the development of agricultural industries. Because the geographical location of the regions, natural and climatic conditions and the uncertainty (risk) in it have a significant impact on the stability of agricultural development and the reliability of the obtained results. Because its effect primarily increases the potential nature of crop yields, production costs and profitability.

In addition, changes in crop yields directly affect not only agricultural products, but also livestock productivity. For these reasons, in our opinion, focusing only on the agricultural sector in determining the volume of agricultural production reduces the probability of achieving the expected results, and therefore, it is necessary to take into account the interdependence of all sectors in the development of the agrarian sector. Because "the probable nature of crop yield and the impact of this parameter on the volume of production of agricultural and livestock products require additional efforts by agricultural producers to maintain stable economic relations with consumers of raw materials and food market"[2].

Also, the fact that agriculture is largely related to living organisms also determines the specific nature of the field perspective, as more biological factors are prioritized in this process. After all, perspective setting programs cannot speed up or slow down the development cycles of plants or animals, that is, they cannot change the nature of the parameters of the development of living organisms.

Another unique feature of the scientific forecasting of changes in the volume of production in agriculture is the development biof land resources, including agricultural land, which are considered the main means of production and the subject of labor, their location by region and different productivity factors (salinity level, availability of water , underground water level, etc.) "Regular

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[1] The Global Competitiveness Report 2001-2002, Executive Summary: Competitiveness and Stages of Economic Development, Michael E. Porter, Jeffrey D. Sachs, John W. McArthur.

[2] Abulkosimov Kh.P., Abulkosimov M.Kh. Factors of ensuring food safety in Uzbekistan.-T.: Economy and finance. - No. 8, 2015. - 19 p.

improvement of arable land reclamation creates opportunities to create additional opportunities in the future, to bring crop productivity to the standard level"[3].

Therefore, the justification of programs for determining the perspective in the agricultural sector requires taking into account the factor of the operation of the competitive market as a result of the influence of the supply and demand mechanism. Due to the fact that their tendency to change, in turn, affects the prices, the activities of product (goods) producers require regular analysis of the dynamics of the increase or decrease in the level of profitability. In addition, it is important to correctly assess the level of risk, especially in agriculture. Because this industry is directly related to nature, the risk is high compared to other industries. Therefore, according to the researches of P. Cooke, "the effect of natural and economic uncertainty factors should be aimed at justifying several possible scenarios for the development of the predicted object."[4]. This, in turn, implies an increase in the scope and number of tasks to be solved. In our opinion, the selection of the most optimal scenario includes taking into account the system of selected priorities for the development of agricultural sectors, as well as the assessment of risks and resource opportunities.

According to the results of the research carried out in the field, economic-mathematical methods and models are of priority in the development of programs for determining the perspective of agricultural development, and the following features should be taken into account when using them, i.e:

➢ the nomenclature of the final products and raw materials of producers is relatively limited due to the fact that agricultural production is technologically almost identical. Therefore, economic-mathematical methods and models will have unknown branches or sectors, types of agricultural products, etc., in the basis of development parameters. In this case, the scale of the issues raised will be small compared to technical areas;

➢ such a relative technological demand is characteristic for the agrarian sector, which requires producers of food products and agricultural raw materials to be engaged in the reproduction of labor objects and means of production, albeit partially, but constantly. A positive solution to this issue, in turn, ensures the reliability of the parameters obtained based on the use of mathematical modeling methods.

Thus, the prospecting program should be considered as a system of research aimed at clarifying the trends in the development of economic relations and finding optimal solutions for achieving these development goals. The main task of this is, on the one hand, to determine the promising directions of development of the studied field in the near or long future, and on the other hand, to help optimize the current and long-term planning and regulation of the field or enterprise. In this case, the main principles, i.e. appropriateness, rationality, consistency, correct selection of factors, their interdependence, and degree of accuracy, play an important role as preliminary rules for the development and justification of programs and measures for the development of the object or subject under study. (table 1).

Also, in the study of the field of knowledge related to the use of economic-mathematical methods and the selection of the most optimal ones, it is necessary to divide them into types of modeling such as extrapolation and the method of least squares. These methods are based on the economic-mathematical theory, and in addition to ensuring the reliability and accuracy of the obtained parameters, they significantly reduce the time of their implementation and allow for information processing, analysis, and methodical-practical evaluation of the results.

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[3] Umurzokov O'., Sultanov B. Important aspects of evaluating the effectiveness of remedial measures. -T.: Agroeconomics. - No. 1, 2017.- 32 p.

[4] Cooke, P. Regional innovation systems, clusters, and the knowledge economy / P. Cooke // Industrial and Corporate Change. – 2001. – Vol. 10(4). – P. 945-974.

Table 1. Methodological principles of the analysis of agricultural development in conditions of uncertainty.

№	Principles	Composition and main functions
1	**Multiple options**	Multivariate analysis requires development and the most optimal option is selected from among the development scenarios.
2	**Systematic**	It includes the creation of a system of indicators, methods and models that correspond to the purpose and content of a specific object, allowing to create a complete picture of its development.
3	**Continuity**	Forecasts for different periods and stages should be developed and linked to each other (long-term, medium-term and short-term).
4	**Complexity**	The result of each analysis requires focusing on the main goals and directions of resource development.
5	**Optimality**	To ensure the development of the network, it is necessary to choose the most effective option among all options.
6	**Motivation**	Ensuring the interest of participants in the process of forecasting in the implementation of development goals.

In particular, the extrapolation method is one of the important forecasting methods, which makes it possible to comprehensively analyze the existing indicators of the past periods and stages (at least 5-8 years) and develop the prospective parameters of the object or subject based on them. Currently, within this method, it is known that there are many equations, which play an important role in determining the trends of processes, providing information necessary for linear evaluation of the correlation and quadratic dependence of the phenomenon. Information is obtained from the following database, namely https://biznes-prost.ru/metod-ekstrapolyacii - 2.html. The use of these base materials is allowed only if there is a bridge between them, that is, a logical connection.

Modeling of economic processes in the conditions of competition in the market economy, especially in the food market, has its own characteristics. First, there is always risk and uncertainty in the market; secondly, limited resources; thirdly, the existence of competition between producers and consumers under the influence of supply and demand ratios for types of goods; fourthly, the need to anticipate the future state of economic indicators, etc. Therefore, in this case, it is important to consider and evaluate the influence of endogenous and exogenous factors.

In this regard, in our opinion, economic models and methods are the creation of economic-mathematical models that provide opportunities to analyze economic processes and determine the trends of their change, along with the analysis of the problem and related factors based on the use of information and communication technologies, the influence of endogenous and exogenous factors, especially , is an objective necessity in the conditions of digitization of economy and technologies. It should not be concluded that the effect of all factors at the same time is equal to the sum of the effects of each of them. Because the final GDP volume obtained from sectors and industries of the country's economy varies under the relative differences between endogenous and exogenous factors. In particular, in Uzbekistan between 2000 and 2012, a regular increase in GDP was observed in almost all sectors, including average physical growth in industry 4922.3 billion sums, in agriculture 4863.2 billion sums, in construction 1362 billion sums, in transport and communication 2607.1 billion sums and 2108.5 billion sums in trade.

In order to analyze and estimate the level of inter-sectoral change of GDP, according to our recommendation, it is appropriate to use the following econometric model, namely:

$$Y = f(x_1, x_2, \ldots, x_n), \text{(1)}.$$

where Y is the main endogenous indicator;

- $x_1, x_2, \ldots, x_n$ – indicators of exogenous factors affecting the level of the final endogenous indicator obtained.

The results obtained with the help of this model are used to develop deterministic and stochastic models of business processes of the national economy, industries and enterprises, as well as economic models that can systematically control these processes in terms of quality and quantity. allows. After all, "determining the volume of production of agricultural products in the agro-industrial complex is special scientific research that determines possible directions, results of the development of objects and events, as well as the perspective of the development of the object.". First of all, the goal of the development of the economic system is determined, and possible future situations are determined. Its results are used as an information base for the development of the most optimal development options and complex programs, which are selected as effective.

In particular, in order to determine the volume of production related to the prospects of agricultural development and to put them into practice, economic models are created that assume the combination of not only factors and problems affecting the increase of profitability, but also interrelated and influencing factors such as the capacity of personnel in the field, the level of mechanization and the use of chemical agents. Today, due to the purposeful use of modern information technology tools in the calculation of these models, the level of accuracy and reliability of the obtained results creates the basis for the effective implementation of the assigned tasks.

It is known that more than half of the yield of most agricultural crops is accounted for by mineral fertilizers and, therefore, it is important to calculate the exact amount and proportions of mineral fertilizers applied to cultivated areas. Already, there is a strong correlation between the amount of fertilizer applied to cropland and yield indicators. From the point of view of science, the connections that change the average value of one factor to another are statistical or correlational connections, and they mainly represent a mathematical model of multi-factor economic processes in the form of production functions. Therefore, it is necessary to determine the relationship between productivity, productivity, cost and a large number of factors that affect them in the form of mathematical functions in agricultural sectors. In particular, in most scientific sources, the multifactor linear correlation-regression model is generally expressed by the following formula, i.e:

$$Y = a_0 + a_1x_1 + a_2x_2 + ...a_nx_n \text{ ёки } Y = a_0 + \sum_{i=0}^{n} a_n x_n ,$$

Where:

Y - is an involuntary variable criterion indicator (for example, yield, productivity, GDP, gross yield, cost, profitability, etc.);

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a_0 – arbitrary variable free number;

$a_1, a_2...a_n$ – the number of arbitrary factors selected for the model;

$x_1, x_2 + ... x_n$- type of independent factors included in the model.

Therefore, multifactor linear correlation analysis models are a set of methods of mathematical statistics, which are widely used to quantitatively express the degree of correlation between the factors of the studied phenomena. Also, various other functions are used as a deterministic basis in economic modeling methods, which are selected based on the characteristics of periodic changes of the studied process. However, the main complexity of this approach is explained by the fact that groups of functions of approximation (from the Latin meaning the closest, the closest) are very sensitive to each other. Approximation is important from the point of view of expanding the possibilities of studying the quantitative and qualitative properties of the object in relation. In addition, the choice of a certain type of deterministic framework is associated with certain difficulties and a certain level of subjective problems if there is no scientifically based information about the process. For example, the COVID-19 pandemic has forced countries to review their food supply systems and implement appropriate measures. Various bans, restrictions and quarantines have complicated food supply chains as well as increased consumer spending and reduced purchasing power.

The development rate of the agrarian sector of the People's Republic of China, which is considered the world's leader in the production of agricultural and food products, decreased by 3.2% in January-March 2019 due to the pandemic to 1.02 trillion. yuan (about 42.82 billion), industry - by 9.6%, 7.36 trillion. up to yuan ($1.04 trillion), service industry - by 5.2%, 12.27 trillion. yuan ($1.73 trillion)"5.

In general, the analysis of the reforms carried out in the development of agriculture shows that "in the conditions of the pandemic, the implementation of a set of measures, including state support, is one of the important tasks for the stable operation of this sector." From this point of view, based on the study of the world experience, we can see the organizational and economic factors affecting the development of agriculture in the analyzed period as follows: Figure 1.
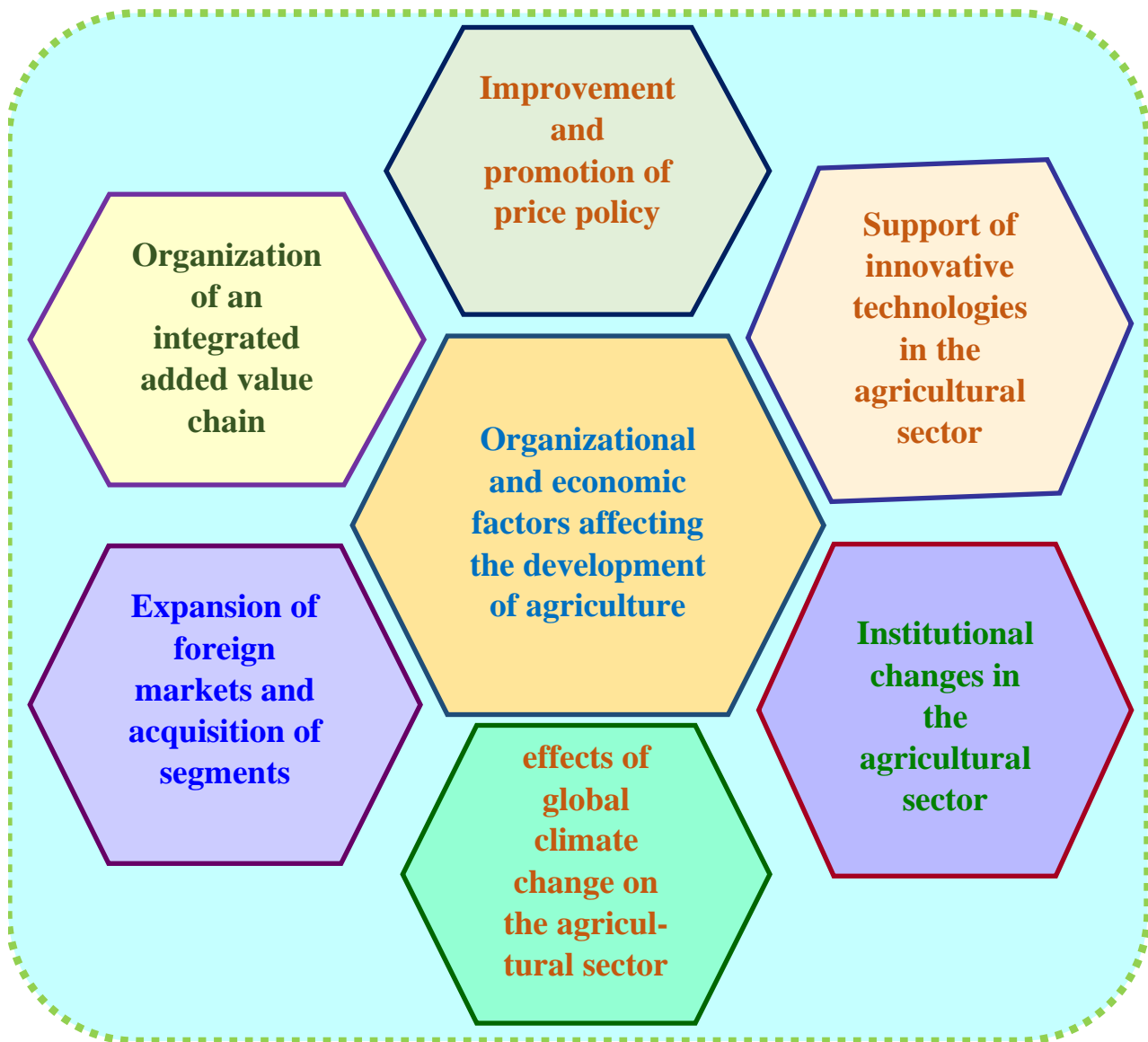
1 picture. organizational and economic factors affecting agricultural development.

From Figure 1, we can see that improving and promoting price policy in developing countries, the majority of farmers are financially and technologically weak, because they use traditional technologies due to their lack of land and other necessary assets, and they are unable to effectively use limited resources based on price. they pay attention.

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[5] The Straits Times. 2020. 50% wage offset for food and beverage firms to cope with coronavirus outbreak [онлайн]. [По состоянию на 15 апреля 2020 года].www.straitstimes.com/politics/covid-19-50-per-cent-wage-off-set-for-food-and-beverage-firms

An integrated value chain brings together farmers, processors, retailers and consumers in a complex relationship to provide valuable information and, where necessary, finance, define and enforce sanitary and phytosanitary standards, share risks, and support funding for research and innovation.

1. Expansion of foreign markets and acquisition of segments. Studying the demand in foreign countries for products that are manufactured or can be manufactured in our country, developing a strategy for entering and competing in the market segments of such goods will have a positive effect on expanding the amount and type of exported goods and the geography of countries.

2. Changes in climate factors. To date, meteorological factors have not been sufficiently taken into account in the analysis of the impact on agricultural production. Weather and climate are among the biggest risk factors affecting agricultural productivity and management.

3. Institutional changes. In our opinion, the following should be mentioned as legal factors of effective management and development of the enterprise: agreements on tariffs and trade between countries, customs and tax policy, local authorities and government regulations..

4. Selection of innovative technologies. Due to the limitation of land and water resources, it should be noted that prospective development of agriculture, increasing the volume of products, improving their quality and reducing their costs directly depends on the efficiency of using innovative technologies that save these resources.

In conclusion

In short, the correct assessment of the perspective is considered the basis of scientifically based optimal decision-making, increasing the scientific level and effectiveness of planning one or another activity, developing short, medium and long-term concepts and their targeted implementation, systematic analysis and its Based on the results, it serves as a means of supporting the development of programs and road maps for the prospective development of the object (subject), ensuring their scientific basis and putting them into practice.

In the context of the transformation of the agrarian sector, it is our republic's republic to solve problems such as the prospective development directions of agriculture and the parameters of future changes in the volume of branch products, especially food types in a scientific and methodological way, the selection and implementation of optimal forecast results, based on the use of economic models and innovative information technology tools. is important in increasing the competitiveness of agriculture and food products in world markets.

From the point of view of determining the strategic directions of agricultural development in the processes of mutual transformation and modernization of economic sectors in the correct assessment of the future, their implementation in accordance with the conditions of changing market competition, the advantages, scientific and methodological-practical significance of this research work are justified, determining and managing the prices of products in the market, the use of the Markov chain model is the basis for creating the possibility of a comprehensive economic analysis of the price policy and competitive environment in the food market.

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7. PF-5969 of the President of the Republic of Uzbekistan dated March 19, 2020 "On priority measures to mitigate the negative impact of the coronavirus pandemic and global crisis on economic sectors" (www.president.uz) and April 3, 2020 "During the coronavirus pandemic, the population , Decree No. PF-5978 "On additional measures to support economic sectors and business entities" (www.president.uz).