

A methodology for comprehensive analysis of agricultural development management problems

Una metodología para el análisis integral de los problemas de gestión del desarrollo agrícola

Sergey Mikhailovich GORLOV [1](#); Natalia Fedorovna KRIVOROTOVA [2](#); Zukhra Soslambievna DOTDUEVA [3](#); Denis Aleksandrovich SYROMYATNIKOV [4](#); Dmitriy Borisovich LITVIN [5](#)

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ABSTRACT:

The study of the relevance of the developing management trends in agriculture is rationalized by the fact that the agrarian sector is one of the most important and most dynamically developing sectors of the national economy. The aim of the study is to identify and systematize the methodological prerequisites for solving the problems of sustainable development of rural areas and their management. It was concluded that the sustainable development of rural areas contributed to the fulfillment of their economic functions, including the provision of food, agricultural raw stock, public goods, the production of goods and services, the preservation of the rural way of life and rural culture, enhanced reproduction of the population, development of public welfare and living standards, maintaining the ecological balance in the biosphere, as well as overcoming the interagency disunity between various levels of governance when deciding on the development of rural areas, which implied social partnership among the rural population, regions and the state. This made it possible to deepen the understanding of the nature of the emergence of agrarian crises and to justify the stability of the crisis trend as an initial prerequisite for the formation of a system for managing the development of both the

RESUMEN:

El estudio de la relevancia de las tendencias de gestión en desarrollo en la agricultura se racionaliza por el hecho de que el sector agrario es uno de los sectores más importantes y de mayor desarrollo dinámico de la economía nacional. El objetivo del estudio es identificar y sistematizar los prerequisites metodológicos para resolver los problemas del desarrollo sostenible de las áreas rurales y su gestión. Se concluyó que el desarrollo sostenible de las áreas rurales contribuyó al cumplimiento de sus funciones económicas, incluyendo el suministro de alimentos, materia prima agrícola, bienes públicos, la producción de bienes y servicios, la preservación del estilo de vida rural y la cultura rural, la reproducción mejorada de la población, el desarrollo del bienestar público y el nivel de vida, el mantenimiento del equilibrio ecológico en la biosfera y la superación de la desunión interinstitucional entre los distintos niveles de gobernanza al decidir sobre el desarrollo de las zonas rurales, lo que implica una asociación social población rural, regiones y el estado. Esto permitió profundizar en la comprensión de la naturaleza del surgimiento de las crisis agrarias y justificar la estabilidad de la tendencia de la crisis como un requisito previo para la formación de un sistema para gestionar el desarrollo

entire economy and the agricultural sector, particularly in the context of analysis of the cyclical development of the economy and modern crisis theories.

Keywords: agricultural development, management problems, national economy.

de toda la economía y el sector agrícola, particularmente en el contexto del análisis del desarrollo cíclico de la economía y las teorías de crisis modernas.

Palabras clave: desarrollo agrícola, problemas de gestión, economía nacional.

1. Introduction

The high degree of instability of the Russian agro-industrial complex to the impact of the crisis and weather anomalies, especially its system-forming sphere – agriculture, testifies to the need for an audit of its development strategy, which challenges economic science with complex research tasks of a theoretical analysis of the current system of strategic management of agricultural production development and working out some directions and mechanisms for its modernization.

In the conditions of institutional changes occurring in the branches of crop production and animal husbandry, the demand for the justification of strategic management model of agricultural development adequate to anti-crisis imperatives is most acute. Since its structure is characterized as disintegrated, the theoretical comprehension of the process of external and internal influence on the agricultural sector and the development of a set of measures that facilitate the overcoming by the agrarian sphere's branches of the state of recession become a fundamental academic problem.

Along with the incompleteness of works to substantiate strategies for the development of farms, there is a need to find new approaches to the choice of forms, methods and tools for their state support. Its level in Russia does not meet the standards set by the WTO rules, as a result of which the production and commercial performance of a significant part of farms does not cover losses, which leads to a reduction in the physical and economic size of farms of different specialization and indicates a recession. In the conditions of the growing disparity in prices for products of industry and agriculture, the prices for machinery, mineral fertilizers, electric power and oil products increase 3.0-3.5 times faster than those for agricultural raw materials and foodstuffs. To increase the level of technical equipment in the agrarian sector of Russia, the production of combine harvesters has increased by more than 50% over the past 10 years, while the supply of tractors and universal loaders to the agrarian sector has increased by 2.0 and 3.3 times, respectively. However, the coverage of the Russian agricultural sector with the main types of equipment is only 50% of the normative level. The formation of a modern material and technical base in the rural economy of Russia is hampered by the disproportionate distribution of profit, which is carried out in favor of the entities of processing industries and trade.

In such conditions, the main task of economic science is to develop strategies for managing the development of agricultural production on the basis of modern approaches to identifying the direction of economic growth. With regard to agriculture, this task is institutionalized in the Concept of Socio-Economic Development of Russia until 2020 and is substantiated by the need for comprehensive studies of the essence, structure and directions of strategic management of the development of the agrarian sphere that are relevant to the current state of this sector.

2. Materials And Methods

General provisions of the authors' study are compiled on the basis of the theoretical and conceptual provisions presented in the works of Russian and foreign researchers in the field of agricultural development (Elchaninova *et al.*, 2014; Evans *et al.*, 2002; Eswaran, & Kotwal, 1986; Acharya, 1997; Braverman, & Stiglitz, 1982; Sharma *et al.*, 2012).

The analysis of publications on the problems of agricultural development in the territorial agro-socioeconomic environment has shown that mainly the problematic aspects are conditioned and similar to the system-wide negative phenomena of the development of the agricultural sector of the economy. In this context, the following publications are worth highlighting:

1. Works connected with the development of rural tourism, and studying the directions of diversification of the rural economy (Sharpley, 2002);
2. Lerman (2001) describes the experience of implementing reforms aimed at improving the efficiency of agriculture in countries with transition economies;
3. Investigation of the impact of globalization processes on the development of agrarian business (Bernstein, 2004), as well as the impact of economic crises on various aspects of the functioning of agricultural organizations (Lobao, & Meyer, 2001; Bobryshev *et al.*, 2015a; Bobryshev *et al.*, 2015b);
4. Studying the issues of agrarian political economy (Buttel, 2001; Bernstein, & Byres, 2001), which creates a conceptual basis for the interaction of economic agents in the agrarian sector (Byres, 1995);
5. Study of the issues of balanced development of rural areas (Marsden, 1995; Bernstein, 1996). In this context, considerable research interest is provided by studies on the issues of the agrarian structure and the balance between large and small farms in the agrarian sector (Deininger, & Byerlee, 2012);
6. Studying the experience of forming strategic directions of agricultural development in different countries (Omamo, & Diao, 2006).

(Zhang *et al.*, 2007) is also worth mentioning as it carried out a detailed analysis of the impact of ecosystem services on agricultural productivity. The problem of sustainable ecological development of agriculture is described in (Shi, & Gill, 2004). In particular, the authors propose a system dynamics model (AISEEM) for studying the potential long-term ecological, economic, institutional and social interactions of rural areas, enabling to develop the most effective scenario of the agrarian policy.

The paper (Irwin *et al.*, 2010) provides an overview of the most important results of economic research, which made it possible to conduct the largest transformation of rural areas, to implement qualitative transformations, to introduce new technologies and innovations.

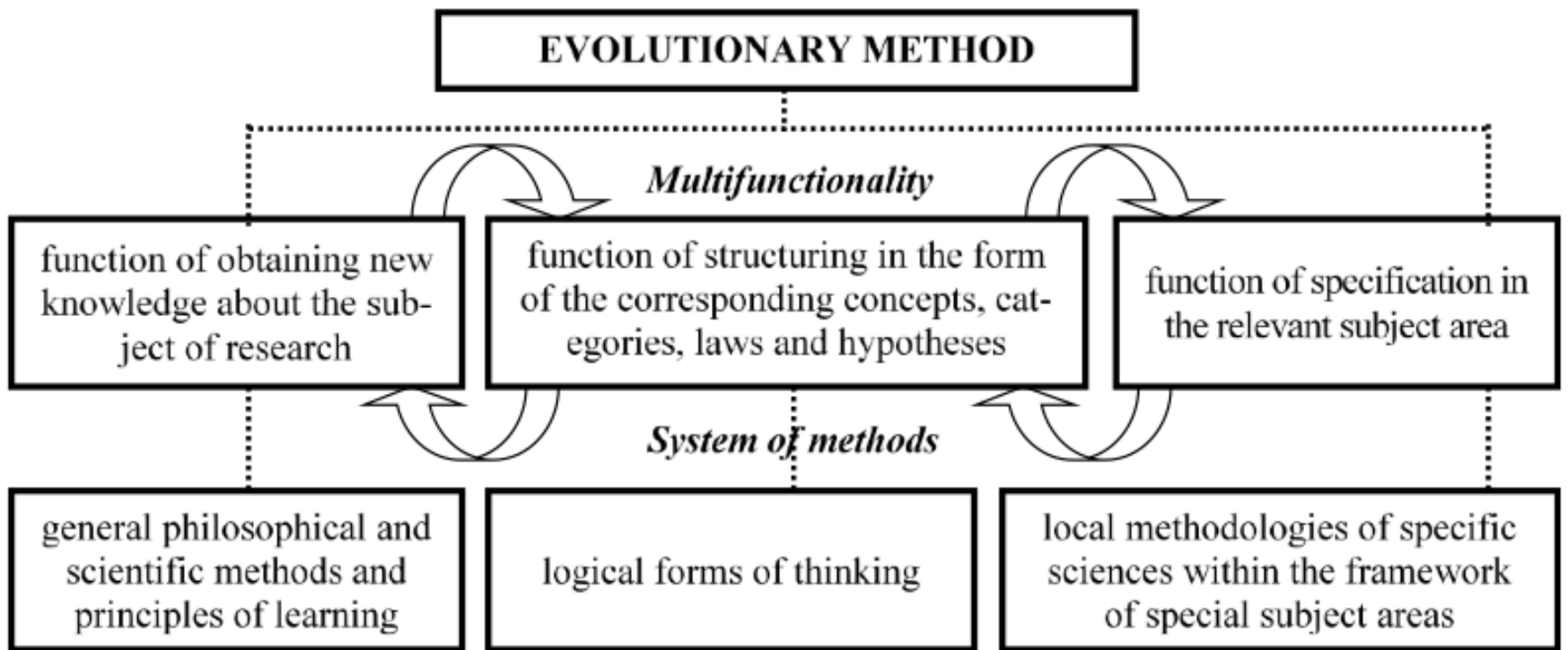
The formation of a system of methods of scientific cognition presupposes the structuring of this epistemological process. At the same time, within the framework of the management methodology, there is a variety of approaches to identifying its structure and levels of manifestation. In the authors' opinion, the most compliant with the modern state of economic doctrines is the evolutionary method, which acts as a general scientific tool for theoretical research (Figure 1).

Based on the above, one can distinguish four levels of manifestation of the evolutionary approach:

- first – is based on the views on the phenomena of the surrounding world, relating to the subject of the analysis by the humanities;
- second – includes theories, without studying which it is impossible to ensure the development of a particular scientific direction;
- third – forms the representations required for various areas of scientific research;
- fourth – a methodology is developed for managing the development of the sphere in question, that is, the agricultural sector in its interconnection with the external environment.

Figure 1

Multifunctionality of the evolutionary approach
to the management of agrarian production



The methodology of management should be developed on the basis of using various methods of scientific research, as well as taking into account the imperatives of real production and the needs of economic entities. On the other hand, the methodology of cognition, in the manner of the inverse effect on the object under study, facilitates the diffusion of research tools into mutually complementary approaches (Figure 2).

In support of this are the provisions of the modern management theory, which recommend the use of complex, process, situational, behavioral and other approaches to managing the development of entities in the real sector of economy. Thus, the use of an integrated approach objectively conditioned by the notion of organizations as open systems closely connected with the external environment is the basis for the formation of management epistemology.

From the viewpoint of the process approach, management can be considered as a process aimed at achieving the goals of economic entities through the implementation of interrelated actions. These actions are in themselves a process that is characterized by a combination of certain decisions and communications. However, in the authors' opinion, the management of the development of agriculture should be viewed not as a set of specific actions, but as a system of organizational and economic relations that are formed with regard to the production and marketing of agricultural raw stock and foodstuffs. Its functioning is based on the integrative unity of the constituent parts (which makes the system more stable in comparison with the set of elements) and is characterized by integrity, complexity and adaptability.

Therefore, the methodology for managing the development of the agrarian sector should be implemented through the use of evolutionary, systemic, anti-crisis, reproductive, integration, institutional and adaptive approaches. The evolutionary approach reflects the worldview interpretation of the results of the study of management from the point of view of their gradual change and on the basis of an ascent from the simple to the complex, and also from the lower to the higher. This solves the problem of determinism, related to the search for information about the subject of research being beyond the scope of assessing the impact of changes in the external environment on it. In this case, the evolutionary approach forms the substantive basis of the methodology for the analysis of managerial processes, which makes it possible to study management in the context of the complementarity of its constituent parts.

Figure 2
Methodology of managing the development of the agrarian sector

METHODOLOGY OF ANALYSIS OF STRATEGIC MANAGEMENT OF THE AGRARIAN SPHERE DEVELOPMENT

As a system of organization of theoretical activity

Methodological principles

As rules of building a scientific model

- integrity
- reasonableness
- responsibility
- efficiency
- optimality
- rationality
- activity
- objectivity

Methodological approaches

As an aggregate of positions to determine the common goal and strategy of research

- evolutionary
- system
- anti-crisis
- integration
- institutional
- adaptive
- reproductive
- innovative
- comprehensive

MANAGEMENT OF AGRICULTURAL DEVELOPMENT:

The system of organizational and economic relations in the production and marketing of agricultural raw stock and food, the functioning of which is based on the integrative unity of all components and is characterized by integrity, complexity and adaptability

Undoubtedly, the basic fundamental principles of the unity of theory and practice, certainty, concreteness, cognizability, causality and objectivity remain unchanged. Their application ensures the reliability of scientific ideas on general management as a science that studies the cause-effect relationships of the corresponding control actions. However, for the formation of a system to manage the development of agriculture, these general scientific principles are clearly insufficient.

In identifying the principles, forms and methods of management, a certain role is played by the achievements of cybernetics, systems theory and innovation science. The application of the cybernetic approach allows modeling special systems related to the perceiving, remembering, processing and exchanging information. The use of methodological achievements of the systems theory provides for testing the integrity of the object and the variety of its internal links in the direction of forming the basis of isomorphism. This theory not only describes the process of the functioning of a system, but also theoretically comprehends its organizational changes in the long run. By implementing the approaches of the theory of innovation, some mechanisms are identified for adapting the subjects of management to a changing market environment. As a result, innovation can be appropriately characterized as an interdisciplinary methodology that assures the integration of general and specific knowledge. When testing its provisions, special sciences retain their independence and specificity in conditions of "self-analysis" of actual data and their "self-cognition".

No less important method of scientific research is considering a systematic approach that examines an object in the unity of its external and internal connections. The implementation of this approach is based on the study of the causes and consequences of management in conjunction with the analysis of the performance indicators of its generating and supplementing subsystems.

In the authors' opinion, the innovative approach to the formation of a strategic management system is adequate to the imperatives of acrisis economy, since its content characteristics are based on the use of tools that regulate chaotic market relations within the framework of intersubject interaction.

Acting as an alternative to well-established, traditionally conservative concepts, the innovative approach reflects the objective necessity of anti-crisis development of the agrarian sphere on the basis of public and private partnership. Undoubtedly, anti-crisis regulation of the agrarian sphere, although oriented in the long-term perspective to increase the physical size of farms, should take into account the need to introduce resource-saving technologies, as the distribution of resources from the federal and regional budgets acquires target nature and is implemented seeking to preserve the potential of agricultural producers and its prospective augmentation (Table 1).

Table 1
The main components of the traditional and innovative approaches
to the strategic management of real economy development

Traditional approach (F. Taylor, A. Fayol, E. Mayo, A. Maslow)	Innovative approach (T. Peters, R. Waterman, I. Ansoff, P. Drucker)
Organizations form a "closed" system, the goals, objectives and conditions of functioning are realized on an independent basis	Organizations form an "open" system characterized by a unity of factors of the internal and external environment
The indicator of success is the increase in the scale of production	The growth in the scale of production is subject to the task of improving the quality of products and services
The main tasks of strategic management: rational organization of production, efficient use of resources, increase in labor productivity in the long run	The main tasks of strategic management: ensuring an adequate response of organizations to changes in the external environment and their adaptation to its conditions
The main source of achieving the goal: material resources of organizations	The main source of achieving the goal: the performance results of organizations
The system of strategic management is based on the control of all types of activities, norms, standards and rules of the operating of organizations	The system of strategic management involves the use of innovations and is based on the rules of conduct of organizations and their counterparties

In the reproductive and evolutionary direction, counterparties of economic entities are also grouped, providing services for the agrarian sphere.

The first group of these entities unites enterprises that supply the factors of production to agriculture, and organizations that help ensure their rhythmic operation. These include: corporate entities of agricultural machinery, transport firms, organizations that provide engineering maintenance of farms, repair shops, research institutions and other service enterprises.

The second group of contractors of agricultural production is represented by organizations of food industry, procurement offices, enterprises engaged in purchasing, storing and supplying foodstuffs to federal and regional funds, wholesale and retail trade firms, and individual entrepreneurs.

The third group of entities that combines agricultural contractors includes commodity exchanges, wholesale markets, auctions and fairs that provide trading in agricultural raw stock. They are supplemented by financial and credit institutions (banks, insurance companies, investment funds) and organizations providing consulting, marketing and institutional services to farms.

The fourth group of entities that take indirect participation in the organization of the reproduction process include governance structures at the federal, regional and municipal levels. They do not have direct impact on the planning of agricultural production, but considering the motivation of farms, through the use of institutional agreements, can form

an environment that ensures sustainable operation of crop and livestock sectors.

Approbation of the systemic approach also requires an assessment of the types of intersubject relations that form the basis of institutional regulation in the agrarian sphere. Their formation makes it possible to plan the volumes of agricultural production corresponding to demand and to manage limited resources through multiparty contracts. In order to increase the effectiveness of this management, farms can create small wholesale markets, supply and marketing and service cooperatives. These structures integrated at the local level provide the agricultural sector with a variety of services, combining production and marketing procedures within a single technologically closed process.

The insufficient effectiveness of the mechanisms of self-adjustment of the agrarian sphere is explained by its specificity and dependence of production results on the natural-climatic conditions (variable factor) and bonitet characteristics of soils (constant factor). This dependence confirms the impossibility of self-development of farms in the fluctuations in crop yields, changes in the number of farm animals and continuous variability of market conditions. Apparently, the features of the agrarian sphere determine the interaction of economic entities and authorities aimed at its economic growth by stimulating demand, increasing investment and optimizing costs. These measures are designed to increase the incomes of farms from the sale of agricultural products and to ensure a reduction in the losses of perishable products.

In this case, the tested multiplicity of management elements in the development of agriculture makes it possible to characterize it as a complex socioeconomic system. Its functioning ensures the solution of diverse tasks on the basis of a branched structure and considerable amount of information. The information approach moves the researchers to study the structure of the category in question from the viewpoint of managing the competitiveness of production at the macrolevel.

However, in a crisis situation and during periods of economic recovery, the management of development of the agrarian sector cannot be performed only at the macrolevel. It requires the implementation of a sufficiently wide range of measures to improve the technical and economic indicators of the production-related operation of farms and the shared financing of crop and livestock sectors.

In the context of the problem under study, it is necessary to take into account the difference between the most important components of management of development of the agrarian sphere: anti-crisis management and anti-recession regulation. Anti-crisis management is a special type of management used within the vector of limiting negative impacts on the process occurring at macro-, meso- and microlevels. It is a reflection of the reaction of business entities to the prevention of threats and points to the expediency of timely application of anti-crisis procedures in the entire system of production relations.

The choice of instruments of institutional regulation in agriculture is based on the principle of responsible behavior of agricultural contractors, implying the obligation to fulfill the conditions and provisions of multiparty contracts. Theoretical studies of the management structure of the reproduction process in agriculture ensure the search for means to improve the efficiency of decisions made by agricultural producers and the formation of adequate measures for their use in practice.

As applied to agriculture, these advantages are manifested in strengthening the market position of economic entities that use the effects of integration with enterprises of processing and trading industries. In this case, integrated enterprises facilitate entering the market, and conditions are created for adapting to anti-crisis imperatives with minimal time costs. In addition, contractual relations with organizations that produce the necessary equipment and materials contribute to the receipt of discounts by small-scale households, which widens the scope of their effective demand. In addition, integrated entities acquire the right to services provided by leasing companies. This allows small-scale farms to overcome the negative effects of the economic crisis with less intensive material costs.

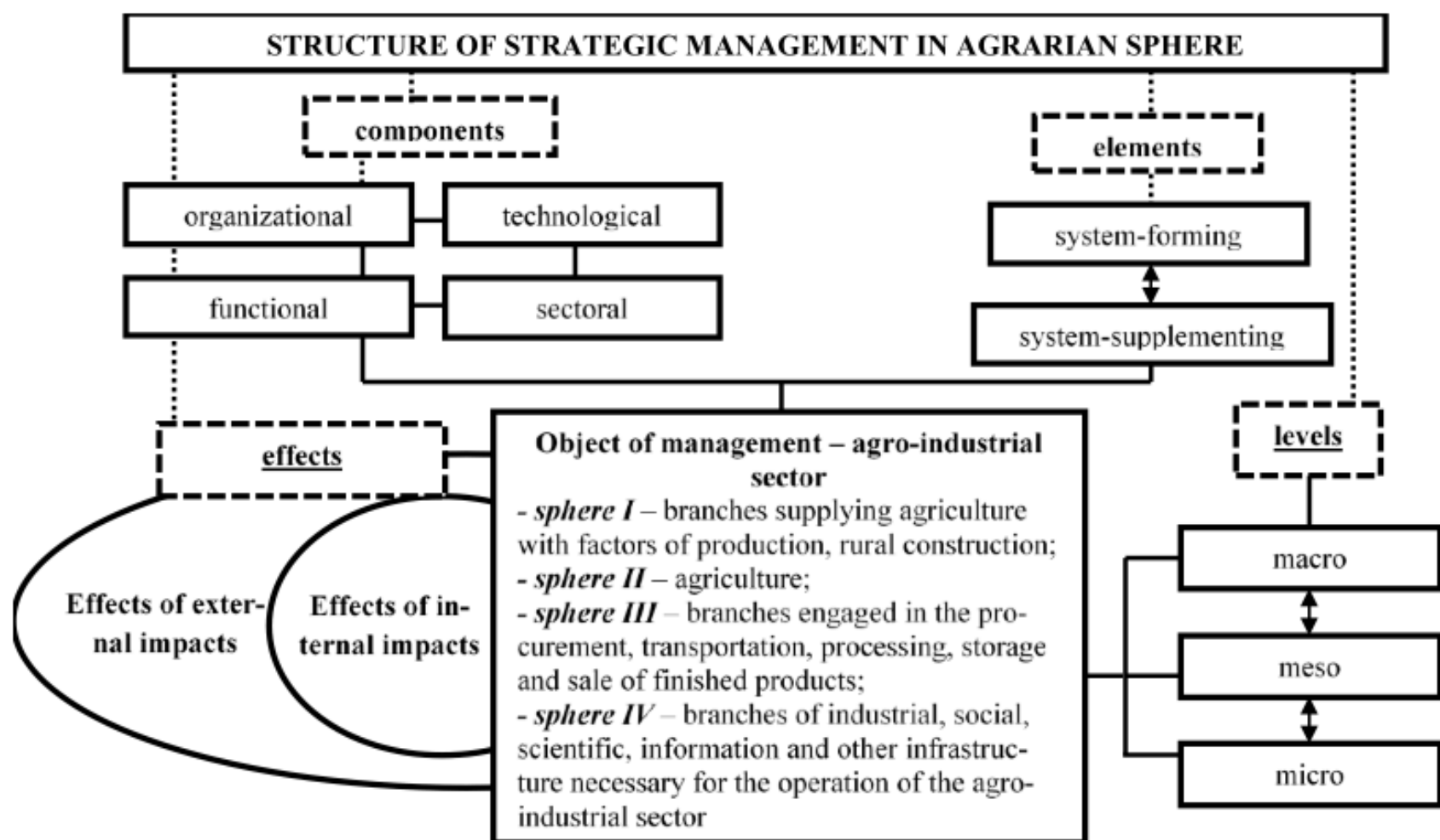
However, large agricultural organizations also benefit from the use of a contract form of interaction with the above-mentioned economic entities. By combining limited resources,

they expand the range of products of agricultural origin and increase their degree of adaptability to the changes in the crisis space.

This state of affairs demonstrates the need for an adaptive approach to the analysis of the causes for management of the development of agricultural production. Its implementation accelerates the adaptation of economic entities to institutional imperatives, since the establishment of mutual relations of economic entities on the basis of their flexible adaptation to changes in the external environment ensures that farms and the state make effective management decisions. The use of this tool contributes to the building of management model for the development of the agrarian sector, which affects the adaptation of small, medium and large farms to the conditions of market transformation. At the same time, this does not mean that the adaptation of institutions or behavior models as applicable to some or other particular purpose occurs consciously or intentionally. When such awareness or intention is present, the adaptation function is called explicit, otherwise it is called latent.

The management structure for development of the agrarian sphere is formed taking into account its decomposition into structural components ensuring the implementation of the relevant functions of strategic management, which is fundamental for the formation of an effective structure of strategic management in the agrarian sector (Figure 3).

Figure 3
Structuring the system for management of agricultural development



Thus, the effective functioning of the complex structured agrarian sector is ensured by the formation of an equally complex level structure of strategic management from the positions of macro-, meso- and microeconomic approaches. This is explained by the fact that the regulatory impact on the organization of reproduction processes in the agrarian sphere is carried out both on the scale of the entire national economy and at the level of its regions, as well as at the microlevel of economic entities.

3. Results

As can be seen, changes in the market situation have an impact on the management activities of farms and are characterized by their ability to influence the adaptation of economic entities to institutional transformation. This influence includes measures to institutionalize economic structures to follow the established rules of behavior in the markets

of agricultural raw stock and food. At the same time, the application of the adaptive approach to managing the development of agriculture directs agricultural producers and the state to use some stimulating tools. This is explained by the fact that the players of the agricultural sector need support not only in the manufacturing industries, but also in the trade sector, where the processing enterprises impose unfavorable conditions to farms in connection with the sale of agricultural raw stock.

On the one hand, the motivation for the interaction of farms and their counterparties involves the implementation of the adaptive approach, and on the other hand, it requires the use of coordinating and complementary form of state regulation. For the rhythmic functioning of agriculture, it is advisable to speak about stimulating the growth of the basic technical and economic indicators of the production and commercial performance of the entities that provide the solution to the problem of import food substitution.

The use of the above approaches to managing the development of the agrarian sphere is based on the methodological principle of interrelation between the economic theory and the real practice of management on site. This conclusion confirms the objectivity of the initial assumptions, but reflects their polymorphic nature, because the theoretical concepts find their change in the process of practical activities of farms.

Of course, the fundamental principles of the unity of theory and practice, certainty, concreteness, cognizability, objectivity, causality and historicism remain unchanged. Their application reproduces the reliability of scientific concepts on general management as a science that studies the cause-effect relationships of the corresponding management-related influences. However, for the formation of system for managing the development of agriculture, the application of the diversity of these general scientific principles turns out insufficient.

4. Discussion

Management instruments that support and stimulate the agrarian sphere should be discussed in the following conditions:

- approbation of evolutionary, systemic, anti-crisis, reproductive, integration, institutional, adaptive and other approaches;
- organization of intrafarm, interfarm, state, municipal and state economic management;
- priority stimulation of effectively functioning economic entities.

The above requirements to a certain extent correspond to the innovative approach to the study of the problem of strategic management in the real sector. A comparative analysis of innovative and traditional approaches indicates that the implementation of the first provides a long-term growth of the agrarian sector by improving the basic performance indicators of farms and their adaptation to highly volatile conditions of the external environment.

The innovative approach to the formation of the system outlined above is adequate to the imperatives of crisis economy, since its content characteristics are based on the use of tools that regulate chaotically developing relations within the framework of the intersubject interaction. Acting as an alternative to the well-established, traditionally conservative concepts, it reflects the need for sustainable development of the agrarian sector on the basis of public and private partnership. At the same time, anti-crisis management in the agrarian sphere, although oriented towards increasing the economic and physical size of farms, should consider the feasibility of introducing resource-saving technologies. In process of their use in practice, the distribution of resources of the federal and regional budgets acquires a target nature and is realized within the vector to conserve the potential available to agricultural producers and its prospective multiplying.

Hence, it follows that the provisions of general and anti-crisis management, the theory of self-organization and the state regulation of the economy, the institutional and evolutionary economic theory, as well as the economy of agriculture, covered in a number of works (Chavas *et al.*, 1998; Azzam, 1998; Mekonnen *et al.*, 2015; Conradt *et al.*, 2015; Petrick, 2013; Bokusheva *et al.*, 2012; Uhl *et al.*, 2016; Goodwin, 2015; Kuijpers, & Swinnen, 2016;

Palma *et al.*, 2010; Buzgalin, & Kolganov, 2016; Wendland *et al.*, 2015; Vander Naald, & Cameron, 2017; Krivorotova, 2016), confirm the thesis on the polymorphic nature of the methodology to manage the development of the agrarian sphere.

5. Conclusion

The content of the management of agrarian sphere development is expressed by the organizational and economic relations that are formed in the agricultural sector, as well as between farms and their partners, regarding the production and sale of food products within a long time lag. To ensure sustainability in the domestic and foreign markets, economic entities use not only the impact tools, but also the means of institutional interaction with their counterparties. This is due to the fact that when implementing sales procedures, farms are forced to establish relations with the enterprises of the processing industry, transport and communications, wholesale and retail. As they are implemented, the managing impacts of farms, combined with the complementary participation of authorities in the organization of the reproductive process, happen to be aimed at preserving the productive potential in a crisis economy and multiplying it in a post-crisis environment. The agricultural sector can function normally only within the parameters of a stable and balanced production management system.

The methodology of strategic management of the development of rural economy can be legitimately based on the use of evolutionary, systemic, anti-crisis, reproductive, integration, institutional and adaptive approaches. They allow the use of scientific research in the vector of identification of forms, mechanisms and tools that increase the effectiveness of interaction among farms, processing and trading enterprises, as well as state and municipal governments. Due to the use of the provisions of general and anti-crisis management, self-government in organizations and state regulation of the economy, institutional and evolutionary economic theory, the cognition of the results of managing impacts of economic entities and authorities acquires a holistic, structured, integrative and adaptive character. Such generalization indicates that the management structure for the development of the agrarian sphere should be examined not only in a functional context, but also taking into account macro-, meso- and microeconomic approaches.

The use of the multicriteria analysis of production management in the agrarian sphere implies the separation of methodological principles for their evaluation, which can be combined into three groups: fundamental, general and specific ones. The first group provides for objectivity, scientific validity, system and complexity, materiality and optimality, efficiency, quantitative determinateness, adequacy, comparability and effectiveness of analysis. The second one indicates the need to take into account the variability, reducibility, reliability, transparency, timeliness and regularity of studies that determine the general requirements for specific indicators. The third one unites the imperatives of the comparability of the options of strategic decisions on the correct choice of the standard for comparison, the use of the time factor, multicriteriaity and differentiation of the indicators of the production and commercial operations of farms.

When justifying and mastering strategies for the development of farms of different forms of ownership, it is necessary to take into account the dynamics of expenditures of agricultural producers and to predict their changes in the long run. This is due to the fact that the implementation of the long-term planning function in the agrarian sector is related to the need to form an optimal structure of economic costs. This need is an anti-crisis imperative, which requires raising the level of federal budget spending to support and stimulate production in the agricultural sector.

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1. Federal State Autonomous Educational Institution for Higher Education North Caucasus Federal University, 355009, Russia, Stavropol, Pushkin Street, 1
 2. Federal State Autonomous Educational Institution for Higher Education North Caucasus Federal University, 355009, Russia, Stavropol, Pushkin Street, 1
 3. Federal State Autonomous Educational Institution for Higher Education North Caucasus Federal University, 355009, Russia, Stavropol, Pushkin Street, 1
 4. Federal State Autonomous Educational Institution for Higher Education North Caucasus Federal University, 355009, Russia, Stavropol, Pushkin Street, 1
 5. Stavropol State Agrarian University Russian Federation, 355000, Russia, Stavropol, Zootechnicheskiy Ln, 12
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