ТЕОРЕТИЧНІ ПРОБЛЕМИ РОЗВИТКУ НАЦІОНАЛЬНОЇ ЕКОНОМІКИ

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MODERN METHODOLOGICAL CONCEPT STUDY ON FOOD SECURITY OF UKRAINE

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СУЧАСНІ МЕТОДОЛОГІЧНІ КОНЦЕПЦІЇ ДОСЛІДЖЕННЯ ПРОДОВОЛЬЧОЇ БЕЗПЕКИ УКРАЇНИ

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СОВРЕМЕННЫЕ МЕТОДОЛОГИЧЕСКИЕ КОНЦЕПЦИИ ИССЛЕДОВАНИЯ ПРОДОВОЛЬСТВЕННОЙ БЕЗОПАСНОСТИ УКРАИНЫ

We consider appropriate use of modern approaches, particularly synergistic ones, in the study of food security. We substantiate the benefits of synergistic campaign using under the development of non-linear, unstable, non-equilibrium dissipative systems – i.e. modern economic and agro-food systems. The presence of non-equilibrium states of agro-food system is the moment of its transition to a qualitatively new phase where it can obtain a higher level of management and productivity. Disequilibrium allows to make a free choice of the option in prospective development of the system out of the different possible directions. Taking into account this fact, we emphasis the importance of quality management impacts on the system at the bifurcation point, where the food supply system could be approached either progressively or regressively.

Key words: *synergistic approach, behavioristic approach, food security system, attractor, bifurcation point, dissipative systems, management system.*

Розглянуто доцільність застосування сучасних підходів, зокрема синергетичного, у дослідженні проблем продовольчої безпеки. Обґрунтовано переваги використання синергетичного підходу в умовах розвитку нелінійних, нестійких, нерівноважних, дисипативних систем, якими є сучасні економічні, у тому числі агропродовольчі системи. Наявність нерівноважних станів агропродовольчої системи є моментом її переходу до якісно нового стану, в якому вона може здобути більш високий рівень організації та продуктивності. Нерівновага дає змогу здійснювати вільний вибір варіанта перспективного розвитку системи з цілого спектра можливих напрямків. З огляду на це особливий акцент зроблено на важливості забезпечення якісного управлінського впливу на систему в точці біфуркації, де система продовольчого забезпечення може бути залучена як прогресивним, так і регресивним атрактором.

Ключові слова: *синергетичний підхід, біхевіористичний підхід, продовольча безпека, атрактор, точка біфуркації, дисипативні системи, управління системою.*

Рассмотрена целесообразность применения современных подходов, в частности синергетического, в исследовании проблем продовольственной безопасности. Обоснованы преимущества использования синергетического подхода в условиях развития нелинейных, неустойчивых, неравновесных, диссипативных систем, какими являются современные экономические, в том числе агропродовольственные системы. Наличие неравновесных состояний агропродовольственной системы является моментом ее перехода к качественно новому состоянию, в котором она может получить более высокий уровень организации и производительности. Неравновесие позволяет осуществлять свободный выбор варианта перспективного развития системы из целого спектра возможных направлений. Учитывая это, особый акцент в статье сделан на важности обеспечения качественного управленческого воздействия на систему в точке бифуркации, где система продовольственного обеспечения может быть привлечена как прогрессивным, так и регрессивным аттрактором.

Ключевые слова: *синергетический подход, бихевиористический подход, продовольственная безопасность, аттрактор, точка бифуркации, диссипативные системы, управление системой.*

Problem statement. In modern science, synergetic approach has become an important methodological basis for the study and understanding of the mechanisms to ensure food security. Extraordinary actualization synergetic paradigm of scientific knowledge at the present stage is explained by absence of stability and constant unpredictable changes in the conditions of economic systems functioning of different rank.

Analysis of recent research and publications. Such researchers as N. Baranovsky, I. Grabar, V. Zhang, T. Zinchuk, A. Erokhina, S. Kapitza, A. Knyazeva, B. Kuznetsova, S. Kurdyumov, G. Malinetskii, A. Myasnikov, V. Sugakov, H. Haken, E. Hodakovsky, I. Yanul and others made a great contribution into establishment of synergy as the science and application of economic research [1–10]. The use of synergistic approach in the study of food security has not found a proper use for now. Thus, the further development of research in this area is extremely important and relevant.

The purpose of the article is characteristics of food security from the perspective of a synergistic approach, and the importance of ensuring quality management impact on the system at the point of bifurcation.

The main results of the study. Methodology plays an important role in the scientific research that allows to combine scientists' vision of the nature of the object with an array Legacy science knowledge and methods of cognition. Fundamental philosophical method of scientific knowledge is dialectical (law of unity and struggle of opposites, the transformation of quantity into quality, negation of the negation, and so on. d.). Dialectics studies the phenomena and processes in the dynamics of interdependence and interdependence, as well as driving force for the development of any system considering the contradictions.

In the development of new food complex the motor of transformations and changes is the contradiction between the new objectives and priorities of the functioning and the old problem of its formation. So, with the destruction of the foundations of the planned command economy with the state subsidizing the agricultural sector and the transition to the principles of self-financing with the need of flexible respond to market conditions changes at the national and global food markets, agro-food system development objectives significantly transformed.

The study of the problems concerning food security should be based on modern philosophical concepts. We tend to view agro-food system development, as evolutionary. The transition to a post-industrial information society, and it further causes corresponding changes in the agro-food sector. They are manifested in the transformation of branch and territorial structures of the food complex, cause the polarization of its development, define the priority of different types of industrial activity and etc.

Transitional stage between the levels of philosophical methodology and methodology of specific sciences is scientific methodology, which involves the use of interdisciplinary approaches and methods in the study of food security. In order to study well-founded systems we see the use of other ones applying a synergistic approach as well.

The feasibility of a systematic approach has no doubt, as the objects of our study (agro-food system, food market, food security, and so on.) have a systemic nature. Agro-food systems, food security – an open system in a state of dynamic equilibrium, and its stability and integrity is determined by a complex internal and external communication, in a manner of interaction of the constituent elements of the system. Important properties of the mentioned systems are: dynamism, persistence, concurrency, integrity and organization, centralization, hierarchy, the uneven development of the individual subsystems, adaptability, self-organization, conflict, evolution, openness, functionality, and so on. d. [1, p. 68].

Food security is a system formed from certain subsystems. There are functional target (agriculture, consumption, sale, distribution of food and reserve) and supply (management, financial, informational, logistical, technological and scientific support) subsystems. This separation is due to the fact that the components of the first subsystem designed to realize directly the main purpose of the food safety system, and the second – to perform a service function, thereby contributing to the realization of this goal.

The above-mentioned subsystems are characterized by different dynamics, they are characterized by contradictions, for example, between the need to satisfy the country's population

with quality food and the desire of producers to maximize their profits by reducing the cost of food production, between the requirements of the WTO to limit the financial support of the domestic agricultural sector and national interests, is to maintain a strong food complex state, and so on.

Thus, a systematic approach is an important methodological basis for the study of food security, including its mechanism. At the same time, there is a lack of stability and constant unpredictable change in the conditions of economic systems functioning of the different rank. Today there is the reason that a systematic approach is inferior to its relevance in favour of synergetic paradigm of scientific knowledge.

Synergetic (from the Greek "synergetikos" – a joint, coherent, joint action) – is an interdisciplinary science that studies the processes of emergence and self-organization, development and decay of various systems, including economic ones. Thermodynamics of non-equilibrium processes, the theory of stochastic processes, the theory of nonlinear oscillations and waves is the theoretical basis of the scientific approach.

In contrast to the systematic approach, synergetic approach is based on the study of non-linear, unstable, non-equilibrium dissipative systems (including the modern economic system) and makes the main emphasis on the appearance of order from chaos, that is, on the phenomena of self-organization in systems. Under the new conditions of functioning the economic systems run its equilibrium state as an intermediate stage on the trajectories of non-equilibrium self-organization. Disequilibrium is necessary conditions for the emergence of new qualities, properties, organization systems, i.e. their development

The application of the synergetic approach elements in the studying of the food security problems, due to the fact that the development of studied categories does not always fit into the traditional patterns of scientific knowledge, and therefore requires new approaches to their analysis and evaluation. Processes of modern agro-food systems and food markets development, as well as the fiscal policy formation in the agricultural sector are often non-linear, that's why they cannot be studied using linear mathematical methods.

At the same time deterministic logic cannot explain many processes taking place in complex dynamic systems. From the positions of a synergistic approach negative trends and processes in the food complex development are incompatible with the global goal of ensuring food security. They can be interpreted as a result of the loosing of food systems balance, transfer them to the bifurcation, and not adaptive development. Here the various fluctuations (internal and external impacts), such as: failed agrarian reforms, the lack of a clear strategy for the development of the agrarian sector of the country and the region, the shortcomings of resource provision, primarily industrial and financial, imperfect structure of food complex, etc., are responsible for the negative unpredictable consequences [1, p. 71].

Depressive, spontaneity and imbalances in development of agro-food systems may be considered as a type of dissipative (chaotic) process, along with the negative phenomena aggravation of social problems in society (poverty, depopulation, in particular the rural population, etc.). It seems to us that the depth of the crisis in the agro-food systems are often determined not so much by external fluctuations, many features of the construction of the systems themselves.

Evaluating the prospects of agro-food system development in Ukraine one should take into account autocatalytic processes. In these conditions concentrations of certain negative phenomena in the agro-food sector determines the increasing of other similar trends in the future. So, the destruction of the productive capacity of the agrarian sector, systems selection and livestock breeding, melioration system, the destruction of perennial plants, undermining natural soil fertility, migration outflow of the working population from rural areas, the devastation of the settlement network, etc. cast doubt on the possibility of a quick exit from the crisis agribusiness in the near future.

At the same time the chaos and the presence of non-equilibrium states of agro-food system is the moment of its transition to a qualitatively new state. There it can get a higher level of organization and performance. When the economic system loses functional stability, self-organization processes of new efficient structures formation arise.

Disequilibrium allows free choice of a particular variant of long-term development of the system from the whole range of possible directions. However, it should be remembered that at the bifurcation point the food system may be involved by progressive or regressive attractor. Then it is possible to increase or decrease the degree of organization and complexity; transition to a new, higher level of development or destruction.

In such circumstances, the need for quality management impact on the system is actualized. In terms of synergy, the effective management of food safety system is to agree on measures of administrative influence with its own laws of evolution and trends in the agro-food system. Ineffective management system consists in imposing such behavior, which it is not peculiar. Thus, even a slight but consistent influence in the bifurcation points can determine the desired noticeable changing in the trajectory of motion (behavior) of the system.

According to a synergistic approach only open system is able to self-organization, closed system must eventually come to a state of maximum entropy and stop any evolution. Confirmation of this conclusion was the destruction of the AFC of former Soviet Union. On the one hand, in contrast to the open, closed agro-food system is able to protect themselves from adverse external influences such as conjuncture in world food markets, fluctuations in world food production volumes, changes in trade policy by the most prominent players in the international food market, the use of individual countries dumping measures, the dictates of the relevant international organizations on measures and dimensions of state support for the development of agriculture etc., as well as instability. Although with time neutralization of their action requires greater efforts. On the other hand, inevitably a critical moment comes, when the system becomes incapable of such a confrontation, loses his balance and destroyed.

The fact that a closed system is organized from the outside (open - organize themselves), through a totalitarian government. Equilibrium of such a system seeks to achieve through the policy-based planning to ensure balanced development of individual subsystems (agriculture, food processing, agricultural machinery and chemical industry, transportation systems, warehousing, storage, distribution of food, etc.). The growth of entropy, which concluded on environment is difficult, makes it inevitable transformation of a closed system in the open.

In the methodology of economic sciences in the study of food security problems still deserve some attention a number of approaches, concepts and theories. A special place among the scientific methods of cognition takes bihavioristic approach. Unlike the previous two, it involves the perception of a certain category (such as agro-food systems, food security, etc.) as the image that is formed in the representation of a person. Behaviorism now widely used in economic research, while, until recently, it was used only in psychology, in particular those of its branches as of the environmental and cognitive psychology.

At the moment, you can define multiple perspective, in our opinion, using behavioristic approach in the study of food security problems:

1. It allows you to select a set of significant problems in the area of food security, together with the use of traditional methods of research, increases the likelihood of their objective identification.

2. It helps to establish the priority of these issues, as well as ranking official indicators of their depth.

3. Comparison of formal defined list of “bottlenecks” in providing food security to their perceptual images, promotes the formation of objective vision of agro-food system prospec-

tive development and the development of adequate measures within the framework of the relevant state, including fiscal policy.

4. Perceptual portraits of key issues should be used to develop strategies for the development of agro-food systems in order to ensure real food security of the country and regions [1, p. 73].

Conclusions.

– Development of agro-food systems are not always subject to the laws of linearity, which means that its study can not only rely on the use of deterministic logic (analysis of the causes);

– in open systems self-organization processes can be made. Interpretation and analysis of them is` beyond the traditional scientific approaches;

– under the influence of various factors, the food system goes to non-equilibrium state, the bifurcation point, offering alternatives for its development;

– agro-food system seeks to achieve a steady state, which is manifested in its movement to the optimal variant of its development (attractor);

– depressive, spontaneously formed and unbalanced agro-food systems can be regarded as a kind of dissipative structures arising in non-equilibrium systems under the influence of various factors;

– explaining the characteristics of the transformation of the structure of agrifood systems may be in the implementation process of self-organization and randomness;

– chaos arising in the food supply is a definite indicator of its “illness”;

– the choice of methods to overcome the negative trends in the development of agro-food systems depends on the degree of randomness [1, p. 72].

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