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**MODELING OF ANTI-CRISIS DEVELOPMENT OF AGRO-FOOD ENTERPRISES IN THE SYSTEM
OF INNOVATION AND INVESTMENT MANAGEMENT
МОДЕЛЮВАННЯ АНТИКРИЗОВОГО РОЗВИТКУ ПІДПРИЄМСТВ АГРОПРОДОВОЛЬЧОЇ
СФЕРИ В СИСТЕМІ ІННОВАЦІЙНО-ІНВЕСТИЦІЙНОГО УПРАВЛІННЯ**

Гук О. В., Мохонько Г. А., Шендерівська Л. П.
Моделювання антикризового розвитку під-
приємств агропродовольчої сфери в системі
інноваційно-інвестиційного управління.
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The organization of modeling the anti-crisis development of agro-food enterprises in the system of innovation and investment management was significantly updated during the war. The study aimed to study the modeling of anti-crisis development of agro-food enterprises in the design of creation and investment management. It has been proven that the anti-crisis management system in organizing the practical work of personnel creates conditions that determine the exceptional priority of the development of professionalism and qualifications of personnel at all levels of agro-food enterprises in the innovation and investment management system. The task of anti-crisis management is to maximally facilitate programs of professional development of personnel based on the proposed model since these measures relate to the development of social capital without disrupting the economic mechanisms of economic regulation. A single agri-food information system will replace paper document flow with an electronic one and automate work processes at agro-food enterprises. In this way, a single information space will be created. When all agro-food enterprises are combined into a single information system, remote control is possible, the purpose of which is to obtain regulated reporting. Conclusions. Implementing the proposed model of formation of the organizational and economic mechanism of anti-crisis management of agro-food enterprises in the innovation and investment management system will allow them to overcome the crisis and stabilize their condition. A unique role in overcoming the problem in the agro-food sector belongs to the implementation of the compulsory insurance system. The functions of information and analytical support should not be underestimated, which includes an information system for forecasting the unfolding of a crisis in the development of agri-food enterprises, information support for a cluster analysis of the crisis state of agri-food enterprises by region, and a single information agri-food system.

Keywords: modeling, anti-crisis development, enterprises in the agricultural sphere, systems, innovation and investment management.

Організація моделювання антикризового розвитку підприємств агропродовольчої сфери в системі інноваційно-інвестиційного управління суттєво актуалізується в період війни. Метою дослідження стало вивчення моделювання антикризового розвитку підприємств агропродовольчої сфери в системі інноваційно-інвестиційного управління. Доведено, що система антикризового управління в контексті організації ефективної роботи персоналу створює умови, які визначають виняткову пріоритетність розвитку професіоналізму та кваліфікації персоналу всіх рівнів підприємств агропродовольчої сфери в системі інноваційно-інвестиційного управління. Завдання антикризового управління полягає в максимальному сприянні програмам професійного розвитку персоналу на основі запропонованої моделі, оскільки ці заходи стосуються розвитку соціального капіталу без порушення економічних механізмів економічного регулювання. Єдина агропродовольча інформаційна система дозволить

замінити паперовий документообіг на електронний і автоматизувати робочі процеси на підприємствах агропродовольчої сфери. Таким чином буде створений єдиний інформаційний простір. За об'єднання всіх підприємств агропродовольчої сфери у єдину інформаційну систему можливий віддалений контроль, метою якого є отримання регламентованої звітності. Упровадження запропонованої моделі формування організаційно-економічного механізму антикризового управління підприємств агропродовольчої сфери в системі інноваційно-інвестиційного управління дозволить їм подолати кризу та стабілізувати свій стан. Особлива роль у подоланні кризового стану агропродовольчої сфери належить упровадженню системи обов'язкового страхування. Не можна недооцінювати функції інформаційно-аналітичного забезпечення, яке включає інформаційну систему прогнозування розгортання кризи розвитку підприємств агропродовольчої сфери, інформаційне забезпечення кластерного аналізу кризового стану підприємств агропродовольчої сфери за регіонами та єдину інформаційну агропродовольчу систему.
Ключові слова: моделювання, антикризовий розвиток, підприємства агропродовольчої сфери, система, інноваційно-інвестиційне управління.

Statement of the problem

After gaining state independence, a challenging economic period began for Ukrainian society, associated with forming a market mechanism, when the state initiated anti-crisis programs implemented in critical social and economic development areas. The agri-food sector is vital to the national economy because its activity is associated with economic, social, and environmental impacts. That is why the ways of implementing concepts of sustainable development while fulfilling the tasks of anti-crisis management in the development of enterprises in the agro-food sector are urgent today's tasks.

Despite enough works on anti-crisis management, it should be noted that the issues of specific mechanisms of prevention and elimination of crisis phenomena in developing enterprises in the agri-food sector still need to be sufficiently studied. With the introduction of martial law, many problems of a methodological, methodical, and practical nature related to management at agro-food enterprises still need to be resolved. Developing agro-food enterprises in implementing national interests and state priorities requires scientific and valuable consideration. More attention should be paid to the issues of the organization of innovation and investment management, which complicates the development of a mechanism for the sustainable functioning of enterprises in the agro-food sector. Therefore, a systematic study of agro-food enterprises' strategy and anti-crisis management tactics is needed to ensure their sustainable development in the conditions of the modern challenges of a globalized society [1-11]. Therefore, the analysis of the formation of a sustainable system of development of agri-food enterprises in Ukraine and the development of proposals for improving anti-crisis management in the agri-food sector have practical and scientific significance. This actualizes the goal and task of this study.

The purpose of the research

To study the modeling of anti-crisis development of agro-food enterprises in the system of innovation and investment management.

Presentation of the main research material

Anti-crisis management, in contrast to regular management, sets specific requirements for the personnel management system. Such determination is due to the correspondence principle between the business and personnel management strategies. Usually, the business strategy for bringing an agri-food enterprise out of the crisis involves:

- focusing on the prompt search for additional service opportunities;
- removing non-core assets;
- inventory optimization, and
- cost reduction.

At the same time, the main task of personnel management is to support anti-crisis measures through effective organization of interaction between management and personnel of agro-food enterprises.

That is why it is necessary to develop a program for anti-crisis personnel management based on stimulating the motivation of personnel. In a crisis, ensuring employees' loyalty in managing the agro-food enterprise and setting tasks is essential. Otherwise, the implementation of specific anti-crisis measures may encounter resistance from the staff. Staff resist change because they are used to working in a certain way and want to keep everything the same. He thinks of familiar stereotypes-images formed in him during his work in standard conditions. The situation has changed, but the stereotypes of behavior remain the same.

It is essential to define the concept of crisis management. Anti-crisis measures should be implemented when the results of agro-food enterprises become very sad. Such an approach weakens the essence of anti-crisis management, denying its preventive, anticipatory function. Therefore, strategic anti-crisis management should not begin with the analysis of the implementation of emergency

measures to prevent insolvency but at the moment of choosing the mission of agri-food enterprises, developing the concept and purpose of its activities, forming and maintaining at a sufficient level the strategic potential of agri-food enterprises, capable of ensuring its advantages for an extended period.

The problem of managing an agri-food enterprise in a state of crisis continues to be tricky because, in market conditions, the activity of many system links is accompanied by numerous signs of trouble. Many enterprises in the agro-food sector still need to pay off their current principal obligations on time. In these conditions, there is a need to develop an effective management mechanism for agro-food enterprises, which still needs to be clearly defined. Any management should be anti-crisis to a certain extent, and it becomes even more so as the enterprise of the agri-food sector enters the stage of crisis development. Each enterprise has a ratio of external and internal crisis factors determining the need for anti-crisis management. The enterprise needs an anti-crisis program for practical use of anti-crisis measures.

The object of anti-crisis management is the emergence and deepening of a crisis in the development of agro-food enterprises, which has negative consequences for its vital activities, elimination, and prevention. Anti-crisis management is a management system that has a complex nature and is aimed at warning, preventing crisis phenomena, and identifying the causes of the crisis, its type, stage and patterns of its course, possible development scenarios, tools for exiting it, with the aim of further functioning of agro-food enterprises.

The analysis of the theory and practice of the anti-crisis management process allows us to conclude that it is inherently strategic and should be built based on balanced and well-founded strategies, which will allow the management of agri-food enterprises to more carefully determine strategic guidelines with the key indicators of the development of agri-food enterprises and take into account the organizational and the financial structure of its elements, which in turn will ensure the effective functioning of the early warning and response system. Thus, in the conditions of war, global financial crisis, growing insolvency, and other economic problems, anti-crisis management, oriented both at preventing problems and at overcoming them, becomes necessary for the effective operation of all enterprises in the agro-food sector.

The problem of developing an anti-crisis program for the agri-food sector and each of its enterprises, that is, determining the anti-crisis measures that must be implemented, belongs to weakly structured or unstructured decision-making problems. The uniqueness and non-standard nature of the formation of the anti-crisis program is because a relatively wide range of alternatives represent a complex object of evaluation.

Decision-making occurs in conditions of information uncertainty and high risk, multifaceted resource provision and the consequences of implementing individual decisions, the growing dynamism of the environment of the agri-food enterprise, and the increase in the interconnection of unique activities. At the same time, when choosing anti-crisis measures, there is a problem of finding the most appropriate solutions, considering the diverse consequences of individual anti-crisis measures, which cannot be reduced to a single indicator. The task of tactical actions is reduced not only to the current repair of the malfunction but also to the forecasting of the resources of the productive operation of the equipment, which requires the personal and professional growth of the personnel of the agro-food enterprise.

First, it is necessary to carry out a conditional decomposition of the agro-food sector based on the target purpose. Let's imagine that all practice is divided into current, related to implementing everyday tactical tasks, and perspective, related to ensuring sustainability based on the constant growth of professional knowledge and professional development. We also define two possible states of these subsystems: action and simple.

The current state of medical practice is an effective operational activity that minimizes the risk of management errors. In a critical management error, the existing subsystem switches from the "active" state to the "idle" state. This circumstance, in a broad sense, leads to lost profit. A simple subsystem that is significant over time leads to the emergence of conditions for the formation of a budget deficit since the requirements for ensuring the plainness of the declared expenses are violated.

A simple subsystem of an agro-food enterprise is when the system is in a state of waiting for the reasons and conditions to manifest its purpose but taking into account the specifics of the industry.

The next stage is determining the natural state of the systems of the agro-food enterprise. The peculiarity of applying this model lies in the fact that qualified personnel must act as an element of the current and prospective innovation and investment management system. A necessary condition for confident movement in a dynamic scientific and technological environment is constant training and a professional search for personnel. However, the current unsatisfactory situation with logistics, manifested in disruptions of the grain deal, minimizes the opportunities for operational growth.

The current situation of prospective development is mostly characterized by regulatory obligations to counterparties.

Therefore, the normal desired state for the current subsystem is the organization of the relationship between productivity and profitability, and for the prospective subsystem, the accumulation of best practices in operational activities that reduce the risk of errors in martial law conditions. Organizing the optimal behavior of personnel is necessary, which guarantees the reduction of trouble in the practice of innovation and investment management.

Summarizing the research results and proposals regarding the anti-crisis development of agro-food enterprises in the system of innovation and investment management, we note the leading positions of the management model:

1. The basic management model is the target performance method.
2. The essence of the proposed approach consists of excluding direct motivation of work, creating conditions for the development of internal initiative and reward.
3. The main goal is to provoke the staff's initiative to professional search.
4. The priority task is to encourage the independent search for new knowledge and methods of operational activity using the latest management methods and tools.
5. A concrete manifestation of effectiveness is developing the staff's ability to create multi-alternative development programs. This will make it possible to find an option that will satisfy the interests of the participants about the prospects of agro-food enterprises in the system of innovation and investment management.
6. The method of satisfying the interests of the relationship participants is a material incentive for showing initiative.
7. The condition of action is that risk response measures not related to current production tasks are carried out only when a sufficient level of production activity is ensured.
8. The advantages of the model of effective anti-crisis management are that training in best practices and their application during the performance of current production tasks allows a faster response to crises. This reduces the costs of agro-food enterprises; internal interest in improving qualifications is achieved.
9. The internal movement mechanism: Reducing the time for the production of a unit of production increases the time for self-development and ensures the safety component of the development of enterprises in the agro-food sector.
10. Control of the effectiveness of current activities.

Therefore, the anti-crisis management system within the framework of the organization of practical operational activities creates conditions that, in the design of innovation and investment management, determine the exceptional priority of developing professionalism and qualification of personnel of all levels. The task of anti-crisis management is to maximize the support of professional development programs of personnel within the framework of the presented model since these measures relate to the development of social capital without disrupting the economic mechanisms of regulating the company's activities.

Of course, to use this approach, you need to form a specific technical support. According to current practice, performance control requires both appropriate information support, which includes modules for local information accumulation, and global assessment of the state of the field. This task is proposed to be performed by forming an organizational and economic mechanism for the anti-crisis development of agro-food enterprises, which can be built only under an integrated approach. Regulatory and legal support of the agency is based on regional development programs and legislative acts aimed at ensuring innovative technological development of agri-food enterprises.

After determining the general principles of anti-crisis development of agro-food enterprises, an assessment of its state is implemented based on neural networks according to the following components:

- the financial and economic condition;
- preventive work;
- ensuring the safety component of work, organization of innovation;
- investment management.

According to the results of the assessment, priority directions are chosen. Conducting constant monitoring of the specified indicators will allow an operational mode to highlight problematic issues that arise in each region of an agro-food enterprise to correct them in the course of activity.

It is also expedient to predict the unfolding of the crisis in the development of agri-food enterprises based on fuzzy logic by groups of indicators: innovative potential, financial potential,

resource potential, professional and qualification potential, and informational potential. It should be noted that with proper information support, it is possible to assess the state of agro-food enterprises and forecast their development.

The formation of the organizational and economic mechanism of anti-crisis management is inextricably linked with information and analytical support, which includes an information system for forecasting the unfolding of a crisis in the development of agro-food enterprises, information support for a cluster analysis of the crisis state of the development of agro-food enterprises by region, a single information system for the agro-food sector.

A single agri-food information system will replace paper document flow with an electronic one and automate work processes at agro-food enterprises. In this way, a single information space will be created. The stages of implementation of such an information system are presented in fig. 1. When combining all enterprises of the agri-food sector into a single information system, remote control is possible, the purpose of which is to obtain regulated reporting. Implementing a single agri-food information system will ensure environmental, social, and economic efficiency.

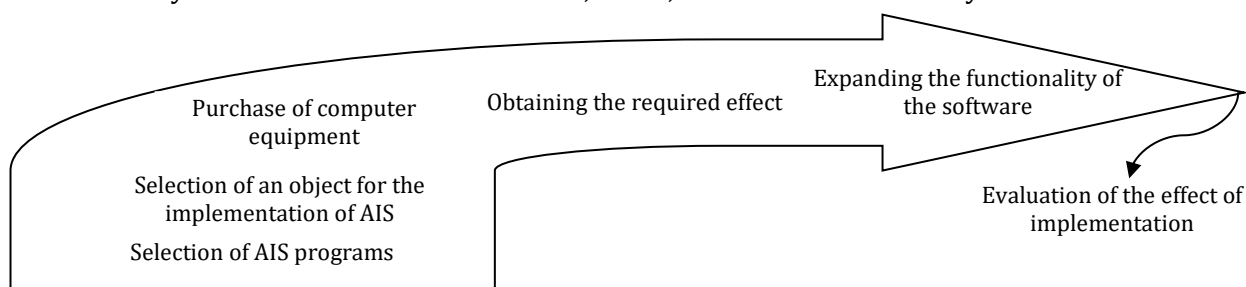


Fig. 1. Stages of implementation of a unified agri-food information system in the system of innovation and investment management

Therefore, implementing the proposed model of anti-crisis development of agro-food enterprises in the system of innovation and investment management will allow it to overcome the crisis, stabilize its condition, and provide the population with the opportunity to receive better state and international aid in wartime conditions. A unique role in overcoming the agro-food enterprise crisis is implementing the mandatory insurance system. The functions of information and analytical support should not be underestimated, which includes an information system for forecasting the unfolding of a crisis in the development of agri-food enterprises, information support for a cluster analysis of the crisis state of the agri-food sector by region, and a unified information system for agri-food enterprises.

Conclusions and prospects for further research

The anti-crisis management system in the context of organizing the practical work of personnel creates conditions that determine the exceptional priority of the development of professionalism and qualification of personnel at all levels of agro-food enterprises in the system of innovation and investment management. The task of anti-crisis management is to maximally facilitate programs of professional development of personnel based on the proposed model since these measures relate to the development of social capital without disrupting the economic mechanisms of economic regulation. Implementing the proposed model of formation of the organizational and financial means of anti-crisis management of agro-food enterprises in the innovation and investment management system will allow them to overcome the crisis and stabilize their condition. A unique role in overcoming the problem in the agro-food sector belongs to the implementation of the mandatory insurance system. The functions of information and analytical support should not be underestimated, which includes an information system for forecasting the unfolding of a crisis in the development of agri-food enterprises, information support for a cluster analysis of the crisis state of agri-food enterprises by region, and a single information agri-food system.

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