# Formalized conceptual rule to interpret crisis state of organizational and economic separation for micro-level and meso-level

Формализованное концептуальное правило интерпретации кризисного состояния организационно-экономической локализации микроуровня и мезоуровня

Written by:
**Oleg N. Dmitriev**[125]
elibrary.ru: https://elibrary.ru/author_profile.asp?id=3295
https://www.scopus.com/authid/detail.uri?origin=AuthorProfile&authorId=57202382529&zone=
https://orcid.org/0000-0003-4514-7519
**Veronika A. Zolotova**[126]
elibrary.ru: https://elibrary.ru/author_profile.asp?id=1035281
https://www.scopus.com/authid/detail.uri?authorId=57202382627
https://orcid.org/0000-0001-9266-6923

## Abstract

The relevance of the transformation of anti-crisis management of departments, enterprises and corporate groups in the direction of its intellectualization due to the relevance of external and internal perturbing factors, threats and unfavorability is stated in a reasoned manner. The necessity of a broad interpretation of the crisis state of organizational and economic separation is proved. The objective need for meaningful interpretation and formalized representation of the crisis state of organizational and economic separation in the implementation of all typical management functions – is shown. The applicability of the known development potential is estimated. The components of the rule of recognition of the state of separation as a crisis in the financial and economic aspect is determined in a meaningful and variant way. Versions of the rule of recognition of the state of separation as crisis in relation to the micro-level and meso-level are considered.

**Keywords:** Management, crisis, interpretation, criterion rule, division, enterprise, corporation, interpretation.

## Аннотация

Аргументированно декларирована актуальность трансформации антикризисного управления подразделениями, предприятиями и корпоративными группировками в направлении его интеллектуализации вследствие релевантности действия внешних и внутренних возмущающих факторов, угроз и неблагоприятствований. Доказана непременность широкой интерпретации кризисного состояния организационно-экономического обособления. Показана объективная потребность в содержательной интерпретации и формализованном представлении кризисного состояния организационно - экономического обособления при реализации всех типовых функций управления. Оценена применимость известного потенциала разработок. Содержательно и вариантно определены компоненты правила признания состояния обособления кризисным в финансово-экономическом аспекте. Рассмотрены версии правила признания состояния обособления кризисным применительно к микроуровню и мезоуровню.

**Ключевые слова:** менеджмент, кризис, интерпретация, критериальное правило, подразделение, предприятие, корпорация.

---

[125] Full-doctor in Economics, Professor, Moscow Aviation Institute (National Research University), 125993 Volokolamskoe highway 4, Moscow, Russia.
[126] Senior Lecturer, Moscow Aviation Institute (National Research University), 125993 Volokolamskoe highway 4, Moscow, Russia.

## Introduction

At present, all over the world, including Russia, to one degree or another, in one form or another, prerequisites have developed or manifestations of quite serious crisis phenomena are already observed. They have many different aspects, but unavoidably affect the financial and economic condition and financial and economic results (the latter is often specially highlighted and emphasized). Of course, quite prosperous zones are also observed, but it is naturally impossible to give guarantees of their infinite and unlimited prosperity within them.

A typical method used to indicate the expected crisis is based on well-known indicators of financial stability (typically non-structural, accounting method) is more or less correctly applied to low-tech enterprises with a very short production cycle. The fact of the advent of the crisis is estimated by the achievement of a critical state of accounts payable.

Anti-crisis measures are usually of the nature of urgent, rather unsubstantiated in the scientific aspect, attempts to eliminate the manifestations of the crisis and less often to eliminate its premises, if the last are obvious.

As a result, crises arise in some way unexpectedly, they are critical, they have the nature of chain reactions, and anti-crisis (sometimes named in the opposite as crisis) management is a feverish empirical attempt by persons of unobvious competence to somehow resolve current claims from counterparties. These attempts are most often brought to selling property assets at bargain prices, lockouts, lobbying activity and attempts to gain access to external sources of external financial recovery.

This scene is observed at the level of divisions of enterprises, enterprises and their corporate groupings (Demchenko, 2011; Kanashchenkov, Dmitriev, Yekshembiyev, Minaev, 2013), as well as in relation to the so-called pseudo-corporations (Dmitriev, Novikov, 2017; Dmitriev, Novikov, 2019).

Naturally, such a situation in the field of scientific development and management practice is unacceptable.

At least the following categorical subjects are interested in its fundamental change in a positive direction:

- Directorates of enterprises and administration of divisions;
- Participants of enterprises - strictly legally "legal entities" or "legal persons";
- Bodies of state and municipal government, and sometimes interstate governing bodies;
- Counterparties (subcontractors and customers);
- In some cases, competitors fearing to find themselves in a crisis industry environment;
- Ordinary employees of enterprises.

Meanwhile, as it will be shown below, significant progress towards improving the quality of crisis management in terms of conceptual and realization content is not observed.

In anti-crisis management, one of the most important directions is reasonably seen as managerial innovation, which provides the development of all types of support for managing systems of organizational and economic separation of the micro level (divisions and enterprises) and meso level (corporations).

## Theoretical basis

When forming reform proposals, we should proceed from the fact that in the field of operating organizational and economic separations, informational-consulting and informational-managing systems should be used.

Therefore, for the declared thematic conceptual constructions it was considered expedient to use a multidisciplinary theoretical complex, including the following theories and scientific direction:

- System analysis;
- General control (management) theory;
- Organization theory;
- Theory of institutional and organizational design;
- Optimization theory, etc.

Thus, in theoretical terms, the study was carried out at the "junction of sciences".

## Methodology

Structural interpretation of universal management methodology is presented (Kanashchenkov, Dmitriev, Yekshembiyev,

Minaev, 2013; Dmitriev, Novikov, 2019). Design allows interpretation as a local version of management.

**Results**

*General ideas.*

When transforming the crisis management sphere, we should rely on the following premises.

1. It is necessary to firstly concentrate on localizing the anti-crisis management loop or circuit (in the built-in or dedicated version (Zolotova, 2017; Novikov, 2019), which must be institutionalized and exist without fail. This is due to the fact that anti-crisis management can be significantly different from the "usual" management for all system-technical components including mandatory optimization criteria, prohibitions, *etc.* In this sense, emergency synthesis and activation of the anti-crisis management loop are seen as conceptual nonsense with disastrous consequences.

2. To move from a primitive interpretation of the crisis as an accomplishment of falling into a "debt hole" to a multi-aspect interpretation, including some regular effects: phenomena and trends.

3. To choose the method of a comprehensive feasibility study of a managerial innovation program as primary as the basic scheme of crisis management (Dmitriev, 2005; Dmitriev, 2017; (Dmitriev, Novikov, 2019) as shown in the Figure 1. Within it, the basic management functions should be implemented (estimating of current state, forecasting, comparison, analysis and optimization).

4. To introduce strategic and tactical management loops involving various types of sanitation of a standardly applied managing system in accordance with the types of management support (Dmitriev, 2005).

5. Conceptual and implementation constructs should be "cross-cutting" for micro level and meso level organizational and economic separation.

6. The criterion rule that was considered should be applied for all implemented management functions:

- In estimating the current state to form a conclusion about the existence of a crisis in the past and present;
- When forecasting to form a conclusion about the possibility of a crisis in the future;
- When comparing to form a conclusion about the presence of a significant crisis;
- When analyzing the factor-responsive identification of the established causality of the crisis;
- When optimizing managing decisions for discriminating management on normal and anti-crisis ones.
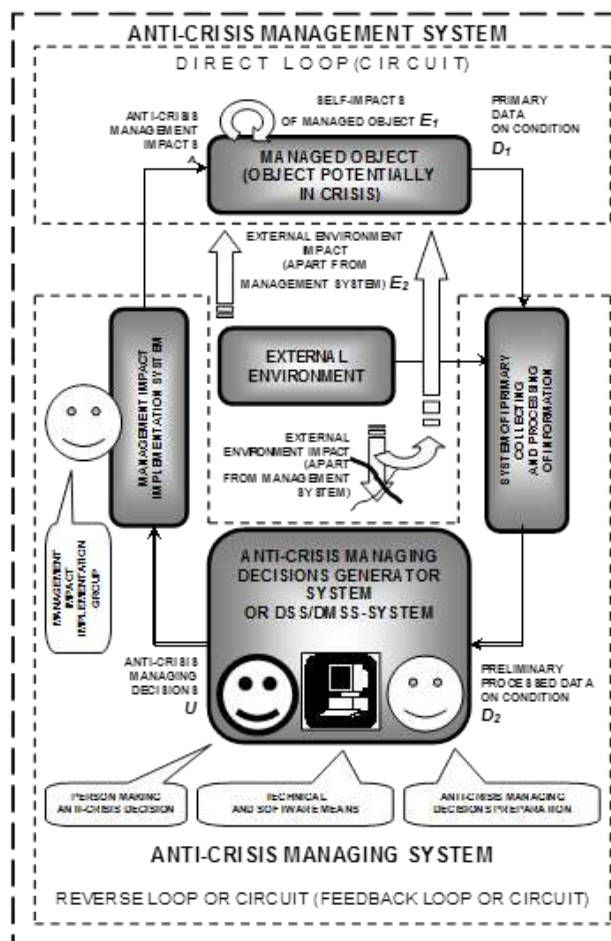
Figure 1. General structure of the high-intellectual anti-crisis management system

*Objectives and expected results of the project.*

There was an orientation towards the formation of a criterion rule while carrying out the study that allowed us to separate the state of organizational and economic separations in the "acceptable - unacceptable" dilemma with an emphasis on the financial and economic state for some time points of an arbitrary category - past, current, and future.

*Conceptual principles.* The functioning and development of anti-crisis management should imply the following known fundamental principles (Novikov, 2019; Dmitriev, Novikov, 2019).

*Forerunners and applicability of their achievements.*

The analysis of existing sources let us make the conclusion that, to date, the authors have not introduced a complete typology of anti-crisis activities, judging by the available publications.

Due to this, an appropriate typology is compelled, on the one hand, to determine the applicability of existing developments in this area, and on the other hand, to move towards the formation of many managerial influences. The Figure 2 schematically shows the relationship of a certain source of the crisis and the managed object: organizational and economic separation.

**Impacts of external environment**

$$\vec{L}(t)$$

**Managerial impacts as implementations of managing decisions**

$$\vec{U}(t)$$

**ORGANIZATIONAL AND ECONOMIC SEPARATION**

**Impacts of internal environment**

$$\vec{G}(t)$$

**Optimization vector criterion (in particular case - vector state index)**
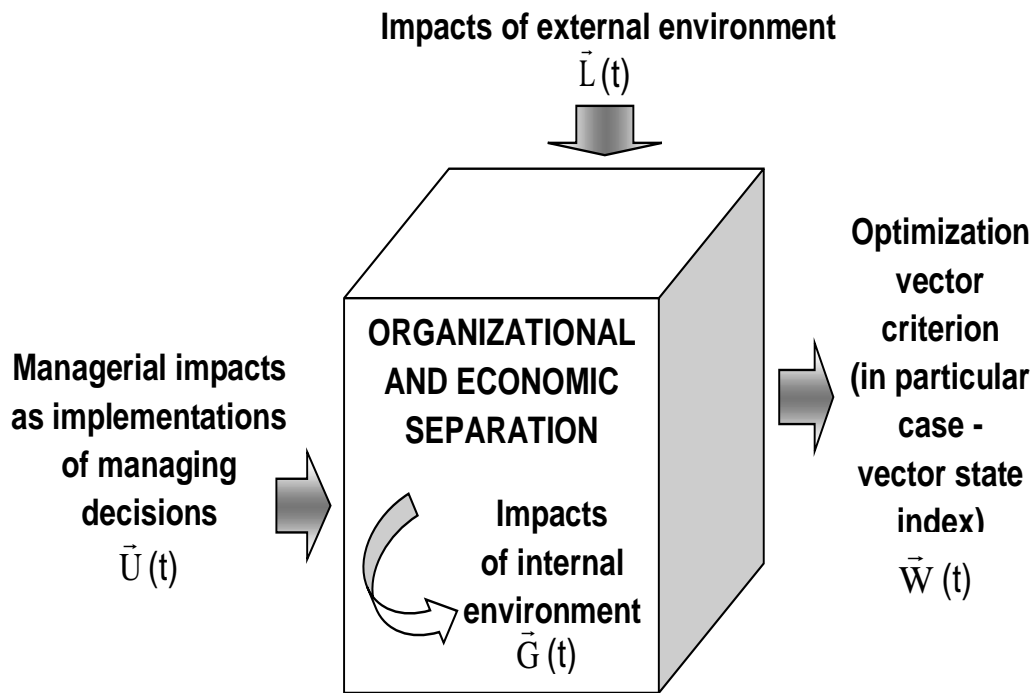
$$\vec{W}(t)$$

Figure 2. Crisis situation presentation

The result of the impact of the source of the crisis on the managed object is expressed in undesirable deviations of the optimization criteria (state indexes) of the object (damage) and further it is expressed in management optimization criteria.

You can influence the deviation of state indexes of the state of the managed object in the following fundamental ways:

- Remove the source of the crisis;
- Remove the connection between the source of the crisis and the managed object;
- Make the managed object insensitive to impacts from the source of the crisis situation;
- Compensate for adverse deviations in the output of the managed object (damage).

The Figure 2 shows that the source of the crisis situation can be localized both outside the managed object (organizational and economic separation), and inside it, causing the presence of internal or external communication with the managed object.

Anti-crisis management can be distinguished in the next functionally separate areas for managing the facility:

- Managing by risk-management methods;
- Managing of the facility by financial recovery methods;
- Managing by audit methods.

Apparently, this list can be enlarged.

There are quite many publications on the general idea of the crisis. But there are quite few of them, however they are on related issues. We will briefly discuss the results of an analytical review of available sources with an emphasis on modern Russian conditions that are quite original.

In the frames of this study, a global, worldwide study of the work of the forerunner seemed resource-impracticable and had very limited applied utility.

Therefore, a significant place in anti-crisis management takes risk-management. The contribution to the development of risk-management theory was made by the results of the work, based on an analysis of available

sources: research results, created by F. Knight, L.N. Tepman, I.T. Balabanov, A.G. Badalova, S.V. Valdaytsev, V.N. Vyatkin, M.V. Grachev, M.A. Rogov, Yu.V. Sidelnikov, V.L. Tambovtsev, E.V. Utkin, E.Yu. Khrustalyov, G.V. Chernov, *etc*. From the materials of one of the works (Badalova, 2006), a definition of risk can be distinguished. The crisis is presented as a threat to the enterprise, which develops into risk and is realized in the course of entrepreneurial activity in the face of uncertainty. The enterprise risk-management system is distinguished based on the integrated impact on enterprise risks at all stages: from identification to exposure to enterprise risks (Badalova, 2004). As part of risk-management, the author proposes to use two main approaches when developing a risk-management system: a conceptual approach of stakeholder groups and a cost approach. Such an interpretation of the onset of a crisis involves the implementation of managerial impacts prior to the realization of risk, i.e., its prevention. The author in one of the works (Pashchuk, 2005) reviewed the methods of influencing risks: avoidance, retention, reduction and transfer of risks. All types of impacts are aimed at minimizing negative impacts from the implementation of risk.

Various authors propose measures to manage the deviation of various indexes, but the most often identified, based on an analysis of available sources, is the income or clear profit of the enterprise. The first three ways to influence the risk are aimed at reducing it. The insurance is often considered as a special case, ensuring the transfer of risk. In addition to risk-management, these methods of influence on deviations of state indicators have become widespread in developments for a managed object that is in a state of insolvency (pre-bankrupt or bankrupt state). The crisis caused by the onset of the insolvency of the object is one of the special cases of crisis situations. A significant contribution to the development of anti-crisis management methods within the framework of this approach was made, including by researchers such as A.A. Belyaev, A.G. Gryaznova, E.M. Korotkov, V.I. Koshkin, V.G. Kryzhanovsky, V.I. Lapenkov, E.V. Luther, V.P. Panagushin, and R.A. Popov. The authors consider anti-crisis impacts for cases of insolvency and bankruptcy of an enterprise (Minaev, Panagushin, 1998; Lapenkov, 2001; Dmitriev, Novikov, 2019). Within the frames of this method, the complex implementation of internal and external anti-crisis impacts on the managed object is considered according to the stages: pre-trial rehabilitation, external monitoring and external management, and bankruptcy proceedings. In the considered work, two directions of the formation of anti-crisis managerial impacts are distinguished: the creation of a strategic program to increase competitive advantages and financial recovery of the management object.

The development of anti-crisis activities is based on the conclusion about the financial condition of the managed object; a plan of measures for financial recovery is developed. Then, based on the developed marketing strategy, interconnected production and marketing strategies, personnel and financing are formed. Not limited to the works of the cited authors, the significance of the results should be noted (Gryaznova, 1999; Belyaev, Koshkin, 2000; Korotkov, 2000; Popov, 2005) by authors such as A.A. Belyaev, A.G. Gryaznova, E.M. Korotkov, V.I. Koshkin, R.A. Popov, who defined crisis management as a set of methods for preventing, counteracting and minimizing the consequences of a crisis in bankruptcy. Currently, crisis management methods based on the prevention and management of an object in a state of insolvency are reflected (Kurkina, 2002; Chaika, 2005; Solodukhin, 2008; Provorov, 2009). The results of these works are the solution of particular problems of optimal management in conditions of financial recovery within the framework of the implementation of certain stages of the bankruptcy procedure, both as independent areas that should be the basis of anti-crisis management, and which are part of others. A crisis is considered the onset of any of the stages of bankruptcy of the enterprise. Only the stage of rehabilitation provides for preventive external anti-crisis management. Removing the source of the crisis in the external environment in this way is not provided.

The deleting of the source of the crisis in the internal environment is assumed in conjunction with the previously listed ways to influence the source of the crisis. Moreover, it is considered that the onset of bankruptcy due to the influence of a random factor or the occurrence of bankruptcy of an enterprise as a random event (Khobta, 2001; Dmitriev, Novikov, 2019). Other authors consider the onset of bankruptcy as a result of management errors, malicious or deliberate actions in relation to organizational isolation (Chuprov, 2008; Provorov, 2009; Dmitriev, Novikov, 2019).

The study of the mutual impact of all influences is feasible if a factor-response model is used. The structural representation is schematically shown in the Figure 3.
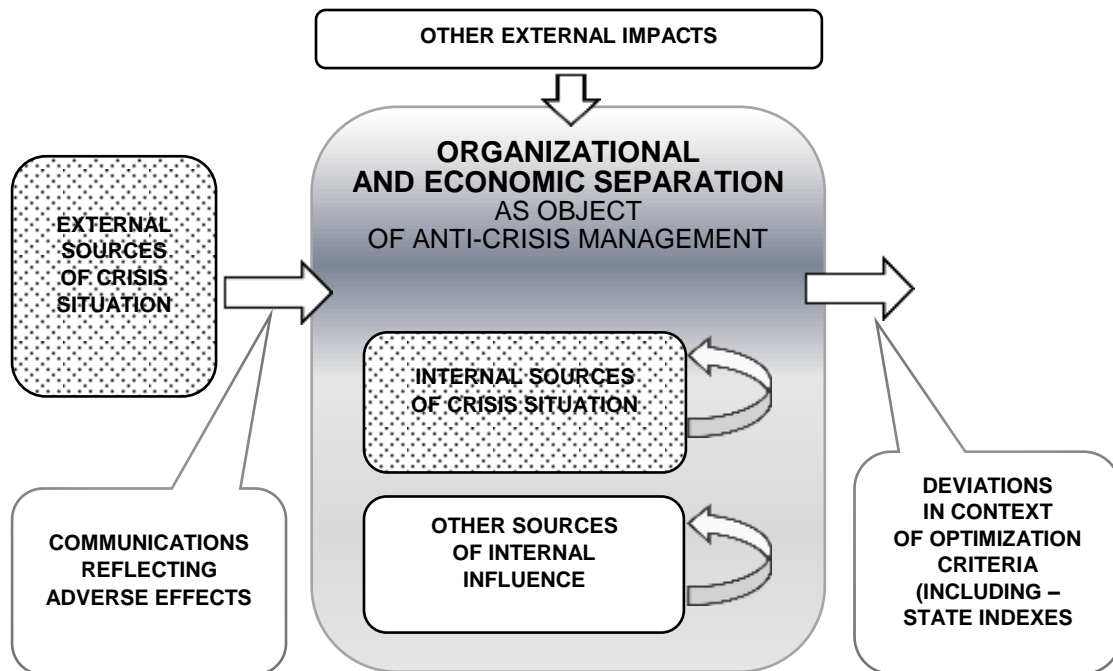


Figure 3. Structural presentation of impacts and their results (consequences)

Figure 3 presents a diagram of the factor-response model of the managed object (abstract organizational and economic separation). Management actions formalized as managing (managerial) decisions $\vec{U}(t) \equiv \{u_1(t), \ldots, u_v(t)\}$ are given to the inputs of the managed object (here organizational and economic separation), with which it can have a direct impact in accordance with the specified requirements. It is supposed that environmental influences

$\vec{L}(t) \equiv \{l_1(t), \ldots, l_y(t)\}$ do not give up to transformation by the subject of management and change over time. Environmental influences are $\vec{G}(t) \equiv \{g_1(t), \ldots, g_H(t)\}$, the values of which can be measured vary with time. Optimization criterio

is
$\vec{W}(t) \equiv \{w_1(t), \ldots, w_P(t)\}$ as a lot of optimization criteria, the values of which are determined by the response of the managed object and are the result of the complex impact of the management, external and internal influences or impacts.

The dimensions V, Y, H, and P of these vectors can be quite large, but, of course, cannot be smaller than one. They vary greatly depending on the specifics of the managerial situation.

Criteria rule in this case is structured with the separation of two components:

- Optimization criterion (in the general case, vector optimization criterion);
- Conditions for recognition of the significant acceptability of the value of the optimization criterion.

In this case, the factor-response representation of the managed object is valid (in fact, as a "black box"): $\vec{W}(t) = f[\vec{L}(t), \vec{G}(t), \vec{U}(t)]$, where $\vec{W}(t)$ is a vector criterion for optimizing managerial decisions and, accordingly, managerial impacts, which is often identical to the vector state index of the corresponding organizational and economic separation; $f$ is a certain function (communication operator) of a general form. As a rule, it is not an analytical formula, but represents a mathematical model of the managed object (in this case, organizational and economic

separation) of one kind or another, and most often it is very complex.

Such representation is also a universal formalized representation of a managerial crisis for a Russian industrial enterprise.

When there is a crisis for several components of the optimization criterion and time instants at the same time then the most general case of this situation can be presented.

For some discrete time instants $t \in [1, T]$ and components of the optimization criterion $\lambda \in [1, M]$ , there are such combined components:

$$\begin{cases} \{t^{*1}, t^{*2}, \ldots, t^{*\Psi}\}, \\ \{\lambda^{*1}, \lambda^{*2}, \ldots, \lambda^{*\Theta}\} \end{cases}$$

for which there is the condition:

$$\begin{cases} \mid Det\{\hat{w}_{\lambda^{*\theta}}(t^{*\psi})\} - e_{\lambda^{*\theta}\ add.}(t^{*\psi}) \mid Bet \xi_{\theta\psi}, \\ \psi \in [1, \Psi], \\ \theta \in [1, \Theta]. \end{cases}$$

where *Det* is the operator of determining of the stochastic or uncertainty estimation (Dmitriev, 2018). Naturally, if $\hat{w}_{\lambda^{*\theta}}(t^{*\psi})$ is a deterministic quantity (which in the general case cannot take place), then the *Det* operator is, in a sense, empty or degenerate, not valid. Given the stochasticity of the estimated optimization criterion, the operators of statistical estimation of mathematical expectations, modes, and quantiles are traditionally most often used; $\hat{w}_{\lambda^{*\theta}}(t^{*\psi})$ is an estimation of the corresponding value of the optimization criterion (deterministic, stochastic or uncertainty). In the first case, naturally $\hat{w}_{\lambda^{*\theta}}(t^{*\psi}) = w_{\lambda^{*\theta}}(t^{*\psi})$ ; $e_{\lambda^{*\theta}\ add}(t^{*\psi})$ is the threshold value of the corresponding optimization criterion - in the particular case of just a state index at the corresponding time moment; *Bet* is an operator of dominance (for example, the traditional operator of absolute dominance of the type ">"); obviously positive threshold for exceeding the deviation.

Naturally, optimization criteria can be of a very different nature. This nature determines the nature of the crisis - financial, economic, industrial and technological, social, complex, *etc.*

Examples of such sets of financial and economic optimization criteria can be identified (Kanashchenkov, Dmitriev, Yekshembiyev, Minaev, 2013; Dmitriev, Novikov, 2018) for enterprises and the case of their consideration as classical commercial organizations.

For business units, other systems of indicators of status and optimization criteria can be used (Dmitriev, Dergunov, 2003; Dmitriev, Dergunov, 2004; Dubovik, 2009).

Regarding corporate grouping, the situation looks much more complicated. This meso level organizational and economic separation includes others: micro level, and for two hierarchical levels (enterprise - structural divisions of the enterprise). The enterprises of the amateur status of legal entities in Russia do not lose from such an entry. Corporate groups in Russia are not persons (legal entities or legal persons).

That is why, state indexes and criteria of optimization for a corporate grouping are combined from indicators and this criteria of its member enterprises.

The following approaches can be applied here:

- The use of the so-called consolidated balance sheet of a corporate grouping (Dmitriev, Dergunov, 2003; Dmitriev, Dergunov, 2004 *etc.*). However, with many nuances, this is only suitable for holdings, which, however, dominate in Russia. The very representativeness of the relevant state indexes, *etc*. These optimization criteria are rather doubtful;
- The section of the "weakest link" scheme according to the constructions (Volkova, 2008);
- The construction of some additional logical rule for recognizing the crisis, which is most often formed empirically and therefore has weak evidence.

That is why, for a corporation, the identification of its crisis is a very complex theoretically and applied methodological task, still far from comprehension, formulation and solution.

**Implemented and unrealized similar projects**

The results of the described development were used:

- In forecasting the crisis of a few enterprises and holding structures of high-tech industries in Russia, including

as a part of the implementation of projects for their corporatization and optimization of sanitation measures;

- In performing a few feasibility studies of several anti-crisis projects and programs;
- In the realization of a few diploma and dissertation projects mainly within the framework of the educational process at the Moscow Aviation Institute.

Among those remaining far from resolving problematic issues were:

- Classic questions of scalarization of vector optimization criteria for individual separations;
- Problems of introducing criteria spaces for business units (production, management, *etc.*) with various areas of managerial competence;
- Uncertain in their multiplicity approaches to the analysis and synthesis of the rules for recognizing corporate groups as being in crisis.

## Conclusion

These considerations give rise to the following observations, conclusions and recommendations:

- The problems of anti-crisis management will be relevant indefinitely for a wide variety of areas of industrial and economic activity in the world and, particularly, in Russia;
- The crisis of organizational and economic separation should be considered comprehensively in many aspects and time points, including future moments, and not be reduced to such as financial insolvency (bankruptcy);
- The existing backlog and practical experience do not solve the anti-crisis management problem;
- Anti-crisis management should be based on the conceptual scheme of the feasibility study of anti-crisis management decisions. This management should be predominantly proactive;
- Each of the typical management functions provides the use of a criterion rule for interpreting a crisis;
- This rule is structurally decomposed into an optimization criterion and a condition for recognizing a crisis by the

residual in the vector space of this criterion;

- Including optimization criteria should be financial and economic. Their content and presentation vary for departments, enterprises and corporate groupings;
- The most difficult criterion rule for analysis and synthesis is the rule for corporate grouping, which is very difficult to introduce and, moreover, typing.

## References

Badalova A.G. (2004). Enterprise risk management: practical toolkit for managers. Moscow: Yanus-K.

Badalova A.G. (2006). Risk management of production systems: theory, methodology, implementation mechanisms. Moscow: Yanus-K.

Belyaev S.G., Koshkin V.I. (2000). Crisis Management: 17-module program for managers managing the development of an organization. Moscow: Infra-M.

Chaika N.K. (2005). Research and development of methods of an estimation of work programs on financial rehabilitation of enterprises: Dissertation of PhD in Economics. Moscow.

Chuprov S.V. (2008). Management of the stability of production systems in the context of innovative modernization: Abstract of a Dissertation of Doctor in Economics. Irkutsk.

Demchenko O.F. (2011). Mathematical modelling methodology of organizational structures of the Russian Federation aviation industry. Moscow: KnoRus.

Dmitriev O.N. (2005). System analysis in management. 5th edition. Moscow: Dobroe Slovo.

Dmitriev O.N. (2017). Strategic problems and directions of developing rehabilitation of managing systems of Russian high-tech complexes. Microeconomics. 6, 5-24.

Dmitriev O.N. (2018). Conceptual problem of criterion pluralism at determinization of usefulness space within scope of management of complex economic objects. Microeconomics. 4. 97-100.

Dmitriev O.N., Dergunov A.I. (2003). Intrafirm management concerning interdepartment and interpersonal competition within scope of enterprise. Moscow: Gnom and D.

Dmitriev O.N., Dergunov A.I. (2004). Intrafirm Management Concerning Interdepartment and Interpersonal Competition within Scope of Enterprise. In English. Moscow: Gnom and D.

Dmitriev O.N., Novikov S.V. (2017). Conception of managing of fuzzy-institutional meso-level organizational separations in a context of product projects internationalization. European Research Studies Journal. 20(4), 277-289.

Dmitriev O.N., Novikov S.V. (2018). Economic Assessment of Federal Scientific Programs. Russian Engineering Research. 38(4), 326-329.

Dmitriev O.N., Novikov S.V. (2019). Concept of Organization and Functioning of Integrated Electronic Infosphere of Reporting on R & D Works' Results. Amazonia Investiga. 8(21), 87-95.

Dmitriev O.N., Novikov S.V. (2019). Concept of state management doctrine. Amazonia Investiga. 8(22), 238-246.

Dmitriev O.N., Novikov S.V. (2019). Economic Optimization of the Modular Structure of Complex Objects. Russian Engineering Research. 39(6), 503-506.

Dmitriev O.N., Novikov S.V. (2019). Organizational and economic polystructure of innovative projects implementation. Amazonia Investiga. 8(20), 180-187.

Dmitriev O.N., Novikov S.V. (2019). Verification of Feasibility Studies at High-Technology Enterprises. Russian Engineering Research. 39(9), 780-781.

Dubovik M.V. (2009). Methodological problems of a substantiation of strategy of municipal management counterparty and competitiveness of the industrial complex of the Russian cities. Moscow: KnoRus.

Gryaznova A.G. (1999). Anti-crisis Management. Moscow: EKMOS.

Kanashchenkov A.I., Dmitriev O.N., Yekshembiyev S.Kh., Minaev E.S. (2013). Strategic Corporate Management: Fundamental and Applied Problems. 2nd Edition, Corrected and Amended. Moscow: Dobroe Slovo.

Khobta V.V. (2001). Improvement of the mechanism of anti-crisis management of enterprises: Abstract of Dissertation of PhD in Economics. Samara.

Korotkov E.M. (2000). Crisis management. Moscow: Infra-M.

Kurkina I.V. (2002). Methodological aspects of improving the economy of industrial enterprises: Abstract of Dissertation of PhD in Economics. Nizhny Novgorod.

Lapenkov V.I. (2001). Management methodology of the current liquidity of a manufacturing enterprise: Dissertation of Full-Doctor in Economics. Moscow.

Minaev E.S., Panagushin V.P. (1998). Crisis management: Studies. Manual for technical universities. Moscow: PRIOR.

Novikov S.V. (2019). Clusters in modern innovations of the economy of the Russian Federation. Espacios, 40(25).

Novikov S.V. (2019). Conceptual Analysis of Aviation Infrastructure. Russian Engineering Research. 39(4), 354-356.

Pashchuk A. (2005). Risk tamers. Company secret: technology for a successful business. Company's secret. 26, 66.

Popov A. (2005). Anti-crisis management. Moscow: High School.

Provorov A.V. (2009). Mechanism for preventing crisis situations in the activities of enterprise structures: Abstract of Dissertation of PhD in Economics. Vladivostok.

Solodukhin D.N. (2008). Financial recovery of industrial enterprises in bankruptcy: Abstract of Dissertation of PhD in Economics. Moscow.

Volkova O.N. (2008). Principles of budget consolidation in holding companies. Finance and credit. 14(302), 40-47.

Zolotova V.A. (2017). Management problems and tasks of the formation of management innovation anti-crisis program in the Russian high-tech industry. Monograph. Moscow: KnoRus.

**Artículo de investigación**