

CHAPTER 3

SYSTEM-TARGETING AND PROCESSING APPROACHES IN THE MANAGEMENT OF FINANCIAL-ECONOMIC SECURITY OF THE ENTERPRISE

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INTRODUCTION

Management is a process of formation and realization of will. It is also considered as a process of problem solving in the achievement of the goal and distinguishes six complexes of operations: the phase of constructing the problem, the phase of finding alternative solutions, the phase of evaluation, the phase of decision making, the phase of implementation, the phase of control. Management process depends, on the one hand, on the type and number of problems that need to be addressed; on the other hand, on the people who participate in it, as well as their interpersonal information and social connections, therefore, it is expedient to study the process of managing financial and economic security on the basis of system-purpose and process approaches, particularly if it concerns an industrial enterprise. Management of the financial and economic activity of the enterprise is a multifaceted, complex process, which involves the presence of a market management mechanism, adaptive management tools, professional, skilled and appropriately trained staffing in the areas of activity, resource potential, which collectively provides the opportunity to take into account factors of influence of internal and external competitive environment on financial performance and competitive position of the company in the market.

The lack of a holistic science-based approach to the design and creation of systems for managing the financial and economic security of an industrial enterprise leads to the prevalence of spontaneous or highly specialized management decisions that do not have the necessary development potential. The logical consequence of this is the emergence of forms of menage and management, which consist of elements of heterogeneous, often mutually exclusive approaches, containing a host of internal contradictions and connections that are redundant or not functioning. All this doesn't improve the quality of financial and economic

security management, but also forces companies to attract additional resources to support inadequate management systems.

3.1. Analysis of recent research and publications

Today, no enterprise can feel economically safe if its products are not in demand by the market; No one enterprise producing the means of production can feel safe if there is a long decline in the technological development of the country. Increasing the aggressiveness of the external and, partly, of the internal environment has led to an increase in the impact of negative factors on the performance of enterprises. Therefore, in the context of the acute economic crisis, which put the majority of domestic industrial enterprises, which until recently were considered successful and stable, on the border of survival, the question of financial and economic security has become very urgent. Theoretical and methodical aspects of the development of the process of management of financial and economic security of the company require further scientific research in the application of system-purpose and process approaches.

Domestic scientists such as O. I. Baranovsky, A. O. Yepifanov, O. M. Roasting, M. M. Yermoshenko, T. G. Vasil'tsev, O. V. Arefyeva, O. B. Vukchyk, I. V. Chibisova, I. P. Moiseenko, N. Yu. Podolchak, O. V. Ivashchenko, L. I. Donets are paying considerable attention to studying the problems of financial and economic security management, the formation of a mechanism for ensuring, assessing the level of security, and organizing indicators of financial and economic security. They detail the problems and suggest ways to prevent and overcome them.

The purpose of the article is to develop the process of management of financial and economic security of the enterprise on the basis of system-purpose and process approaches.

3.2. Presentation of the main research material

It is expedient to investigate the financial and economic security management system based on the system-purpose approach and divide it into two subsystems – the subsystem of economic security and the subsystem of financial security. The division into a subsystems is related to the possibility of isolating the totality of interrelated elements (components) capable of performing relatively independent functions, sub-goals aimed at achieving the overall purpose of the system. The subsystem, as part of the system, must have the properties of the system, in particular, the property of integrity. It is she that distinguishes the subsystem from a

simple group of elements for which no sub-target is defined and the integrity property is not executed. Its occurrence and preservation provide connections that characterize the construction (statics) and the functioning (dynamics) of the system. Elements of the system, entering into ties with each other, lose part of their individual properties, which they potentially owned in a free state. Communications are characterized by directions, strength, character, type, place of use, orientation of processes in the system as a whole or in its individual subsystems. The behavior of the system in advance is determined not so much by functional connections, but by their causative orientation.¹

Under financial and economic security N.A. Dehtyar² understands a rather complex system, which includes a certain set of internal characteristics, aimed at ensuring the effectiveness of the use of material, labor, information and financial resources. The system of financial and economic security is a set of elements aimed at identifying and neutralizing financial and economic threats to the functioning and development of the enterprise, providing economic independence, competitiveness, financial independence and stability, optimality of the organizational structure, protection of the information environment, personnel safety, commercial secrets and interests. In terms of the system approach, the “security” itself is defined as the property of a system that ensures its steady, stable functioning and development in the conditions of various types of external and internal threats. That is, this property of the system allows to minimize, and ideally, neutralize the negative influence of destabilizing factors.

The organization of the investigated system of financial and economic security, the stable ordering of its elements and relationships are characterized by the structure of the system (from lat. *Structura* – structure, arrangement, order).³ Structural connections have a relative independence from the elements and can act as an invariant in the transition from one system to another, passing regularities discovered and disclosed in the structure of one of them, to others. The same system of financial and economic security can be represented by different structures depending on:

¹ Akimova, T. A. (2003). *Teoriya organizatsii: uchebnoe posobie dlja vuzov* [Theory of the organization: a manual for universities]. Moscow : JUNITI-DANA. P. 64.

² “Management of financial security of economic entities: Chapter 2. Management of financial and economic security of enterprises: the essence and mechanism of provision”, available at http://pidruchniki.com/78180/finansii/upravlinnya_finansovoyu_bezpekoju_ekonomichnih_subyektiv (accessed 18 September 2018).

³ Ivanova, T. Ju., & Prihod'ko, V. I. (2004). *Teoriya organizatsii* [Theory of the organization]. Piter, SpB. P. 24.

the stages of knowledge of the system, the aspect of its consideration, the purpose of its knowledge, the influence of internal and external factors that significantly violate the balance of the system. The system of financial and economic security is an open system. The peculiarity of such systems is the ability to share information with the external environment.

In the study of open-source systems, a class of purposeful and non-focused systems is distinguished.⁴ Classification of systems by the level of organization was first developed by G. Simon and A. Nyella, and then V. Nalimov distinguished class of well-organized and class of diffusion systems. By adding a class of self-organizing systems, we obtain a classification that allows the different methods of formalized representation of systems and means of representing them to be brought into conformity with different classes. The distinguished classes can be considered as approaches to display an object or task, which are chosen depending on the stage of knowledge of the object and the possibility of obtaining information about it.⁵ The first class – well-organized systems, the second class – diffusion systems, the third class of systems – systems that are self-organizing (developing). The main features of the third class of systems are stochastic behavior; instability of individual parameters; unpredictability of behavior; the ability to adapt to conditions of a changing environment; the ability to change the structure, while preserving the property of integrity; the ability to withstand entropy trends, to formulate possible behaviors and to choose the best of them. This class includes the system of financial and economic security of an industrial enterprise. R. Fatkhutdinov gives a sufficiently complete classification of systems⁶ and grouping their properties according to the following features: the essence and complexity of the system, its connection with the external environment, the methodology of goal setting, the parameters of functioning and development that, in our opinion, is the most appropriate in applying a systematic approach to the management of financially – economic security as a system. Thus, in our opinion, in the simulation of complex processes occurring in the system of financial and economic security, the mechanism of self – organization can be most effectively implemented through the method of system analysis and system-purpose approach.

⁴ Chernjak, Ju. I. (1975). *Sistemnyj analiz v upravlenii jekonomikoj* [System analysis in economic management]. Moscow: Ekonomika.

⁵ Valuev, S. A., Volkova, V. N., & Gradov, A. P. (1991). *Sistemnyj analiz v jekonomike i organizacii proizvodstva* [System analysis in economics and production organization], Leningrad : Politehnika, pp. 47–49.

⁶ Fathutdinov, R. A. (2000). *Organizacija proizvodstva: uchebnik* [Organization of production: textbook]. Moscow : INFRA-M., pp. 66–76.

In the course of studying the peculiarities of the functioning and development of complex open systems with active elements, a number of regularities of systems have been identified which enable to form adequate models for making managerial decisions.

With the help of a systematic approach to the study of the behavior of the system of financial and economic security and its subsystems, it is possible to reflect problem situations with uncertainty, while sharing the “big” uncertainty with smaller ones that are easier to learn, which helps to identify the causes of qualitative changes in the formation of the whole. The division of the system of financial and economic security into separate subsystems makes it possible to analyze the causes of the emergence of integrity on the basis of establishing the causal relationships of different nature between different parts of the system, between the part and the system as a whole, between the system and the external environment. Any system is always between two extreme states – absolute integrity and absolute addiction. That is, the system always strives to become more and more independent variables, and at the same time to reduce the independence of elements, that is, to a greater degree of integrity.

The regularity of integrity (emergence) is manifested in the system when there are “new integrative qualities” in it, not inherent to its components. On the one hand, the properties of the system are not a simple algebraic sum of the properties of the elements, but on the other – the properties of the system are in a functional dependence on the properties of its elements. Combined elements of the system may lose a number of properties that are characteristic of them outside the system, that is, the system “suppresses” some of the properties of its elements. Thus, on the one hand, the law of integrity characterizes the change in the relations of the system as a whole with the environment, in contrast to the interaction with the system of individual elements; on the other – leads to the loss of elements of some properties, when they become elements of the system. The property of integrity is connected with the purpose for which the system is created.

An integral part of the system is the integrity of the system, which is expressed in the heterogeneity and contradiction of the elements of the system, on the one hand, and in the quest for them to join the coalition – on the other.

Any open system is not isolated from other systems, it is connected with a lot of communications with the external environment. The complexity of the system with the external environment is characterized as a

regularity of communicative, which makes it possible to determine the hierarchy as the pattern of construction of the whole world and the system isolated from it.

The pattern of hierarchy is one of the first laws that was studied by Academician V. Engelhardt, who pointed out the need to take into account not only the outside of the hierarchy, but also the functional relationship between its levels.⁷ Hierarchical representations help to better investigate and understand the phenomenon of complexity, therefore the integrity, integrability, communicative and hierarchical patterns are the basis for developing a mechanism for managing financial and economic security as a system consisting of two subsystems – financial security subsystems and subsystems of economic security that are components of the overall enterprise security system.

For all phenomena (this also applies to the socioeconomic systems that are developing and to which the system of financial and economic security of the enterprise belongs), a fair second law of thermodynamics, that is, the desire, on the one hand, to entropy (collapse), and on the other – to negentropy (evolution and development). In these systems, depending on the predominance of entropy or nonentropic tendencies, the subsystem of any level of the hierarchy can develop in a direction towards a higher level or move to a lower level (destructive phenomena).

The authors of various methods of system analysis form a sequence of stages, preferring different stages of analysis. In some techniques, more attention is paid to the development and research of alternatives to decision-making, in others the definition and structuring of goals, and in the third, the implementation of the already adopted decision.^{8 9 10} However, all these methods agree that the first stage is the research process, related to the analysis of the existing system and the identification of the problem. For a more in-depth analysis it is necessary to detail the listed stages, dividing them into sub-stages.

Summarizing the results of the substantiation of expediency of the system-purpose approach to management of financial and economic

⁷ Jengel'gardt, V. A. (1976). On some attributes of life: hierarchy, integration, cognition. *Voprosy filosofii*, vol. 7, pp. 65–81.

⁸ Optner, S. (1969). *Sistemnyj analiz dlja reshenija delovyh i promyshlennyh problem* [System analysis for solving business and industrial problems]. Moscow : Sovetskoe radio.

⁹ Golubkov, Je. P. (1975). *Sistemnyj analiz v upravlenii narodnym hozjajstvom* [System analysis in the management of the national economy]. Moscow : MINH.

¹⁰ Jang, S. (1972). *Sistemnoe upravlenie organizaciej* [System management of the organization]. Moscow : Sovetskoe radio.

security of the enterprise, it should be noted that it is the system-purpose approach that allows to offer consideration of the system of financial and economic security as two interconnected and complementary subsystems.

The concept of “financial and economic security” is complex and requires a comprehensive, systematic approach to understanding the essence in order to create a system for managing the financial and economic security of the enterprise. We believe that the system of financial and economic security of the enterprise (hereinafter SFESE) is a collection of interconnected in time and space subsystems and their components that are integrated into a certain integrity, have a specific structure and interact with each other and the external environment for achieving the goal. The purpose of such a system is to ensure the financial balance, sustainability of the economic development of the enterprise and adaptability of the mechanism of its functioning to threats that can impede the process of achieving the strategic and current objectives of the company, which operates under conditions of uncertainty of the competitive environment. It is precisely the uncertainty of the competitive environment that generates threats that are difficult to predict and poorly managed. Let us dwell in more detail on the notion of “threat” in the system of financial and economic security.

The concept of “threat” with regard to financial and economic security is associated with the emergence of certain barriers to activities, financial and economic losses, that is, a factor that endangers the sustainable functioning and development of the socio – economic system. The most successful studies of the nature of the classification of threats can be considered research M. M. Yermoshenko and K. S. Goryachoy ¹¹ who believe that the threat is an existing or potentially possible phenomenon or a factor that endangers the realization of the financial interests of the enterprise. However, summarizing the views of many domestic authors and expressing their own views, it is advisable to formulate an understanding of the concept of “threat” – a phenomenon or factor that destructively affects the socio-economic system as a whole, has a destructive force of different orientations, impedes the realization of the overall purpose of the enterprise and can lead to irretrievable loss and termination of activity. The identification of the threat is a precondition for timely response of the

¹¹ Yermoshenko, M. M., & Horyacheva, K. S. (2010), *Finansova skladova ekonomichnoyi bezpeky: derzhava i pidpryyemstvo: naukova monohrafiya* [Financial component of eco-nomic security: state and enterprise: scientific monograph], NAU, Kyiv, Ukraine. P. 56.

SFESE to a threat in order to select the most effective mechanism for its neutralization.

From the definition of the concept of “threat” it is clear that, in particular, the system of financial and economic security of an enterprise operates as a result of the implementation of a certain set of processes that accompany economic activity, therefore, when constructing the SFESE it is expedient, along with the system-purpose approach, to use a process approach.

Most domestic enterprises have a linear-functional or functional management structure, which assumes that each management authority specializes in the performance of individual functions at all levels of management.¹² A kind of functional depreciation is the grouping of work on the process. The complexity of process management arises as a result of the fact that enterprises operate in a market-changing, external environment, which, as it develops, leads to complications of both processes directly related to production and those that accompany the production process.

Let us dwell in more detail on the concept of “process”. In terms of ISO 9000: 2000 process – a set of interconnected activities that interact and transform “inputs” into “outputs”. One of the means of improving the management of industrial enterprises with functional varieties of organizational structures is the process approach to management. The term “process approach” is finally approved in the international standard ISO 9000: 2005 “Quality Management Systems”, which states: “In order to function effectively, organizations must identify and manage the numerous interconnected processes that interact. Often the output of one process directly forms the input of the next. The systematic identification and management of the processes used by the organization, and especially the interaction of such processes, can be considered a process approach”.¹³ The desired result is achieved more effectively when the activity and related resources are managed as a process.

A complex of technological processes of producing the product forms a system that gives an effect in the form of a product by which a particular enterprise is identified in society. To implement these

¹² Kane, M. M., Ivanov, B. V., Koreshkov, V. N., & Shirladze, A. G. (2008). *Sistemy, metody i instrumenty menedzhmenta kachestva : uchebnoe posobie* [Systems, methods and tools of quality management: a tutorial], Piter, SpB. P. 542.

¹³ Harrington, Dzh., & Voul, F. (2008). *Sovershenstvo upravlenija znanijami* [Knowledge Management Excellence]. Moscow : Standarty i kachestvo, pp. 70–72, 157–170.

processes, a certain set of technical means is used. They are ordered (structured) and ensure the correct course of the system of processes. The technical means become the material components of the enterprise. An enterprise is an open system that sells through the exchange processes (goods, resources, money), that is, it constantly exchanges with the external environment with all components from which it is composed. The main systems that are part of it, or subsystems, are: a system of processes that ensure the transformation of resources into the product (for example, technology); the control system or the signal-regulating system and the system of social relations (personnel actions, distribution of responsibilities and responsibilities, motivation necessary).

A leading subsystem, which determines how other subsystems of an industrial enterprise will be formed, is a subsystem of production processes. The operation of the enterprise is a complex of relatively stable processes of the transformation of resources, the course and support of which is provided by the operational actions of managers and performers. To the zone of each process that takes place at the enterprise, a given set of resources is directed to be used to obtain the planned results. The results of the process can be new resources, which are directed to “inputs” of the following processes. Given such sequence of actions, it is possible to logically construct a system of enterprise processes, examining all transitions between processes.

We see that the logic of the process approach in no way excludes the possibility of its implementation in the presence of any organizational management structure. The process approach does not exclude the possibility of the existence of any type of organizational management structure, but, according to the author, a prerequisite for its implementation is the formation of a structure that reflects the totality of processes in the context of which management is carried out.

Thus, the expediency of use of system-purpose and process approaches in the construction of a system of management of financial and economic security of the enterprise is substantiated. Let's dwell on the techniques and methods of system analysis that can be used in the construction of the SFESE. To solve complex problems using system analysis it is necessary to formally present the organization of the process of solving the problem in this way:¹⁴

¹⁴ Orehov, N. A., Levin, A. G., & Gorbunov, E. A. (2004). *Matematicheskie metody i modeli v jekonomike : uchebnoe posobie dlja vuzov* [Mathematical methods and models in economics: a textbook for universities]. Moscow : JUNITI-DANA, p. 261.

$$R: \{\{M\}, \{x\}, F\}, \quad (1)$$

Where $\{\dot{I}\}$ – a set of actions to solve a task;

$\{\tilde{o}\}$ – a set of links between actions;

F – formulation of the task (goal).

The element $\{\dot{I}\}$ is defined as an action, the scheme of the organization of action is as follows: purpose – description – the way of execution, that is, we deal with the three levels of organization of the decision.

In each process infrastructure subsystem, local goals are solved, and the concept of a local goal refers to both operations and individual procedures performed in the subsystem. Let's select a set of local goals $\{g_j^s\}$, which ensure the implementation of goal G_j of operation j :

$$\{g_j^s\} \rightarrow G_j, s = \overline{1, \sigma}. \quad (2)$$

The goal G_j can also be achieved by performing more simple goals, namely $g_j^1, g_j^2, \dots, g_j^n$. Achievement of goal G_j through goals g_j^s can be provided in different ways, depending on what links exist between goals (operations, procedures). Therefore, there are related goals, unrelated goals, and difficult goals. The way to achieve each of the goals can be discrete or continuous. The construction of an action system is facilitated by the use of typical action schemes that are developed for particular classes of tasks. The development of such typical schemes is important for enterprises, because they are characterized by the complexity of organizational management, functioning in a changing external environment, changing the conditions of the internal environment, which necessitates continuous improvement of the schemes and complicates management. Such typical schemes are called operating models, they consist of a set of interrelated operations (procedures) and is a description of typical ways of solving problems. Operating models may include methods, instructions, programs and action algorithms that reveal the sequence of operations (procedures). Decisions on each of the operations or procedures are defined as the choice of alternative. The choice of alternatives involves two fundamental

concepts: the set of alternatives (action options) $\{x\}$ and the principle of choice (\hat{O}). Then the task of decision-making has the form:

$$\{\{x\}, \hat{O}\} \rightarrow \tilde{o}^*, \quad (3)$$

where \tilde{o}^* – selected alternatives (one or more).

Depending on the degree of formalization, that is, the possibility of constructing operational models, there are three variants of tasks:

– the task of optimal choice – if the set $\{x\}$ is uniquely determined (fixed), and the principle of choice \hat{O} is formalized (in operating models);

– the task of choice – if the set $\{x\}$ is uniquely determined, but the principle of choice \hat{O} can not be formalized. In this case, the choice depends on who and on the basis of which information makes choices;

– the general task of decision-making – if the set $\{x\}$ does not have defined limits (may be supplemented and varied), and the principle of choice \hat{O} is not formalized. In this case, different actors can choose alternatives that others have not even considered.

CONCLUSIONS

The construction of SFESE on the basis of system – target and process approaches should be associated with the formation of strategic financial objectives, which are determined taking into account the threats of enterprise security loss and ways to neutralize them. In accordance with the main dominant areas of financial and economic security, the company organizes the process of forming its strategic goals, which are appropriate to include the following: maximizing the level of financial profitability; optimization of the volume of financial resources; providing the necessary level of financial stability and sustainability; full satisfaction of the investment needs of the enterprise; minimize the level of financial risks; providing financial stability in the event of crisis situations.

The system approach involves the study of as many connections between the elements of the SFESE and the objects of the environment as possible to identify and analyze the most significant of them. One of the main problems of using the system approach to building a SFESE is the proper formalization of the components and processes of the system (operational models), the identification of all its essential elements and the establishment of the whole set of relationships between them.

Thus, the basis for building a system for managing the financial and economic security of an enterprise should be a concept that takes into account the following individual characteristics:

- each enterprise has its own set of processes, procedures, operations, that is, the elements by which operating models are built; formalization of operational models highlights areas of activity within the scope of economic activity (personnel, sales, purchases, finance, economics, technology, technology, construction, etc.); operating models are unique within a specific enterprise and are grouped in a process approach;

- the construction of operating models, which are the organizational basis of the SFESE, should be grouped on the principles of leadership, which are the main provisions of management science and relate to the management of people in the process of joint activities to achieve the goals of the enterprise;

- the establishment of a relationship between operations and procedures that collectively represent operational models of the SFESE is the basis for using the systemic and objective approach to managing financial and economic security.

To organize the system of actions for solving problems that are included in the subsystem of the system of financial and economic security of the enterprise, one must strive for the maximum formalization of processes, which will reduce the influence of the subjective factor on making managerial decisions in the process of achieving goals by any subsystem.

SUMMARY

The article deals with the problems of management of financial and economic security of the enterprise, the appearance of which is caused by an increase in the aggressiveness of the external and internal environment and the increase of the influence of negative factors on the performance of domestic enterprises. It is substantiated that it is expedient to build a system of management of financial and economic security of the enterprise on the basis of system-purpose and process approaches. The term “threat” under which the authors understand the phenomenon or factor that destructively affects the socio-economic system as a whole, has a destructive force of various orientations, impedes the realization of the overall goal of the enterprise and can lead to irreversible losses and termination of activity. The characteristic features, on which the concept of construction of the system of financial and economic security should be grouped, is formulated.

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