

Modeling Of The Process Of Functioning Of The Mechanism Of Economic Security Of Foreign Economic Activity Of Enterprise Taking Into Account Weak Signals And Identification Of Risks And Threats

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Abstract: The feasibility of using a behavioristic model of the mechanism of economic security of foreign economic activity of enterprise is substantiated in order to determine and detail the features of the qualitative functioning of the mechanism of economic security of enterprises foreign economic activity as a part of the enterprise management system. The use of behaviorism to describe the functioning of the mechanism of economic security of foreign economic activity of enterprise has its own causal basis and its advantages. Firstly, the mechanism of economic security of foreign economic activity of enterprise is not an inherently valuable element of the enterprise management system. In simple words, the composition of the mechanism is not that valuable as its necessary reactions under various stimuli. Secondly, using just behaviorism and content analysis allows us to combine the triad "stimulus-content-response". Thirdly, the use of behaviorism allows relatively simple, without involving deterministic analytical models, to carry out a scenario analysis of the functioning of the mechanism of economic security of foreign economic activity of enterprise and, if necessary, debug such a mechanism and ensure its adequate content with increasing complexity, variability and intensity of stimuli. This allows to use the model of the functioning of the mechanism of economic security of foreign economic activity of enterprise depending on the needs of the user and the task in prescriptive, descriptive and constructive-reflective modes. Based on the developed model of the functioning of the mechanism of economic security of foreign economic activity of enterprise and the detailed disclosure of each of the elements of such a model, an algorithm for constructing this mechanism is developed. On the basis of the model under consideration, certain elements of such a model and their content, the structure of scenarios of functioning of mechanism, the generated algorithm allows to build an mechanism of economic security of the foreign economic activity of enterprise for a particular enterprise taking into account the specific operating conditions of such an enterprise, the expected incentives from the external and internal environment of the enterprise as for mechanism functioning, its predetermined reactions and its necessary structure, which allows to provide such reactions in existing conditions.

Index Terms: mechanism, economic security, foreign economic activity, quality functioning, threat, risk, behavioral model

1 INTRODUCTION

The effect of "erasing borders" and the integration of business structures in the markets of different countries generates a significant number of threats and risks. This situation requires an appropriate response from enterprise management due to increased competition and increased requirements for micro-level economic security systems. Foreign economic activity (FEA) is an integral component of globalization processes in the economy, and it is the main source of funds for most enterprises. However, today there are practically no scientific and methodological approaches to the formation of effective mechanisms for ensuring the economic security of foreign economic activity.

Accordingly, to ensure economic security, specific actions on the part of the enterprise governing bodies are in demand, that is, an effective element in the enterprise management system should be clearly defined, which, according to the results of the economic security assessment of foreign economic activity of enterprise (FEA), should take measures to improve it. Such an effective element is proposed to determine the of mechanism of economic security of foreign economic activity of enterprise (MESEFEA). It should be emphasized that the MESEFEA is not identical to a certain structural unit, which will be responsible for ensuring the economic security of the FEA of the enterprise, but will be instrumental and applied in the overall system of enterprise management. A considerable number of scientists was engaged in the study of economic mechanisms, unlikely to the mechanisms of economic security of enterprise. Among the publications of Ukrainian authors covering this topic, we can distinguish researches by Havlovska N. [4], [5], Zlotenko O. [17], Kozachenko H.V., Pogorelov, Yu. S. [8], Rudnichenko Ye.M. [9], [10], et al. Foreign approaches to the formation of economic mechanisms and mechanisms of economic security were investigated in the works [1], [6], [2], [7]. However, in most studies, the authors do not pay attention to the research methodology from the perspective of modern behavioral economics [3], [13], [14], where threats, risks and managerial decisions are examined in relation to the reactions of relevant subjects. In our view, one of the fundamental approaches of scientific research from the point of view of the above aspects is the theory of behaviorism. Behaviorism as a scientific trend dates back to 1913, when John Watson made a program report "Psychology as the Behaviorist Views it" at the annual meeting of the American Psychological Association [15]. The key idea of

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behaviorism (J. Watson) is the relation between the stimulus and the response for the object under study, which has the ability to certain reactions: a certain stimulus or their combination causes a certain reaction. Based on the study of such a ratio, it is possible to either fix certain reactions or predict them, or the ability to elicit the necessary reactions based on the use of known stimuli [16]. In this case, the internal processes that occur "inside" the object under study are often given much less attention, either because of the principle of non-determination in determining their content or due to the dominance of the reaction over the process of its formation, that is, the situation when the reaction of the object under study is of much greater value than the process by which it is formed. That is, from the point of view of economic security of foreign economic activity of enterprise, an interesting and useful scientific result will be the consideration of all possible reactions in the processes of formation and functioning of mechanisms of economic security.

mechanism of foreign economic activity of enterprise based on the consideration of weak signals, we have developed a behaviorist model of the functioning of the economic security mechanism of foreign economic activity of enterprise (Fig. 1). The description of the behavior of MESEFEA on the basis of behaviorism with the allocation of sets {R} to available stimuli {S} under conditions of operation {C} allowed to clarify the composition of each of the elements in such a scheme and the content of the mechanism itself as a response agent. The reactions of the mechanism are considered by groups {R1} - {R4}, specifying the nature of the activity of each of these groups and distinguishing two reaction loops - the action loop and the reflection loop.

2 Methodology

To describe the functioning of the economic security

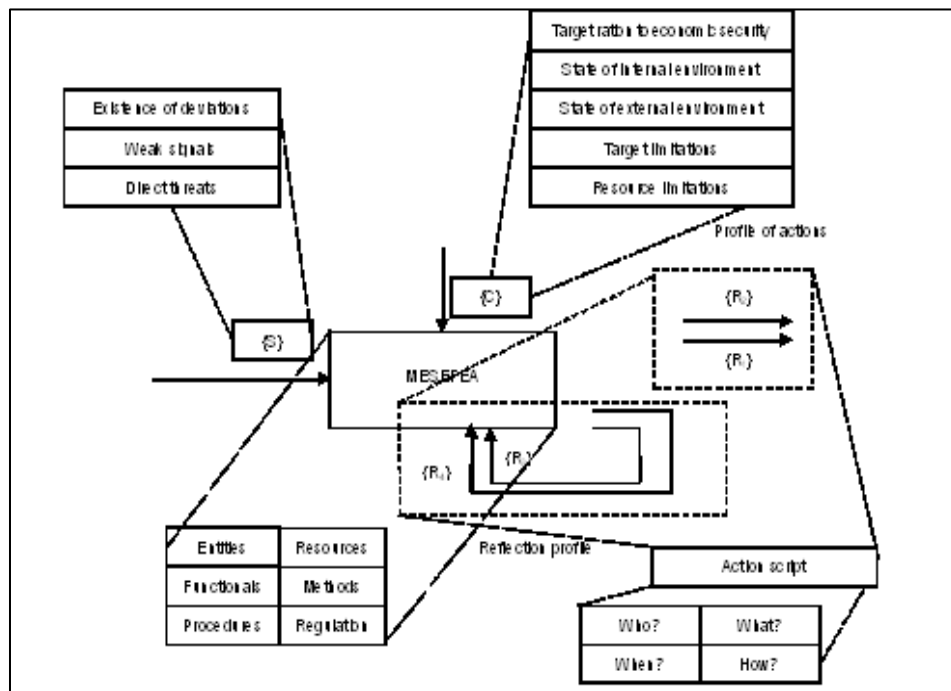


Fig. 1. Model of mechanism of economic security functioning concerning the foreign economic activity of enterprise.

3 RESULTS

The availability of response multitudes {R} for MESEFEA of a particular enterprise it is possible to soundly ascertain the level of such mechanism. This assertion in its simplest version is presented in tabular format in table 1.

TABLE 1

Characteristics of MESEFEA depending on the availability of multitudes of its responses to present incentives (simplified version)

No	Characteristics of multitudes {R}	Characteristics of MESEFEA level	Characteristics of MESEFEA
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1	$\{R_1\} = 0,$ $\{R_2\} = 0,$ $\{R_3\} = 0,$ $\{R_4\} = 0$	Zero	MESEFEA is declarative in nature, since there are no responses to present incentives within the mechanism functioning. Even if MESEFEA formally exists within the enterprise system and the functioning of this mechanism is formally declared, in fact, the result of its functioning is not available
2	$\{R_1\} \neq 0,$ $\{R_2\} = 0,$ $\{R_3\} = 0,$ $\{R_4\} = 0$	Low	MESEFEA is purely reactive in nature. Functioning of the mechanism is evident as responses to explicit and tangible incentives under existing conditions. However, the result of the mechanism functioning does not cover any precautionary and preventive measures. MESEFEA is unchanging and inflexible

3	$\{R_1\} \neq 0, \{R_2\} \neq 0, \{R_3\} = 0, \{R_4\} = 0$	Average	MESEFEA is preventive and precautionary in nature and has specific results. MESEFEA reacts both to certain incentives and involves monitoring, warning, and preventive measures. However MESEFEA remains unchanged and nonadaptive to changes in internal and external environment of the enterprise
4	$\{R_1\} \neq 0, \{R_2\} \neq 0, \{R_3\} \neq 0, \{R_4\} = 0$	Above average	MESEFEA is reflective and adaptive in nature; it responds to incentives, involves monitoring, warning, and preventive measures and provides for self-improvement and adjustments based on the analysis of previous actions and their consequences
5	$\{R_1\} \neq 0, \{R_2\} \neq 0, \{R_3\} \neq 0, \{R_4\} \neq 0$	High	MESEFEA is proactive and adaptive in nature; it responds both to the obvious incentives, and involves monitoring, warning, and preventive measures, provides for self-improvement based on the analysis of previous actions and proactive view of the functionality of this mechanism in the future

						character
15	$\neq 0$	$\neq 0$	$\neq 0$	$= 0$	High	Reflexive and adaptive character
16	$\neq 0$	$\neq 0$	$\neq 0$	$\neq 0$	High	Active-adaptive character

The situation when $\{R_1\} = 0$, but at the same time $\{R_2\} \neq 0$, although $\{R_3\} = 0$ and $\{R_4\} = 0$, still characterizes the low level of MESEFEA, since it corresponds to the situation when regular work is carried out in the activities of MESEFEA, but there is no reaction to the presence of $\{S\}$. A certain exception or a transition period in the activities of MESEFEA may be the situation when $\{R_1\} = 0$, but $\{R_3\} \neq 0$ and / or $\{R_4\} \neq 0$, since this corresponds to the construction or organization, or the setting of MESEFEA. In such a situation, the functionality of such a mechanism is not yet ensured. Therefore, the MESEFEA level can be estimated as below average (many reactions $\{R_1\}$ are not performed, but its implementation is expected to be adjusted), or as average (if $\{R_3\} \neq 0$ and $\{R_4\} \neq 0$, ie there is a complex MESEFEA improvement. The normal situation for the sets $\{R\}$ in MESEFEA activity is when $\{R_1\} \neq 0$, which means MESEFEA provides the necessary $\{R\}$ in response to the presence of $\{S\}$ from the enterprise external and internal environment. However, further variants of the sets $\{R_2\} - \{R_4\}$ detail the MESEFEA characteristic and its functionality. The option, when $\{R_2\} - \{R_4\}$ are empty, describes the low level of MESEFEA, since such a mechanism reacts retroactively only to $\{S\}$. However, of course, this option is better than the complete absence of appropriate reactions. An option when $\{R_1\} \neq 0$ and $\{R_2\} \neq 0$ describes the normal functionality of MESEFEA without improving it both on the target and on a reflective basis. The options are remarkable when $\{R_1\} \neq 0, \{R_2\} = 0$, but $\{R_3\} \neq 0$ and / or $\{R_4\} \neq 0$. These options are characterized by the normal MESEFEA functioning and the possibility of its improvement by generating sets of reactions $\{R_1\}$ and $\{R_2\}$. In this case, the level of MESEFEA should be assessed as average or above average, since the functionality of the mechanism is not complete, but continues to improve. Finally, in the case when $\{R_1\} \neq 0$ and $\{R_2\} \neq 0$, while $\{R_3\} \neq 0$ and / or $\{R_4\} \neq 0$, the MESEFEA level should be estimated as high, since current response to $\{S\}$ sets is ensured, carrying out regular work, as well as the possibility of improving MESEFEA based on the previous experience of its work and anticipating the expected changes in the enterprise internal and external environments. Suggested tables 1 and 2, based on the selected sets of reactions MESEFEA $\{R_1\} - \{R_4\}$ to the existing stimuli $\{S\}$ can be used both in modeling MESEFEA and organizing its work in order to ensure the appropriate level of such a mechanism, and to evaluate the existing MESEFEA for the formation of a conclusion about the level of its work and the need for its improvement. To detail the MESEFEA description, each of the elements in the proposed stimulus-response dyad received its own detail. Thus, the reactions of the mechanism are considered in groups $\{R_1\} - \{R_4\}$, specifying the nature of the activity of each of these groups and distinguishing two contours of reaction - the contour of action and the contour of reflection. There are three sets of signals identified in set $\{S\}$ that may need MESEFEA response. Such groups of signals are possible deviations of certain indicators in the enterprise activity, weak signals and direct threats. Let us consider these possible elements $\{S\}$ in more detail. Examples of elements $\{S\}$ for MESEFEA operation are discussed in table 3. Such examples are not exclusive, that is, they do not describe the set $\{S\}$ as a whole

If we consider a larger variation of the sets $\{R_1\} - \{R_4\}$ for a particular MESEFEA of a particular enterprise, then we can propose and consider a larger number of combinations of MESEFEA reactions to the set $\{S\}$ (table 2). Describing options 1-16 in table 2, it should be noted that options 1-8 cover situations where the MESEFEA level can be described as low or initial. The initial level describes the situation when MESEFEA is only created (in whole or in part) and begins its activity. Of course, in such a situation, one cannot expect a full and adequate response of the mechanism to the existing stimuli. Therefore, in such a situation, $\{R_1\}$ may be equal to zero, and other sets $\{R\}$ are empty or non-empty (in such a situation, we can talk about establishing routine maintenance, improving MESEFEA, etc.). If MESEFEA is already functioning, but $\{R\}$ is an empty set, then the level of MESEFEA can be estimated as low or below average, since MESEFEA does not give a reaction to the set $\{S\}$.

TABLE 2
MESEFEA evaluation based on the presence of sets of its reactions to the available stimuli

No	$\{R_1\}$	$\{R_2\}$	$\{R_3\}$	$\{R_4\}$	MESEFEA level characteristics	MESEFEA characteristics
1	$= 0$	$= 0$	$= 0$	$= 0$	Zero	Absence of an effective mechanism
2	$= 0$	$= 0$	$= 0$	$\neq 0$	Low/initial	Declarative character
3	$= 0$	$= 0$	$\neq 0$	$= 0$	Low/initial	Declarative character
4	$= 0$	$= 0$	$\neq 0$	$\neq 0$	Low/initial	Declarative character
5	$= 0$	$\neq 0$	$= 0$	$= 0$	Low/initial	Declarative character
6	$= 0$	$\neq 0$	$= 0$	$\neq 0$	Below average/initial	Declarative-reflexive character
7	$= 0$	$\neq 0$	$\neq 0$	$= 0$	Below average/initial	Declarative-reflexive character
8	$= 0$	$\neq 0$	$\neq 0$	$\neq 0$	Medium/initial	Declarative-reflexive character
9	$\neq 0$	$= 0$	$= 0$	$= 0$	Low	Reactive character
10	$\neq 0$	$= 0$	$= 0$	$\neq 0$	Average	Fragmentary-reactive character
11	$\neq 0$	$= 0$	$\neq 0$	$= 0$	Average	Fragmentary-reactive character
12	$\neq 0$	$= 0$	$\neq 0$	$\neq 0$	Above average	Preventive-preventive character
13	$\neq 0$	$\neq 0$	$= 0$	$= 0$	Average	Preventive-preventive character
14	$\neq 0$	$\neq 0$	$= 0$	$\neq 0$	Above average	Preventive-preventive

and by individual elements, but they allow us to more fully reflect the content of {S} as an element of the model of functioning of the mechanism of economic security of foreign economic activity of enterprise. The set {C} is of no less value for the description and establishment of MESEFEA is such an element of the proposed model of the functioning of the mechanism of economic security of foreign economic activity of enterprise, that is, the conditions for the functioning of the enterprise as a whole, and MESEFEA, in particular. The target attitude to economic security determines the fundamental importance of this category for the management system, the orientation of the enterprise as a whole, the management system and MESEFEA to ensure economic security.

TABLE 3

An example of MESEFEA activity signals

Groups of signals	Example signal
The presence of deviations	Significant deviation of gross income from foreign economic activity from the planned value according to the results of the period Extension of customs clearance of goods Increase in transaction costs
Weak signals	High turnover of staff in the FEA department The onset of the "recession" stage for the life cycle of the exported product Changing market development trends, introducing and implementing new technologies in target markets
Direct threats	Competitive expansion in the market Direct regulatory restrictions or prohibitions on foreign economic activity Resources loss due to natural or artificial events Leakage of information on enterprise counterparties in the FEA Conflicts with institutional agents

The state of internal and external environments are in priori conditions of the enterprise. The more threats the external environment contains, the more risks the internal environment carries, the more effective MESEFEA must be in order to ensure the necessary state of economic security of the foreign economic activity of the enterprise. Target limits and resource constraints are an important element of the set {C}. There are restrictions on the resource, target, regulatory plan at any enterprise, and such restrictions have an objective impact on the functioning of MESEFEA. Therefore, their clear definition will simplify the management decision made to ensure the economic security of foreign economic activity. The analysis of the content of MESEFEA itself and its specific elements (subjects, functionalities, regulations, procedures, resources and methods) have already been carried out in the MESEFEA frame model, therefore, no additional comments are needed. Such elements of the MESEFEA mechanism provide its functionality, that is, the formation of the set {S} as a response to the set {R}. The scripting method is one of the classic ones in management [12]. Its essence lies in the fact that there is a formation of scenarios of alternative options and a managerial decision is made based on the results obtained and the optimal (according to various criteria) scenario is selected. Using the scenario method, it is proposed to present the functioning of MESEFEA in tuple form. To represent such functioning, it is necessary to describe its two key elements: a trigger and a script. Such elements have their own definition, are used in science, but for a more complete picture of the functioning of this mechanism, it will require concretization of

its content. A trigger is an electronic logic circuit that has two stable states in which it can remain until the control signals change accordingly. In psychology, the term "trigger" refers to a stimulus that starts feelings or problematic behavior. In fact, a trigger is a collection or combination of conditions that trigger certain events. Script – in concept [11] – one of the types of consciousness structures, the type of frame, which performs some special task in natural language processing: familiar situations are described by scripts as stereotypical changes in events. Formalizing the relationship between triggers and scripts to describe the MESEFEA functioning is described as follows:

$$Sc_i = \text{if } Tr_i \text{ then } Scr_j, \quad (1)$$

$$i = 1 \dots k, \quad j = 1 \dots m, \quad l = 1 \dots t,$$

$$Tr \in \{Tr\}, \quad Scr \in \{Scr\},$$

in which i, j, l – counters for scenarios, triggers and scripts;

Sc – MESEFEA functioning scenario;

Tr – trigger, which starts certain MESEFEA functioning scenario;

Scr – script, which occurs as a result of a specific trigger.

That is, the script describes a situation of MESEFEA activity in which if a certain trigger occurs, it leads to updating of a certain script. Trigger and script in each scenario belong (individually) to a set of predefined triggers and scripts. One trigger starts one script, while one script can be the result of multiple triggers. In an analytical form, the ratios for trigger combinations and scripts in the MESEFEA scenario are proposed to be represented as follows:

$$Sc = \langle Tr, Scr \rangle,$$

$$\{Tr\} = \{S\} \cdot \{C\},$$

$$Scr = \langle Sub, Func, Res, Meth, Proc, Regl \rightarrow R \rangle, \quad (2)$$

$$R \in \{R_1, R_2, R_3, R_4\},$$

in which Sub – specific subjects from the composition of MESEFEA subjects that will form a MESEFEA response to the prevailing trigger;

$Func$ – formed functional of subjects within MESEFEA;

Res – resources used to form a MESEFEA response to a generated trigger;

$Meth$ – methods used to form a MESEFEA response to a formed trigger;

$Proc$ – procedures within the selected scenario, which are part of the MESEFEA response to a formed trigger;

$Regl$ – regulations within the selected scenario, which are part of the MESEFEA reaction to a formed trigger;

$R \in \{R_1, R_2, R_3, R_4\}$ – formed MESEFEA reaction to an updated trigger.

In tuple form, the script, answering the question of who, what, when and how to do to form the proper $R \in \{R\}$ for MESEFEA, is described as a combination of a trigger and a script. The set of triggers for MESEFEA is determined by combining the operating conditions of the enterprise {C} and the input signals {S}. The importance of taking into account the set {C} is due to the fact that the same signal $S \in \{S\}$ can activate completely different scripts under different operating conditions of $C \in \{C\}$. Coverage of the content of the model of the mechanism functioning of economic security of the foreign economic activity of the enterprise allows us to create an algorithm for building MESEFEA at a particular enterprise. The basis of such an algorithm is the determination of MESEFEA elements for a particular enterprise and the defining of elements of the dyad "stimulus-response", taking into account the conditions of

the enterprise operating. The proposed algorithm for constructing MESEFEA is presented in Fig. 2.

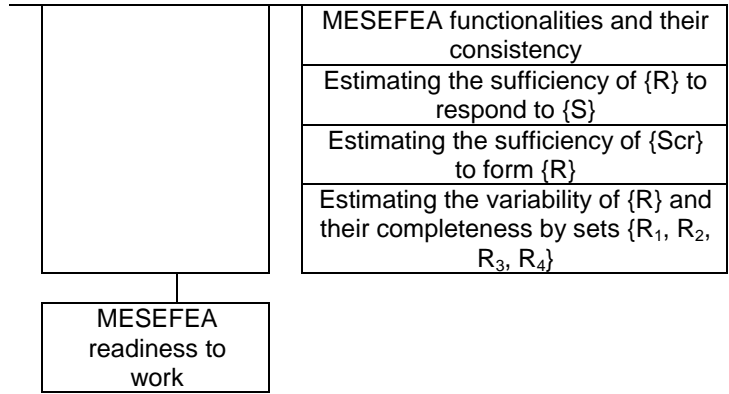
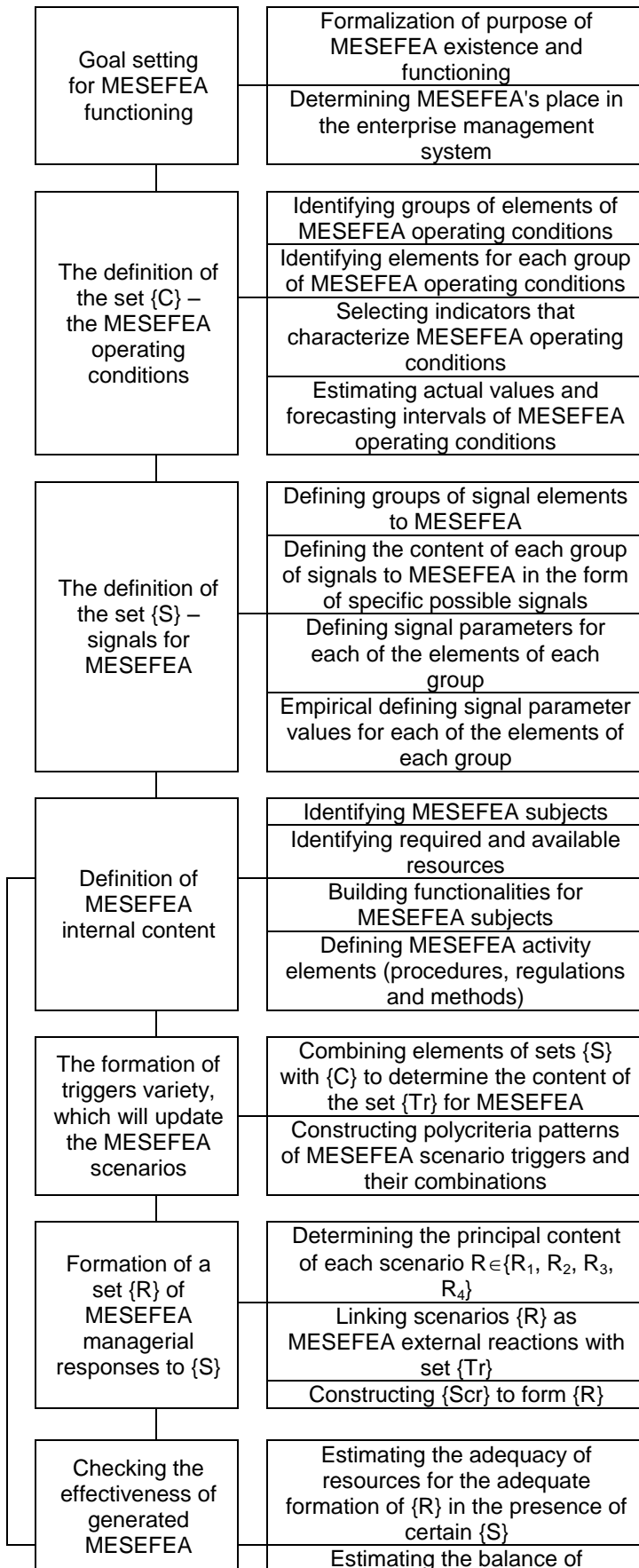


Fig. 2. The algorithm of constructing MESEFEA.

Commenting on the developed algorithm for constructing MESEFEA (Fig. 2), the following should be noted. The MESEFEA construction algorithm is somewhat linear, since it involves the sequential structuring of each of the MESEFEA elements and their contacts with the external environment (multiple stimuli, reactions and conditions of operation), and the implementation of such algorithm may take some time. But the advantage of such an algorithm is saving time and effort during the operation of the developed MESEFEA. That is, from the point of view of the theory of complexity of algorithms, a rather significant part of the effort and time is spent on the stage of building MESEFEA as a result of combining {S} and {C}, building {Tr}, setting up the necessary {R} on the external and internal {S}, working out {Scr}, but then the reaction of MESEFEA is very fast, since the built MESEFEA is ready to react to real or most anticipated {S}. A certain weakness of such a MESEFEA construction algorithm is its focus on typical tasks and the retrospective nature of readiness to respond. MESEFEA that was formed as a result of such an algorithm may not cope immediately with the formation of proper responses to those elements of the set {S} or to unexpected elements {Tr} due to changing {C}, which were not previously prescribed in such an algorithm and, accordingly, were not considered in the mechanism. However, such a weakness in MESEFEA's activity is easily leveled due to the presence of a reflective reaction loop, that is, the sets {R3} and {R4}, which allow the retrospective or proactive adaptation of MESEFEA to new {S} and timely provide the necessary {R}. The MESEFEA construction algorithm itself contains an iterative control element, since at the last step of the algorithm, the validity of the generated MESEFEA is checked. Such verification is carried out both on the basis of evaluating the sufficiency and completeness of individual sets describing the functioning of MESEFEA, and by simulation – running MESEFEA in test mode based on conditional or empirical {S} and expert evaluations of further {R} that will be selected and proposed to implementation during the work of MESEFEA. In addition to purely simulation modeling, which is able to confirm the effectiveness of the mechanism for certain {S}, but not enough to analyze all the options for its functioning, separate sets for MESEFEA are compared. So, it is advisable to compare the available and necessary resources to form the totality of the proposed {R}. And if the number of such resources is unsatisfactory, we can reduce {R}, that would lead to reducing the functionality of MESEFEA, or increase the number of resources used. If resources are sufficient, the MESEFEA functional balance and consistency should be further

evaluated. Moreover, such consistency should be considered inside of MESEFEA between individual entities and other units in the activity of the enterprise. In the future, as part of the validation of the generated MESEFEA, it is necessary to expertly check the sufficiency of the generated {R} to respond to the expected or empirically determined {S}. For a deeper test, it is advisable not to take retrospective information, but to combine the {S} scenario and test MESEFEA's readiness to formulate the necessary {R}. To ensure MESEFEA's internal readiness to formulate adequate management responses, the sufficiency of multiple scripts should be evaluated. Since the external reaction from the composition {R} is a consequence of the joint functioning of the MESEFEA elements, the set {Scr} is subject for verification, which ensures the formation of external reactions. The insufficiency of the set {Scr} will automatically make {R} impossible, and it is better to detect this at the testing and verification stage of MESEFEA, rather than at the stage of its functioning, since such insufficiency will lead to an inability to respond to {S} in a timely manner. Finally, at the step of MESEFEA test, it is advisable to check the degree of variability {R}. Such variability should be adequate {S}, since the measure of variability of the control system should be higher than the variability of the controlled system. Otherwise, MESEFEA simply will not happen. In terms of management, otherwise, MESEFEA simply will not cope with its tasks – low variability {R} will actually mean the ergodic equifinal deterministic nature of the functioning of MESEFEA. However, speaking about the set {S} as a generalizing characteristic of the influence of the external and internal environment on the functioning of MESEFEA, it will actually mean that MESEFEA is not a governing body to ensure the economic security of the foreign economic activity of the enterprise, but rather acts as a management object. Such a situation is not useful, but even harmful in the context of ensuring the economic security of the enterprise, since then the response of the governing body is less dependable on many possible stimuli, and such a reaction is narrowed regarding the entire spectrum {S}. Of course, it is difficult to talk about the effectiveness of MESEFEA in this situation, therefore, to ensure the normal efficient functioning of MESEFEA in the case of a wide range of {S}, the variability {R} should be adequately high. But this fact must be checked before, at the step of MESEFEA construction. Another aspect of checking the set {R} is to establish the completeness of the reaction for all the sets {R1}, {R2}, {R3} and {R4}. That is, in general, for the set {R} the number of reactions may be sufficient, but for individual sets of {R1}, {R2}, {R3} and {R4} the number of reactions may be insufficient. In such a situation, when checking the effectiveness of the developed algorithm for constructing MESEFEA, it is advisable to check for sufficiency of each of the sets under consideration and, if necessary, supplement it with the necessary reactions. If the verification of the effectiveness of the generated MESEFEA in all areas recognized the adequacy of MESEFEA, its adequacy, the ability to perform the main task is to ensure adequate {R} in the case of empirically and scenario-confirmed {S}, then the action of the algorithm should be considered as completed, and the generated MESEFEA is ready for work. If an imbalance is identified in one or more of the proposed areas of verification, or iterative simulation has revealed insufficient functionality of the mechanism, then the proposed algorithm provides a return to the stage of determining the internal content of MESEFEA, its refinement in order to provide an

adequate managerial response. Of course, this feature of the algorithm (iterative improvements with checking the effectiveness before the algorithm starts functioning) has its drawbacks, in particular, the formation of the algorithm can take a sufficient amount of time. However, it is better to spend efforts at the stage of MESEFEA formation to ensure the functionality of such a mechanism than to obtain insufficiently functioning MESEFEA with inadequate {R} or to refine MESEFEA in the process of its functioning due to the many reactions {R3}, which still need to be formed.

4 CITATIONS

The study proposed a behavioral model of MESEFEA functioning, which allows to describe the action of such a mechanism for a particular enterprise, taking into account the conditions of its functioning and the expected incentives from the external and internal environment, by isolating and describing the set of reaction paths of such a mechanism. The practical value of the presented scientific results lies in the fact that they allow the developed mechanism to be implemented in the enterprise management system basing on a detailed description of the incentive content, the operating conditions of the mechanism and its content, reaction paths and corresponding scenarios. Based on the developed model of MESEFEA functioning and the detailed disclosure of each of the elements of such a model, an algorithm for constructing this mechanism has been developed. On the basis of the model under consideration and its certain elements, as well as the structure of the scenarios of MESEFEA functioning, it allows to build MESEFEA for a particular enterprise, taking into account the actual operating conditions of such an enterprise, the expected incentives and reactions. In view of the foregoing, the prospects for further research will be to detail the actions of the direct executors involved in the functioning of MESEFEA and the scientific, methodological and instrumental support for their effective work.

REFERENCES

- [1] Bates, R. (2017). *The Development Dilemma: Security, Prosperity, and a Return to History*. Princeton University Press, 200.
- [2] Davidavičienė, V., Raudeliūnienė, J., Tvaronavičienė, M., Kaušinis, J. (2019). The importance of security aspects in consumer preferences in electronic environment. *Journal of Security and Sustainability*. Issues, 8(3), 399-411.
- [3] Hart, O. and B Holmström (2010). A Theory of Firm Scope. *Quarterly Journal of Economics*, 125(2), 483-513.
- [4] Havlovska, N., Rudnichenko, Y., Lisovskyi, I. (2019). Transformation processes in the system of providing economic security of investment activities of industrial enterprises. *Baltic Journal of Economic Studies*, 5(2), 18-23.
- [5] Havlovska, N., Savina, H., Davydova, O., Savin, S., Rudnichenko, Y., Lisovskyi, I. (2019). Qualitative substantiation of strategic decisions in the field of cost management using the methods of economic mathematical modeling. *TEM JOURNAL – Technology, Education, Management, Informatics*, 8(3), 959-971.
- [6] Huber, G., Rehm, P., Schlesinger, M., Valletta, R. (2010). *Economic Security at Risk: Findings from the*

Economic Security Index.

- [7] Korauš, A., Dobrovič, J., Polák, J., Kelemen, P. (2019). Security position and detection of unusual business operations from science and research perspective. *Entrepreneurship and Sustainability. Issues*, 6(3), 1270-1279.
- [8] Kozachenko, G. V., Pogorelov, Yu. S., Bilousova, A. Yu. (2019). Development of threats to enterprise activity. Security of the XXI century: national and geopolitical aspects : collective monograph. Prague Czech Republic, 134-140.
- [9] Rudnichenko, Ye., Havlovska, N., Matiukh, S., Lopatovskiy, V., Yadukha, S. (2019). Optimization of the interaction of industrial enterprises and foreign counterparties using pure player strategies in a non-cooperative game. *TEM JOURNAL – Technology, Education, Management, Informatics*, 8(1), 182-188.
- [10] Rudnichenko, Ye. M., Havlovska, N. I., Yadukha, S. Y. (2018). Implementation of managerial innovations in the system of providing economic security for subjects of foreign economic activity. *Scientific bulletin of Polissia*, 1(13), P.1, 88-94.
- [11] Schank, R. C., Abelson R. P. (1977). *Scripts, plans, goals, and understanding: An inquiry into human knowledge structures*. Hillsdale : Erlbaum, 248.
- [12] Sparrow, O. (2010). Making use of scenarios – from the vague to the concrete. *Scenario & Strategy Planning*. London : Ark Publishing, 2(5), 18–21.
- [13] Thaler, R. H. (2016). Behavioral economics: Past, present, and future. *American Economic Review*. 106, 1577–1600.
- [14] Thaler, R.H. (2015). *Misbehaving: The Making of Behavioral Economics*. New York: W. W. Norton & Company.
- [15] Watson, J. B. (1913). Psychology as the Behaviorist Views it. *Psychological Review*, 20(2), 158-177.
- [16] Watson, J. B. (1930). *Behaviorism* (Revised edition). Chicago: University of Chicago Press.
- [17] Zlotenko, O., Rudnichenko, Y., Illiashenko, O., Voynarenko, M., Havlovska, N. (2019). Optimization of the sources structure of financing the implementation of strategic guidelines for ensuring the economic security of investment activities of an industrial enterprise. *TEM JOURNAL – Technology, Education, Management, Informatics*, 8(2), 498-506.