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Abstract. The purpose of this study is to develop mechanisms to ensure the economic security of enterprises on the basis of identifying qualitative new patterns of its development, which are associated with digital transformation. The work uses methods of generalization, comparison, analysis and synthesis — to understand the essence and components of economic security; a graphic method — to visualize the conceptual model and mechanism for ensuring the economic security of the enterprise in conditions of digitalization; monographic methods — for in-depth research of the tasks set; abstract-logical methods for theoretical generalization of research results and formulation of conclusions and proposals. The mechanism for ensuring the economic security of enterprises on the basis of identifying qualitative new patterns of its development, the action of which allows to ensure the necessary level of economic security of the enterprise is suggested. The practical significance of the research lies in the development of methods for assessing the economic security of enterprises based on the calculation of relevant local indicators and a set of indicators that characterize various aspects of economic security (production, human resources, finance, environment, digitalization), which allows to develop timely measures to improve economic security in relevant areas. The originality lies in the justification of the structure of the functional components of the economic security of the enterprise and the justification of the need to calculate its level on the basis of the integral index in order to develop measures to improve it. The results of the study can be used for the formation of an effective system of economic security of the enterprise.

Keywords: security, economic security, management, mechanism, enterprise, system, indicators of economic security.

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ЕКОНОМІЧНА БЕЗПЕКА ЯК ЕЛЕМЕНТ КОРПОРАТИВНОГО УПРАВЛІННЯ

Анотація. Метою дослідження є розроблення механізмів забезпечення економічної безпеки підприємств на основі виявлення якісно нових закономірностей його розвитку, які пов'язані із цифровою трансформацією. Використано методи узагальнення, порівняння, аналізу і синтезу — для розуміння сутності та складових економічної безпеки; графічний метод — для унаочнення концептуальної моделі та механізму забезпечення економічної безпеки підприємства в умовах цифровізації; монографічні методи — для поглибленого дослідження поставлених завдань; абстрактно-логічні методи — для теоретичного узагальнення результатів дослідження і формулювання висновків та пропозицій. Запропоновано механізм забезпечення економічної безпеки підприємств на основі виявлення якісно нових закономірностей його розвитку, дія яких дозволяє забезпечити потрібний рівень економічної безпеки підприємства. Практична значимість дослідження полягає в розробленні методики оцінювання економічної безпеки підприємств на основі розрахунку відповідних локальних показників і набору індикаторів, які характеризують різні аспекти економічної безпеки (виробництво, кадри, фінанси, екологія, цифровізація), що дозволяє своєчасно розробити за відповідними напрямками заходи щодо підвищення економічної безпеки підприємства. Оригінальність полягає в обґрунтуванні структури функціональних складових економічної безпеки підприємства та обґрунтуванні необхідності розрахунку її рівня на основі інтегрального показника з метою вжиття заходів щодо її підвищення. Результати дослідження можуть бути використані для формування ефективної системи забезпечення економічної безпеки підприємства.

Ключові слова: безпека, економічна безпека, управління, механізм, підприємство, система, індикатори економічної безпеки.

Формул: 3; рис.: 2; табл.: 3; бібл.: 17.

Introduction. Ensuring economic security is an important aspect of the successful functioning and development of corporate structures and largely affects the effectiveness of their activities. The policy of economic security in corporate management requires a comprehensive approach, the implementation of which is quite difficult and important in the conditions of the manifestation of modern trends. The main task of the policy of economic security in corporate management is to ensure sustainable and most effective development in the current environment, as well as the creation of high growth potential in the future. The policy of economic security is aimed at providing stable and dynamic development, constant balancing and harmonization of activities, which are achieved by using all types of resources and opportunities, available to the corporation.

Formation and realization of economic security policy occurs through the process of creation of intercorporate system of economic security, focused on identification of bifurcation points in development (transformation from stable state of corporate management to unstable). Insufficient attention to the issues of economic security policy in corporate management to a great extent is reflected in the results of activity, dynamics of growth and sustainable development of the company.

Literature review and problem statement. The concept of economic security plays an important role and is an integral part of both external and internal policy of any company. An important task of economic security of the company is to protect its own resources and personnel from various negative influences, prevention of causes, as well as determining the factors that can have a negative impact on the results of its activities.

Theoretical approaches to the content of the concept of «economic security» can be divided into the following groups.

Thus, one of them can include the works of scientists who believe that economic security is closely related to the dynamics of economic development, necessary to protect the interests of the state. This point of view is held by such scientists as Antonian O. A. [1], Karaim M. M. [2], etc.

The second group including Heyets V. M. [3], Otenko I. P. [4], etc. consider economic security as an interrelation of conditions and factors that ensure the independence and in the long run the maximum growth of economic resources per capita in a more efficient way.

The third group of authors implies under the economic security the ability of the economy to meet the needs of society at the international and national level. This group of scientists includes Arefyeva O. B. [5], Chukurna O. P. [6], Piletska S. T. [7—9], etc.

Among scientists there is also no consensus on the essence of the economic security of the enterprise.

So, Pyrozhev S. I. characterizes the economic security of an enterprise as its ability to perform its function and at the expense of which to ensure the achievement of interests in the sphere of business [10]. According to Reverchuk N. I., economic security is a state, mode, legal atmosphere that ensures the reliability of the functioning of the enterprise [11]. Boki V. I. notes that when forming the system of economic security, it is necessary to ensure the competitive advantages due to the correspondence of the organizational structure and the financial, material, personnel potential of the enterprise to its strategic tasks and goals [12]. According to Voropay V. A., the economic security of an enterprise is a system that provides optimal resource management, aimed at ensuring its sustainable functioning, effective resistance to various negative factors of the environment [13].

In another study, the economic security of an enterprise is characterized as a system of protection of legitimate and vital interests of an enterprise from threats of various forms, which ensures its stable development according to the established objectives under conditions of economic risk and competition [14—16].

Consequently, the economic security of corporate structures or enterprises is the provision of stable activity, increasing efficiency, growth of financial and economic indicators, innovation, social development under the conditions of organizational, legal and production relations, intellectual resources.

The enterprise as an object of economic security cannot exist in conditions of self-isolation. The assessment of the state of economic security, which characterizes the effectiveness of the use of resources of the enterprise to achieve this goal, should be expressed quantitatively or qualitatively through the concept of «the level of economic security».

To achieve the target level of economic security, an enterprise should conduct such research in each functional component of business.

The structure of such functional components as a whole coincides with the main directions of economic security (*Table 1*).

Table 1

Structure of functional components of economic security of the enterprise

Functional component	Description of the purpose of the components
Financial	Rational use of financial assets, study of profitability and financial sustainability
Tax	Striving for protection against additional financial losses of tax nature
HR	Provision of the organizational structure with human resources and effective HR-management
Intellectually innovative	Development of intellectual potential, stimulation of rationalization work
Production and technological	Using better technologies to optimize production processes, increase competitiveness, efficient management of fixed and circulating assets
Regulatory and legal	Support for the activities of the company in compliance with legal norms
Ecological	Pursuing the ecological policy, which is connected with minimization of environmental damage
Information	Creating the conditions for the continuous, safe and purposeful use of information resources
Marketing	Correlation between the internal conditions of the enterprise and the market opportunities

Source: summarized and supplemented by authors according to [14—16].

Further activities to ensure economic security is to analyze the formalized system of factors, which is expressed through indicators. Modeling the influence of factors, assessing the state and creating mechanisms to ensure economic security will determine the achievement of goals and satisfaction of vital interests of the enterprise.

Principle of work. The purpose of this study is to develop mechanisms of economic security of enterprises on the basis of identifying qualitative new patterns of its development, which are associated with digital transformation.

Research results. In modern conditions the main tasks of economic security in corporate governance are to ensure a stable and effective activity, sustainable growth, the formation of strong potential and dynamic development of corporate structures in the future.

Rational use of all resources of the enterprise, increase of efficiency of activity can be received at the expense of decrease in the negative factors influencing economic security and creation of financial stability and freedom; quality of competitiveness; innovations and investments; effective corporate management; legislative maintenance; information security; competent personnel, the capital, property and commercial interests.

Assessment of economic security of corporate structures is built on the basis of determining the threshold level of economic security of the company. Its monitoring is formed on the basis of the logic of the analysis of existing threats to economic security and is based on:

- search for weaknesses in the operation of the company;
- differentiation of their objective and subjective influence; determination of a set of methods to prevent threats to economic security;
- analysis of measures taken to eliminate risks; determination of costs for measures to ensure economic security.

In order to ensure the economic security of enterprises, it is necessary to develop an appropriate concept.

The concept of ensuring the economic security of the enterprise — a set of views on the problems of economic security and ways to solve them at different stages and levels of economic activity of entrepreneurs, as well as the key principles, stages, directions of implementation of security measures.

Economic security of the company is determined by protective qualities, aimed at reducing risks and observance of economic interests.

The conceptual model of economic security of the company in the conditions of digital transformation is shown in *Fig. 1*.

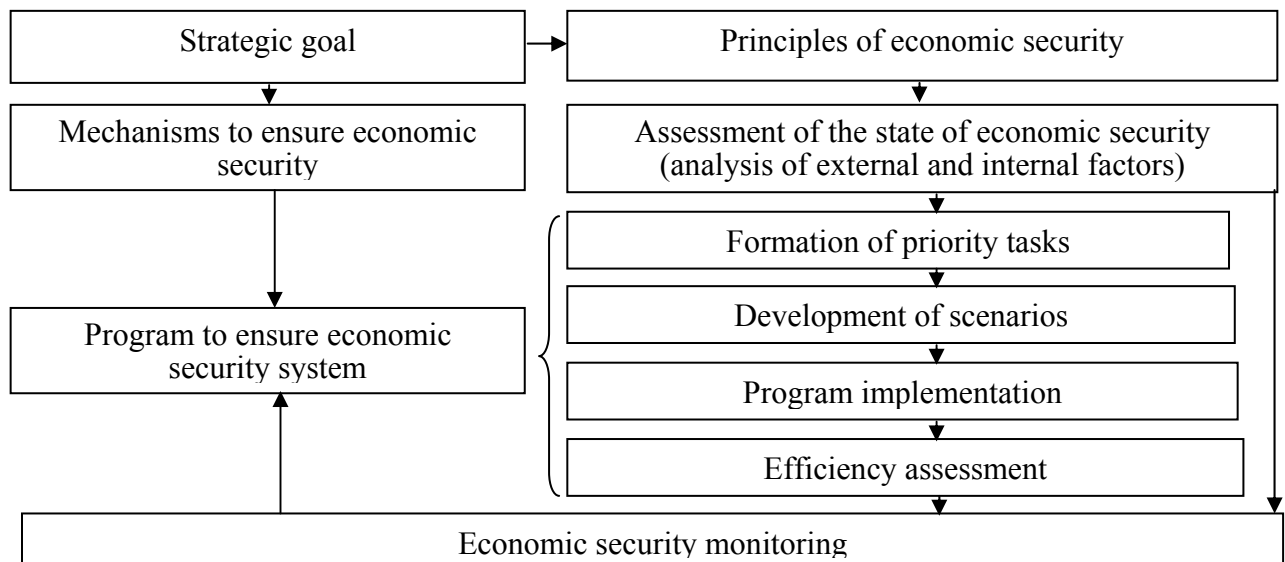


Fig. 1. Conceptual model of economic security of the enterprise in the context of digitalization

Source: developed on the basis of [17].

The model includes the goal, idea, vision of the problem, the subject and object of management, tasks on achievement of the established purposes, principles, mechanisms of ensuring economic security in the conditions of external and internal risks.

The main purpose of ensuring the economic activity of enterprises is the formation of conditions for stable socio-economic development of enterprises, the preservation of viability and economic stability under the impact of adverse internal and external factors.

The key tasks of ensuring the economic security of the enterprise can be obtained by means of:

- preparation and analysis of initial information, forecasting the development of enterprises;
- control over the observance of the rights of the enterprise's employees;
- tracing the base of clients and potential employees; monitoring the activities of employees, business partners and competitors;
- operational identification of potential exogenous and endogenous threats;
- ensuring the integrity of financial and material resources;
- search for optimal management strategies.

The object of security is a sustainable economic position of the enterprise in the current and prospective periods, not exceeding the critical indicators of the state of security.

The subject is responsible within the business units' management link within the limits defined for it by service instructions of competence and authority.

The concept of economic security should be subject to the following principles: consistency, comprehensiveness, unity, collegiality, planning, information equipment, analyticity.

The next stage in the implementation of the concept is the analysis of external and internal information about the state of the system of economic security of enterprises.

The main part of the concept is the implementation of programs to ensure the economic security of enterprises.

It includes the stages of formulation of priority tasks, development of the scenario, implementation of programs, as well as evaluation of its effectiveness.

The mechanisms for ensuring the economic security of enterprises under the conditions of digitalization are shown in Fig. 2.

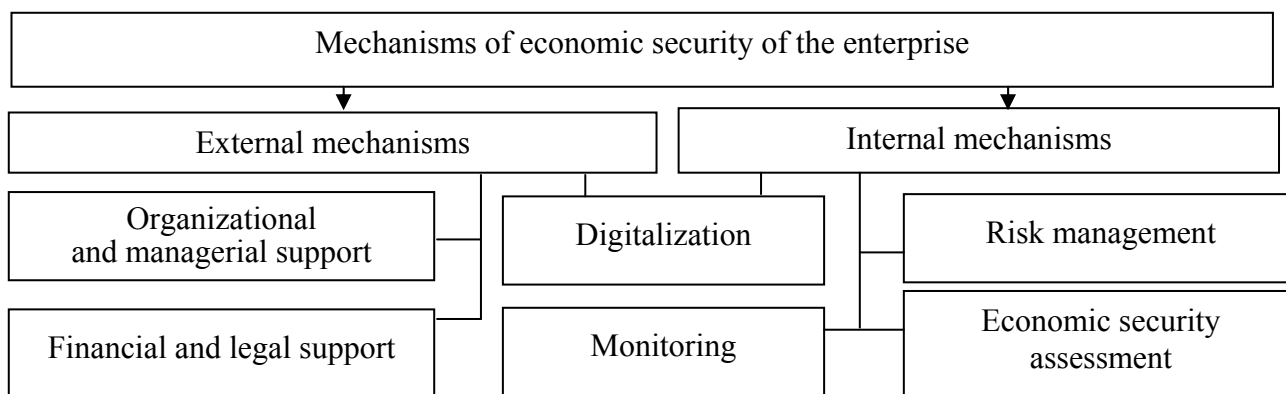


Fig. 2. Mechanisms of economic security of the enterprise in the conditions of digitalization

External mechanisms — include common at the enterprise ways of organizing the interaction of individual components of the system of economic security. The external environment of enterprises can include such entities as the state and its institutions; markets for goods, services, innovations, labor; financial institutions; competitors; suppliers; consumers; public and other organizations; and individuals. Internal mechanisms — are methods of organizing internal business processes of companies in order to ensure their economic security.

Ensuring economic security — the process of supporting various types of security at a given level: financial, intellectual, personnel, information, etc. In scientific literature and practical activities to determine economic security use a significant number of methods: scenario analysis and processing; pattern recognition; multivariate statistical analysis

Summarizing the methods and models for assessing the level of economic security, we can conclude that their shortcoming is the lack of specificity of accounting for the impact of the enterprise of the digital economy. On this basis, the methodology of assessing the economic security of enterprises in the conditions of digitalization, which includes the analysis of local indicators and their convolution into one generalized criterion of economic security based on a set of indicators that characterize various aspects of economic security (Table 2), was developed.

Table 2

The system of indicators of economic security of the enterprise

Name of indicators	Projection
Personnel qualification level	Personnel security
Level of personnel motivation	
Personnel retraining rate	
Personnel stability level	
Rate of fixed assets renewal	Industrial and technological safety
Labor productivity	
Share of innovative products	
Share of innovative products exports	
Working capital availability	Financial security
Ratio of total liquidity	
Return on sales	
Ratio of business activity	
Share of investments in sustainable water use	Environmental safety
Share of investments in environmental protection	
Share of investments in waste management	
Environmental innovation-and-ecology ratio	
Share of workers working remotely	Digital security
Digital marketing utilization rate	

Since all indicators have different dimensions, they are given in a dimensionless form for joint analysis. The information about the critical (threshold) values of the indicators is used. Generally accepted values are used as threshold values for the characteristics of production-

technological and monetary safety projections. To reduce the indicators to a dimensionless form a function is used:

$$y_j = 2 \frac{P_j}{K_j}, \tag{1}$$

where K_j — value of parameter j ;
 P_j — threshold values.

The rest of the indicators were initially dimensionless with shift limits from 0 to 1.

Further, in order to position enterprises by the level of economic security, an integral assessment of individual projections of economic security and the system of indicators as a whole was carried out. The generalized indices for the projections were calculated as the sum of the products of the transformed indicators by their significance coefficients, reflecting the contribution of each indicator to the projection and ranked on the basis of expert assessments:

$$Z_i = \sum_{m=1}^4 y_4(i-1) + mS_4(i-1) + m, \tag{2}$$

where i is the number of the projection;

y_j — normalized indicator j ;

s_j — weight of the index.

The integral index of economic security is the sum of the generalized indices of the projections multiplied by the weight coefficient, reflecting the contribution of each projection to the assessment of economic security and determined on the basis of expert evaluations:

$$Z = \sum_{m=1}^5 Z_i r, \tag{3}$$

where r is the weight of the corresponding projection.

The value of the integral index describes the level of economic security of the company. If this value lies between 0 and 0,2, the level of economic security is extremely low; if 0,2 to 0,4 is low; if 0,4 to 0,6 is medium; if 0,6 to 0,8 is high; if 0,8 to 1 is very high. The same positioning can be carried out for each of the five projections of economic security.

Thus, we propose a system of twenty indicators, divided into five projections of economic security: personnel, production and technology, financial, environmental and digital. To position enterprises by the level of economic security in the conditions of digitalization, a procedure for calculating the integral indicator was suggested.

On the basis of the suggested model of integral assessment of the level of the enterprise economic security it was carried out to determine the existing and forecast level of economic security of such enterprises as PJSC «Hartron», PJSC «Datagroup», PJSC «Kyiv Radio Plant» (Table 3).

Table 3

Generalized indicators of economic safety of the enterprises

Projection	PJSC «Hartron»	PJSC «Datagroup»	PJSC «Kyiv Radio Plant»
HR	0,703	0,905	0,614
Manufacturing	0,690	0,245	0,501
Finance	0,530	0,412	0,462
Environment	0,05	0,075	0,415
Digitalization	0,75	0,075	0,225
Integral index	0,410	0,342	0,443

Source: own research.

At PJSC «Kyiv Radio Plant» the level of economic security is 0,443 (see Table 3), which indicates problems at the enterprise, at PJSC «Hartron» the level of economic security is 0,410, which indicates an average level of economic security, and at PJSC «Datagroup» the integral index value is 0,342 corresponds to the low level.

Conclusions. Thus, the economic security of the enterprise, its independence and prevention of threats can be reliably ensured if the most important strategic directions of the enterprise security are determined. In modern realities there is a need to form mechanisms to ensure an appropriate level of economic security. To achieve this task the internal and external mechanisms are highlighted. The assessment of its level acts as an internal mechanism to ensure economic security. To this end, the model of integral assessment of the level of economic security of enterprises was suggested. In addition, in order to methodologically form an objective assessment of the integral level of economic security of the enterprise, it is necessary to follow a systematic approach based on a comparative analysis of selected indicators by group (production, personnel, finance, ecology, digitalization). Only in this case it is possible to make the most accurate integral assessment of the economic security of the enterprise.

Література

1. Антонян О. А. Підходи до оцінювання рівня економічної безпеки підприємств: порівняльний аналіз. *Восточноєвропейський журнал передових технологій*. 2013. № 6/3 (66). С. 30—34.
2. Караїм М. М. Управління економічною безпекою підприємства: методичні засади. *Формування ринкових відносин в Україні*. 2015. № 11. С. 110—113.
3. Геєць В. М., Кизим М. О., Клебанова Т. С., Черняк О. І. Моделювання економічної безпеки: держава, регіон, підприємство : монографія. Харків : ВД «ІНЖЕК». 2006. 240 с.
4. Отенко І. П., Преображенська О. С. Аналітичний інструментарій управління економічною безпекою підприємства. *Актуальні проблеми економіки*. 2014. № 5. С. 203—209.
5. Ареф'єва О. В., Кузенко Т. Б. Планування економічної безпеки підприємств. Київ : Вид-во Європейського університету, 2005. 170 с.
6. Chukurna O., Nitsenko V., Kralia V., Sahachko Y., Morkunas M., Volkov A. Modelling and Managing the Effect of Transferring the Dynamics of Exchange Rates on Prices of Machine-Building Enterprises in Ukraine. *Polish Journal of Management Studies*. 2019. Vol. 19 (1). P. 117—129.
7. Пілецька С. Т., Коритько Т. Ю. Методика комплексної оцінки антикризового потенціалу підприємства. *Економіка промисловості*. 2018. № 3. С. 76—92.
8. Пілецька С. Т., Коритько Т. Ю., Храпач В. О. Управління фінансовою стійкістю підприємства в контексті забезпечення економічної безпеки в умовах посилення інтеграційних процесів в економіці. *Бізнес Інформ*. 2020. № 12. С. 245—251.
9. Пілецька С. Т., Коритько Т. Ю., Ткаченко Є. В. Модель інтегральної оцінки економічної безпеки підприємства. *Економічний вісник Донбасу*. 2021. № 3 (65). С. 56—66.
10. Пирожков С. И. Методические рекомендации по оценке уровня экономической безопасности. Москва : НИПМБ, 2016. 27 с.
11. Реверчук Н. Й. Управління економічною безпекою підприємницьких структур : монографія. Львів : ЛБІ НБУ, 2004. 196 с.
12. Бокій В. І. Економічна безпека підприємства — найважливіша складова фінансової стійкості. *Актуальні проблеми економіки*. 2003. № 8. С. 111—114.
13. Воропай В. А. Аналіз методичних підходів оцінки стану і рівня забезпечення системи економічної безпеки підприємства. *Культура народів Причорномор'я*. 2013. № 257. С. 190—195.
14. Гнилицька Л. В. Теоретико-методологічний інструментарій формування системи забезпечення економічної безпеки підприємства. *Бухгалтерський облік і аудит*. 2013. № 9. С. 37—45.
15. Kotenko S., Nitsenko V., Hanzhurenko I., Havrysh V. The Mathematical Modeling Stages of Combining the Carriage of Goods for Indefinite, Fuzzy and Stochastic Parameters. *International Journal of Integrated Engineering*. 2020. Vol. 12 (7). P. 173—180.
16. Bazaluk O., Kotenko S., Nitsenko V. Entropy as an Objective Function of Optimization Multimodal Transportations. *Entropy*. 2021. Vol. 23 (8). P. 946.
17. Кашин А. В. Экономическая безопасность предприятия: управленческие решения : автореф. дис. ... канд. экон. наук : спец. 08.00.05 «Экономика и управление народным хозяйством (экономическая безопасность)». Москва : Институт экономики РАН, 2008. 24 с.

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References

1. Antonian, O. A. (2013). Pidkhydy do otsiniuvannya rivnia ekonomichnoi bezpeky pidprijemstv: porivnialnyi analiz [Approaches to assessing the level of economic security of enterprises: a comparative analysis]. *Vostochnoevropejskij zhurnal peredovykh tekhnologij — Eastern European Journal of Advanced Technologies*, 6/3 (66), 30—34 [in Ukrainian].
2. Karaim, M. M. (2015). Upravlinnia ekonomichnoiu bezpekoiu pidprijemstva: metodychni zasady [Management of economic security of the enterprise: methodological principles]. *Formuvannya rynkovykh vidnosyn v Ukraini — Formation of market relations in Ukraine*, 11, 110—113 [in Ukrainian].
3. Heiets, V. M., Kyzym, M. O., Klebanova, T. S., & Cherniak, O. I. (2006). *Modeliuvannya ekonomichnoi bezpeky: derzhava, rehion, pidprijemstvo [Modeling of economic security: state, region, enterprise]*. Kharkiv: VD «ІNZhEK» [in Ukrainian].
4. Otenko, I. P., & Preobrazhenska, O. S. (2014). Analitychnyi instrumentarii upravlinnia ekonomichnoiu bezpekoiu pidprijemstva [Analytical tools for managing the economic security of the enterprise]. *Aktualni problemy ekonomiky — Actual problems of economics*, 5, 203—209 [in Ukrainian].

5. Arefieva, O. V., & Kuzenko, T. B. (2005). *Planuvannya ekonomichnoi bezpeky pidpriemstv* [Planning of economic security of enterprises]. Kyiv: Vyd-vo Yevropeiskoho universytetu [in Ukrainian].
6. Chukurna, O., Nitsenko, V., Kralia, V., Sahachko, Y., Morkunas, M., & Volkov, A. (2019). Modelling and Managing the Effect of Transferring the Dynamics of Exchange Rates on Prices of Machine-Building Enterprises in Ukraine. *Polish Journal of Management Studies*, 19 (1), 117—129. <https://doi.org/10.17512/pjms.2019.19.1.09>.
7. Piletska, S. T., & Korytko, T. Yu. (2018). Metodyka kompleksnoi otsinky antykryzovoho potentsialu pidpriemstva [Methods of complex assessment of anti-crisis potential of the enterprise]. *Ekonomika promyslovosti — Industrial economics*, 3, 76—92 [in Ukrainian].
8. Piletska, S. T. Korytko, T. Yu., & Hrapach, V. O. (2020). Upravlinnia finansovoiu stiikistiu pidpriemstva v konteksti zabezpechennia ekonomichnoi bezpeky v umovakh posylennia intehratsiinykh protsesiv v ekonomitsi [Management of financial stability of the enterprise in the context of economic security in terms of strengthening integration processes in the economy]. *Biznes Inform — Business Inform*, 2, 245—251 [in Ukrainian].
9. Piletska, S. T. Korytko, T. Yu., & Tkachenko, E. V. (2021). Model intehranoi otsinky ekonomichnoi bezpeky pidpriemstva [Model of integrated assessment of economic security of the enterprise]. *Ekonomichniy visnyk Donbasu — Economic Bulletin of Donbas*, 3 (65), 56—66.
10. Pirozhkov, S. I. (2016). *Metodicheskie rekomendacii po ocenke urovnya ekonomicheskoy bezopasnosti* [Guidelines for assessing the level of economic security]. Moscow: NIPMB [in Russian].
11. Reverchuk, N. I. (2004). *Upravlinnia ekonomichnoiu bezpekoiu pidpriemnytskykh struktur* [Management of economic security of business structures]. Lviv: LBI NBU [in Ukrainian].
12. Bokii, V. I. (2003). Ekonomichna bezpeka pidpriemstva — naivazhlyvisha skladova finansovoi stiikosti [Economic security of the enterprise — the most important component of financial stability]. *Aktualni problemy ekonomiky — Actual problems of economics*, 8, 111—114 [in Ukrainian].
13. Voropai, V. A. (2013). Analiz metodychnykh pidkhodiv otsinky stanu i rinvnia zabezpechennia systemy ekonomichnoi bezpeky pidpriemstva [Analysis of methodological approaches to assessing the state and level of economic security of the enterprise]. *Kul'tura narodov Prichernomor'ya — Culture of the peoples of the Black Sea region*, 257, 190—195 [in Ukrainian].
14. Hnylytska, L. V. (2013). Teoretyko-metodolohichniy instrumentarii formuvannia systemy zabezpechennia ekonomichnoi bezpeky pidpriemstva [Theoretical and methodological tools for forming a system of economic security of the enterprise]. *Bukhhalterskyi oblik i audit — Accounting and auditing*, 9, 37—45 [in Ukrainian].
15. Kotenko, S., Nitsenko, V., Hanzhurenko, I., & Havrysh, V. (2020). The Mathematical Modeling Stages of Combining the Carriage of Goods for Indefinite, Fuzzy and Stochastic Parameters. *International Journal of Integrated Engineering*, 12 (7), 173—180. <https://doi.org/10.30880/ijie.2020.12.07.019>.
16. Bazaluk, O., Kotenko, S., & Nitsenko, V. (2021). Entropy as an Objective Function of Optimization Multimodal Transportations. *Entropy*, 23 (8), 946. <https://doi.org/10.3390/e23080946>.
17. Kashin, A. V. (2008). Ekonomicheskaya bezopasnost' predpriyatiya: upravlencheskie resheniya [Economic security of the enterprise: management decisions]. *Extended abstract of candidate's thesis*. Moscow: Institut ekonomiki RAN [in Russian].

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