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DIRECTIONS OF INCREASING THE LEVEL OF ECONOMIC SECURITY OF ENTERPRISES UNDER THE INFLUENCE OF DIGITALIZATION

НАПРЯМКИ ПІДВИЩЕННЯ РІВНЯ ЕКОНОМІЧНОЇ БЕЗПЕКИ ПІДПРИЄМСТВ ПІД ВПЛИВОМ ЦИФРОВІЗАЦІЇ

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Kolodynskiy S.B., Zakharchenko O.V., Kramskiy S.O. Napryamki pidvishchennya rivnya ekonomichnoyi bezpeki pidvplyvom tsyfrovizatsiyi. Naukovo-metodichna statтя.

У статті розкривається сутність процесу цифровізації економіки України в умовах зростання загроз із зовнішнього середовища, що пов'язано з формуванням відкритої економічної системи та глибокими трансформаційними зв'язками у світових економічних відносинах. Економічні відносини в інтелектуальній сфері, які пов'язані з інноваційною діяльністю українських підприємств, є об'єктом уваги як міжнародних трансатлантичних компаній, так і національних структур, які пов'язані з підризом конкурентоспроможності держави та експорторієнтованих підприємств, що в кінцевому підсумку призводить до обмеження самостійності і незалежності держави. За таких умов зростає важливість економічної безпеки та формування суттєво нових систем захисту інтелектуальних ресурсів українських підприємств та обмеження можливостей впливу на сучасні інформаційні, телекомунікаційні та сучасні комунікаційні системи підприємств країни, які можуть стати об'єктом інформаційних атак на виробничу інфраструктуру та створенням загроз, різко зростає для її існування.

Ключові слова: цифровізація господарських підприємств; економічна безпека підприємств; сфери економічної безпеки підприємств; прогнозування та попередження загроз; захист від загроз

Kolodynskiy S.B., Zakharchenko O.V., Kramskiy S.O. Directions of Increasing the Level of Economic Security of Enterprises Under the Influence of Digitalization. Scientific and methodical article.

The article reveals the essence of the process of digitalization of the economy of Ukraine in the conditions of growing threats from the external environment, which is connected with the formation of an open economic system and deep transformational ties in global economic relations. Economic relations in the intellectual sphere, which are connected with the innovative activities of Ukrainian enterprises, are the object of attention of both international transatlantic companies and national structures, which are connected with the undermining of the competitiveness of the state and export-oriented enterprises, which ultimately leads to the limitation autonomy and independence of the state. Under such conditions, the importance of economic security and the formation of significantly new systems for the protection of intellectual resources of Ukrainian enterprises and the limitation of the ability to influence the modern information, telecommunications and modern communication systems of the country's enterprises, which can become the object of information attacks on the production infrastructure and the creation of threats, are sharply increasing for its existence.

Keywords: digitization of economic enterprises; economic security of enterprises; spheres of economic security of enterprises; prediction and prevention of threats; protection against threats

At the current stage of the development of society, the processes of forming the digital economy have acquired special significance in the pace of economic development. However, the problem of the impact of the digital economy on the economic and digital security of business entities at the enterprise level is insufficient. In this regard, the goal of the study is to identify the factors of digitalization of the economy into the constituent elements of the economic security of industrial socio-economic systems.

In modern conditions, the "digital economy" is becoming a driver of society's development, that is why it is so important to assess its impact on the economic security of the country, as well as its enterprises as a factor of competitiveness and sustainable socio-economic development. It should be noted that the initiated processes of digital transformation of modern economic systems in society allow to reduce the level of influence of external and internal threats on the activities of economic entities of enterprises, which makes them more stable and effective. In the process of active development of the digital economy, it is possible to replace traditional socio-cultural and economic values with instinctive ones, which determines the urgency of considering the impact of the digital economy on economic security at all levels of management.

Analysis of recent researches and publications

The processes of digitalization of the economy and the widespread use of modern Internet

technologies have led to the formation of qualitatively new technology transfer systems and the separation of even individual spheres of activity into a special system of scientific research. The result of such activity is the creation of the latest products of scientific and research activity – patents and know-how, which become the object of special attention from the side of modern companies that want to master the obtained research results and influence the course of their use in modern productions. The protection systems of many domestic companies cannot ensure their resistance to external influence and penetration into company management systems and databases of available information resources. A large number of scientific works are devoted to the issue of economic security, which is considered by different authors from different positions, such as Baigarin T., considers the impact of digital technologies on modern company management systems and the formation of the latest business models of modern entrepreneurship. Dernova I.A. touches on the impact on the economic development of the coronavirus pandemic and the transition to the widespread use of digital technologies in conditions of limited contacts of business entities and the strengthening of digitization trends in the fields of education, medicine, art and the creation of strong connections in the field of services at the level of enterprises and entire enterprises. The research of V. Haustov is interesting in determining the role of the digital economy at the state level and possible threats in today's sharp shifts in the structure of world markets. Other scientists, such as Shevchuk I., Panteleeva N.M., Rebrik M.A., Burkin'sky B.V., Marchenko O.A. devoted their research to many separate issues of digitalization of the economy.

Unsolved aspects of the problem

The level of scientific developments devoted to the problem of digitization of the economy is quite meaningful, but the issues of economic security do not allow us to focus on production economic systems, which become independent in the conditions of administrative-territorial transformation and are unable to fully protect themselves from external influence. Determining the spheres of economic security of enterprises (ESB) requires the determination of the most important areas of protection and the provision of characteristics to the specified spheres. It is also important to find the ability of the economy of individual territories to economic growth and to ensure an acceptable standard of living for the population.

The aim of the article is to determine the essence of economic security of production economic systems in the conditions of digitization of the economy and search for ways to ensure the necessary level of economic security at the level of enterprises and to eliminate threats that have a critical level.

The main part

Understanding the essence of security consists in finding out the state of protection of an individual, community or state against internal and external

threats, which is based on the detection, weakening or elimination of dangers and threats capable of causing damage, losses, losses and even destroying the object of protection.

Economic security is a narrower concept, as it is based on the ability of the economic system to resist threats, destruction, causing significant damage to the organizational structure of the economic entity, causing losses in achieving development goals and the prospects of preserving independence and independence in the rights of the owners and owners of the economic structure. The production socio-economic system of the enterprise (VSESP) is becoming the object of special attention thanks to the administrative and territorial reform, which is being carried out on the territory of Ukraine. Regions gain significant independence in the implementation of their economic activities, cross-border and cross-border activities with the possibility of entering world markets. Such significant preferences granted by the state also require significant responsibility for the results of one's economic activity, which in recent times requires special attention due to intensifying economic competition and growing attention from the side of international companies to weak, little-experienced domestic production structures, which are Ukrainian enterprises.

Indicators of economic security of production enterprises are used to assess the state of economic security. The importance of such indicators is growing due to the strengthening of digitalization processes, which significantly increase the speed of economic reforms and provide an opportunity to adapt to the latest economic processes, which are moving from analog systems of interaction to information technologies (IT).

At the same time, digitalization processes make regional economic systems vulnerable, increase the risk of interference in the economic activities of competitors and causing large losses on their part.

Diagnostics of the level of economic security of enterprises (EBP) is based on a set of indicators. The degree of EBP threats is determined by comparing the current (actual) values of indicative indicators with their threshold (critical) values [1].

The formation of indicators of economic security of enterprises is carried out in various spheres of life. For manufacturing enterprises, 13 such spheres can be identified, which, in turn, are grouped into three large blocks (Table 1). The development of the digital economy is carried out through indicators:

- the readiness of the country and its enterprises for the informatization of society;
- readiness of economic entities of the region for electronic commerce;
- development of virtual service organizations.

There are also methodologies for the systemic development of the digital economy. Index of readiness for informatization of territories; index of readiness for electronic commerce; Internet connection; informational security; the quality of the education system; automation of government services; the presence of favorable conditions for the

development of e-commerce based on digital marketing logistics. Based on the results of the analysis of methods for assessing the level of development of the digital economy, it can be concluded that in addition to technological aspects, other factors should also be taken into account, such as: the level and quality of education of the population of the country's territories; level of computer and digital literacy; increase of user systems in the section of enterprises of the country [2].

A number of theoretical and practical results were obtained based on the results of the conducted research on the assessment of the impact of the digital economy at the EDB level:

- first, the systematization of methods for assessing the level of development of the digital economy is proposed, the most reliable method for its application at the regional level is selected – the index of readiness for the information society, which is primarily manifested in the presence of modern computer support of the population of the region and access to the Internet;
- secondly, on the basis of correlation analysis, an assessment of the impact of the digital economy on regional economic development is given, especially in matters of the application of modern information systems, which are the basis of the formation and development of the so-called

"knowledge economy". The latest economy is built on the wide spread of achievements of scientific and technological progress, and lagging behind such achievements will lead to the displacement of the domestic economy to the fringes of world progress and the preservation of old technological systems with a consistent loss of autonomy and independence of both the region and the state as a whole;

- thirdly, there is an inverse stable relationship between the index of readiness for the information society and the level of economic security of the region (EBR), which indicates the positive impact of the factors of digitalization of the economy of enterprises on economic security [3].

A stable direct relationship between such factors of the development of the digital economy as "expenditure on information, computer equipment and digital technologies", "volume of investments in fixed capital aimed at the purchase of information, computer and telecommunication equipment", "amount of organizations using the Internet", "the number and level of virtual service organizations – VSO", "the share of the population that uses the Internet to order goods, works and services", "the level of digital literacy of the population of the region" [3, 4].

Table 1. Areas of economic security of enterprises (EBP)

The sphere of economic security of enterprises (EBP)	Characteristics of the sphere economic security of enterprises (EBP)
1. The capacity of the territory's economy for economic growth	
1.1. Investment security	The ability of the territory's economy to grow and expand
1.2. Production safety	Assessment of crisis phenomena in the field of production potential enterprises
1.3. Scientific and technical security	The state of the scientific and technical potential of the territories
1.4. Foreign economic security	Dependence of the economy of the territories on the import of important types of products and services
1.5. Financial security	Stability of the financial system of the territories
1.6. Energy security	Energy system ability to meet the needs of the economy in fuel and energy resources
1.7. Informational security	The ability of territories to resist information threats at the national and regional levels
2. Ensuring an acceptable standard of living of the territories	
2.1. Standard of living of the population	Availability of conditions for normal life activities of the population of the territories
2.2. Labor market	The ability of the territory's economy to provide a sufficient number of jobs
2.3. Demographic security	Resistance to the depopulation of the population of the territories
2.4. Law and order	The level of criminalization of society and spheres of economic and financial activity in the territory
2.5. Food safety	The degree of providing the population of the territories with food products of their own production in sufficient quantity
2.6. Infrastructure security	System maintenance balance
3. Ensuring environmental security of territories	
3.1. Ecological safety	The ability of territories to preserve the balance between man and nature

Source: authors' own development

On the basis of the proposed indicators of economic security of production economic systems, a model of economic security of enterprises has been developed, which is presented in Figure 1. The complexity of such a model lies in the ability to detect, monitor and calculate possible threats and establish the degree of critical security for enterprises

as separate types of threats and determine the complex effect of detected threats on the possibility of creating a crisis state and destroying the economic system of enterprises [4].

Threats to economic security include a number of destabilizing factors associated with unfair competition and violation of norms, principles and

laws that underlie the market economic system. All threats to economic security can be divided into a number of features:

- according to the place of occurrence of threats, they can be divided into internal and external threats, which requires dividing the significance of the threat into the production system of enterprises;
- political, competitive, social, legal, and other important reasons for threats can be cited as the causes of threats;
- according to the presence of threats, there may be existing, hidden and future or potentially possible threats;

- according to the consequences of the action, threats can be divided into minor, significant, critical and catastrophic;
- according to the ability to prevent threats, they can be divided into force majeure threats and non-force majeure threats, which are probably the most complex among the identified threats.

The peculiarity of force majeure threats is the unpredictability of their occurrence, such as wars, disasters, earthquakes and other natural disasters that are difficult to predict and prevent. Imprudence and political short-sightedness can lead to catastrophic consequences for enterprises on the part of administrative authorities.

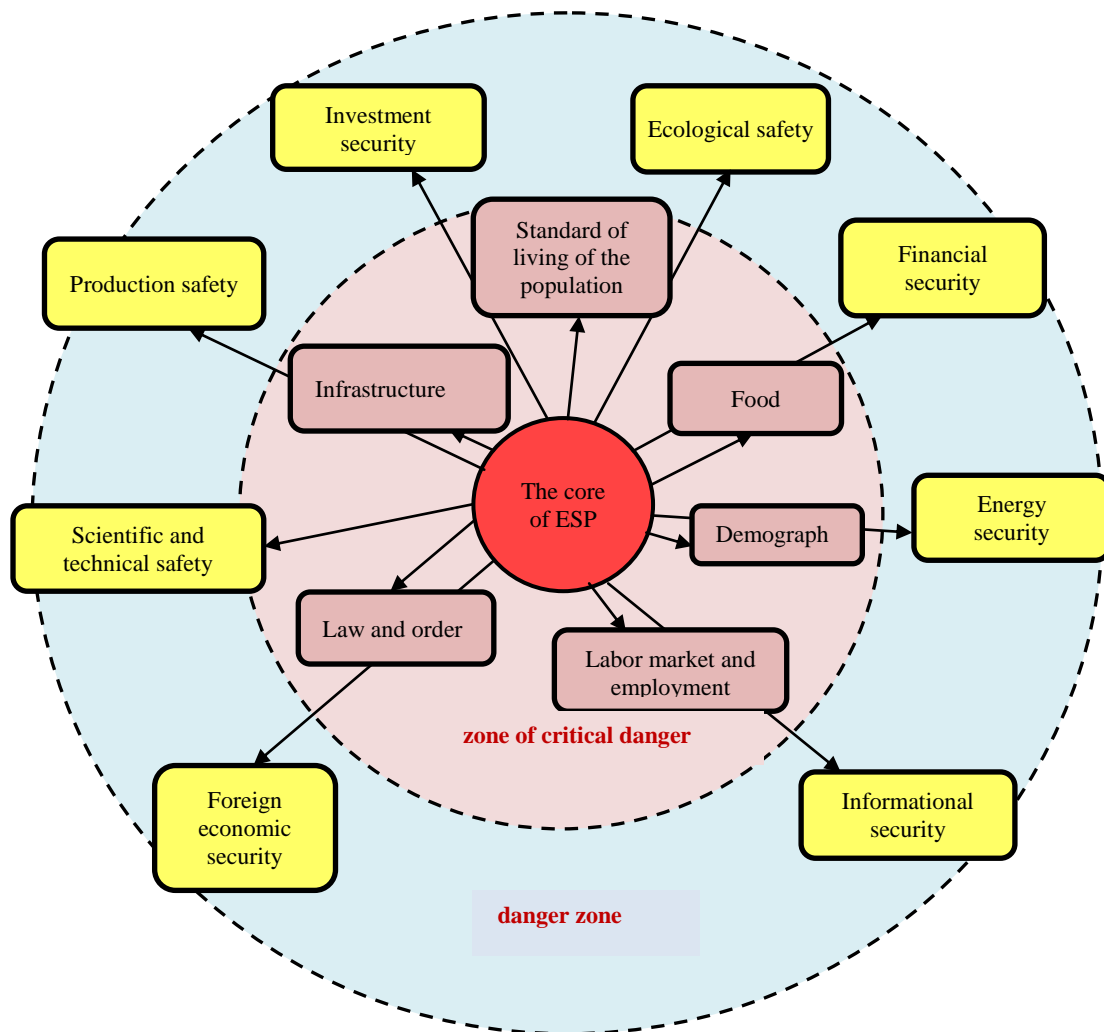


Figure 1. Spatial model of economic security of enterprises
Source: authors' own development

The zone of threats presented in Figure 1 can gradually turn into a zone of critical danger, which affects vital areas of the population's life. These areas primarily include the standard of living of the population, the state of the infrastructure, especially transport connections and logistical relationships between production entities and state and foreign counterparties.

It is also important to note the existence of law and order within the market economic system, which ensures the implementation of state legislative acts and legal mechanisms of production administrations and local self-government bodies. Ultimately, a stable legal basis of industrial relations will lead to the normalization of the demographic situation and the stabilization of labor relations in the labor market

with maximum employment of the population and reduction of unemployment.

In recent times, population migration in search of work has become a threat not only to the enterprises of our country, but also to the state as a whole. The number of young people who emigrate in search of work at a low birth rate significantly affects the labor market. The outflow of specialists with a high level of education and the loss of specialists in the information field, which are critical for the market economy, are especially critical. IT specialists are invited abroad by international companies, offering high wages, which encourages domestic specialists to leave our country [5, 6].

The food problem also becomes a cornerstone of the development of the domestic economic system. The market of agricultural products requires the saturation of the production markets with high-quality and cheap products, however, the constant increase in food prices leads to the loss of competitive positions of domestic producers and the entry of foreign competitors into the markets, who, pushing domestic producers, supply low-quality and expensive products of their own.

The indicated dangerously critical conditions for the existence of the domestic economic system may eventually lead to a crisis in the economy and, in the final case, lead to the disintegration of the country's integral economic systems into separate territorial entities with their subsequent impoverishment and descent into beggary of the population of individual territories.

The elimination of these threats involves the application of complex methods and means of safe use of information in production economic systems. The following measures are the most important:

1. Management of access to important information and resistance to possible methods of unauthorized access to information. Such measures provide for the identification of users and personnel of the management bodies of enterprises by attaching a personal identifier to each object.

2. Verification of authority and recognition of the authenticity of the identifier object by the presented code or cipher, which will allow them to access the relevant information.

3. Creation of conditions for access and work with information with establishment of work regulations and volumes of access to relevant information.

4. Mandatory registration of persons and structures and the time of their access to the relevant confidential information, establishing the volume of information received and processed by them with its further use in socio-economic and industrial-technological relations.

5. Recording attempts of unauthorized access and even attempts regarding unauthorized access to information with identification of persons or structures suspected of unauthorized access.

6. The development of special mechanisms for encrypting access to critical information, which are growing in connection with the development of telecommunications systems and the expansion of

communication systems, especially the creation of an extensive Internet system with its unlimited access to various databases and Internet resources.

7. Countering the attacks of malicious programs that can harm the accumulated resources, make it possible to use them without the permission of the owners and carry out commercial activities with objects of information resources.

8. To counter the facts of viral infection of databases, sources of information in public access and localization and destruction of resources or its intentional damage and failure of computer systems and devices that are quite expensive and rare [7, 8].

According to the Law of Ukraine "On Basic National Security of Ukraine", the concept of "information security" is not widely disclosed, but only threats and directions of state policy in this area are listed. According to the Law of Ukraine "On the Concept of the National Informatization Program" dated February 4, 1998, information security is an integral part of political, economic, defense and other components of national security. The objects of information security are information resources, channels of information exchange and telecommunication systems and networks, and other elements of the country's information infrastructure [9].

One of the most dangerous threats to the security of the country and its enterprises in the information sphere is "computer crime", and with the aim of reducing it, the Interdepartmental Scientific Research Center for Combating Organized Crime was created, which definitely leads to an improvement in the situation with the protection of industrial economic systems. However, the problem of crime becomes particularly acute in connection with mass computerization, the unification and creation of computer networks and the use of the Internet system. A mechanism for investigating crimes in the field of computer information has been developed, which allows establishing the differences of a computer system or network according to established standards, checking the operation of computers with the help of special tests, identifying the authors of a software tool, assigning it to established permissions and volumes of use, estimating the value of the received information and its further use.

Conclusions

Summing up, it should be noted that the theoretical significance of the research lies in the identification of factors of the digital economy, which affects the increase in the level of economic security of the region, which can serve as a basis for conducting further research on the impact of the processes of digital transformation of economic systems on economic security. The digitization process is rapidly developing and the renewal of production economic systems is impossible without the involvement of modern information protection mechanisms and overcoming attempts at its unauthorized use.

The practical significance of the conducted research is related to the possibility of using the results of creative searches when planning activities for the implementation of digital technologies in production economic systems in order to increase the

level of economic security of agents at all levels of management and close cooperation with advanced developers of information resource protection systems.

Abstract

In modern conditions, the "digital economy" is becoming a driver of society's development, that is why it is so important to assess its impact on the economic security of the country, as well as its enterprises as a factor of competitiveness and sustainable socio-economic development. We note that the initiated processes of digital transformation of modern economic systems in society allow to reduce the level of influence of external and internal threats on the activities of business entities, i.e. enterprises, which makes them more stable and effective. In the process of active development of the digital economy, it is possible to replace traditional socio-cultural and economic values with instinctive ones, which determines the urgency of considering the impact of the digital economy on economic security at all levels of management.

Economic security is a narrower concept, as it is based on the ability of the economic system to resist threats, destruction, causing significant damage to the organizational structure of the economic entity, causing losses in achieving development goals and the prospects of preserving independence and independence in the rights of the owners and owners of the economic structure. The production socio-economic system of enterprises is becoming the object of special attention thanks to the administrative and territorial reform, which is being carried out on the territory of Ukraine. Regions gain significant independence in the implementation of their economic activities, cross-border and cross-border activities with the possibility of entering world markets. Such significant preferences granted by the state also require significant responsibility for the results of one's economic activity, which in recent times requires special attention due to intensifying economic competition and growing attention from the side of international companies to weak, little-experienced domestic production structures.

The theoretical significance of the research lies in the identification of the factors of the digital economy that influence the increase in the level of economic security of enterprises, which can serve as a basis for conducting further research on the impact of the processes of digital transformation of economic systems on economic security. The digitization process is rapidly developing and the renewal of production economic systems is impossible without the involvement of modern information protection mechanisms and overcoming attempts at its unauthorized use.

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