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Тумчyshyn Yuliya

*PhD in Economics, Doctoral of the
Dolishniy Institute of Regional Research of NAS of Ukraine*

Тимчишин Юлія Василівна

*кандидат економічних наук, докторант
ДУ «Інститут регіональних досліджень
імені М.І. Долішнього НАН України»*

**THE IMPACT OF INFORMATION TECHNOLOGIES ON THE
REGIONS' ECONOMIC SECURITY
ВПЛИВ ІНФОРМАЦІЙНИХ ТЕХНОЛОГІЙ НА ЕКОНОМІЧНУ
БЕЗПЕКУ РЕГІОНІВ**

***Summary.** The article highlights the impact of information technology on the economic security of regions and threats to economic security of the region that arise from the use of information technology. The system of economic security of the region in the context of development and application of information technologies is considered, which should include the following elements: diagnostics and identification of the existing state of economic security of the region; identification of threats to the economic security of the region from the use of information technology by business entities and from trends and problems in the development of the IT sector in the region; assessment of identified threats; development of effective mechanisms for their prevention; ensuring the increase of the level of economic security of the region with observance of the balance of national, regional and local interests; monitoring the level of economic security of*

the region. The main tasks of monitoring the economic security of the region in the context of development for the use of information technology are analyzed: monitoring the state of development of the IT sphere of the region and the level of ICT use in the activities of enterprises; timely detection of changes occurring in the IT sphere of the region and in the activities of economic entities of the region in the process of using information technology, and the reasons that caused them; prevention of negative trends leading to the formation and development of tensions in the IT sphere and socio-economic space of the region to prevent threats to its economic security; implementation of short-term forecasting of trends in the most important processes in the IT sphere of the region and in the functioning of economic entities from other sectors of the economy, due to the widespread use of IT in commercial, management and production activities; assessment of the effectiveness of methods, organizational structures and processes of managing the economic security of the region in terms of information development of society and the deep penetration of IT in various areas of management and economic activity at the regional level. The principles of monitoring the economic security of the region in the context of development and application of information technologies are revealed. The requirements to be met by the mechanism of economic security of the region, related to the intensification of informatization processes and the development of the IT sphere, are described. The functions that should be performed by the mechanism of economic security of the region (MESR) related to the intensification of informatization processes and the development of the IT sphere are substantiated. The main groups of computer crimes with the use of information computer technologies are identified, which have an extremely sharp impact on the economic condition of both a particular enterprise and the region as a whole.

Key words: economic security of regions, information technologies, IT sphere, monitoring, mechanism, crimes, threats.

Анотація. У статті висвітлено вплив інформаційних технологій на економічну безпеку регіонів та загрози економічної безпеки регіону, які виникають зі сторони використання інформаційних технологій. Розглянуто систему економічної безпеки регіону в контексті розвитку та застосування інформаційних технологій, яка повинна включати в себе наступні елементи: проведення діагностики та виявлення існуючого стану економічної безпеки регіону; виявлення загроз економічної безпеки регіону від використання інформаційних технологій суб'єктами господарювання та від тенденцій і проблем у розвитку ІТ-сфери в регіоні; оцінка виявлених загроз; вироблення ефективних механізмів щодо їх запобігання; забезпечення підвищення рівня економічної безпеки регіону із дотриманням балансу загальнодержавних, регіональних та місцевих інтересів; проведення моніторингу рівня економічної безпеки регіону. Проаналізовано основні завдання моніторингу економічної безпеки регіону в контексті розвитку на застосування інформаційних технологій: спостереження за станом розвитку ІТ-сфери регіону та рівнем використання ІКТ у діяльності підприємств; своєчасне виявлення змін, що відбуваються в ІТ-сфері регіону та у діяльності суб'єктів господарювання регіону в процесі використання інформаційних технологій, і причин, що викликали їх; попередження негативних тенденцій, що ведуть до формування і розвитку напруженості в ІТ-сфері та соціально-економічному просторі регіону для запобігання виникненню загроз його економічній безпеці; здійснення короткострокового прогнозування тенденцій розвитку найважливіших процесів в ІТ-сфері регіону та у функціонуванні суб'єктів господарювання з інших сфер економіки, обумовлених широким

використанням ІТ в комерційній, управлінській та виробничій діяльності; оцінка ефективності методів, організаційних структур і процесів управління забезпеченням економічної безпеки регіону в умовах інформаційного розвитку суспільства та глибокого проникнення ІТ в різні сфери управління та сфери економічної діяльності на регіональному рівні. Розкрито принципи моніторингу економічної безпеки регіону в контексті розвитку та застосування інформаційних технологій. Охарактеризовано вимоги, яким повинен відповідати механізм забезпечення економічної безпеки регіону, пов'язаної із інтенсифікацією процесів інформатизації та розвитком ІТ-сфери. Обгрунтовано функції, які повинен виконувати механізм забезпечення економічної безпеки регіону (МЗЕБР), пов'язаної із інтенсифікацією процесів інформатизації та розвитком ІТ-сфери. Виділено основні групи комп'ютерних злочинів із застосуванням інформаційних комп'ютерних технологій, які надзвичайно гостро позначаються на економічному стані як конкретного підприємства, так і регіону в цілому.

Ключові слова: *економічна безпека регіонів, інформаційні технології, ІТ-сфера, моніторинг, механізм, злочини, загрози.*

Problem formulation. Information technology and IT occupy one of the key places in the system of socio-economic development of both the individual region and the country as a whole. This is primarily due to the urgent needs of the time in the informatization of almost all spheres of public life, the emergence of advanced information technologies and the development of the information society. However, along with the advantages provided by information technology, the issue of ensuring the economic security of the region is acute, which is extremely important today.

The 21st century is an era of information. Today, the acquisition and processing of information, its exchange and protection, the acquisition of skills to use sources of information are priority areas of society. In the conditions of total informatization of all spheres of life, one of the important issues is mastering the computer as a means and tool of high-quality professional duties. It is difficult to find a field of activity where information technology is not used. Their rapid development is fueled by important factors: a person's desire to know more, to master more information, and the rapid pace of technical progress, which is improving every day the technical means and sources of obtaining and processing information. Computers and communications have become firmly entrenched in modern life, and it is no longer their presence that is surprising, but rather the absence or inefficient use of [2].

Analysis of recent research and publications. The problems of the influence of information technologies on the economic security of the regions are devoted to the works of such scientists as: O.Yu. Alexandrova [3], Z.S. Varnaliy [1], R.Yu. Guchko [2], V.V. Dikan [3], O.V. Kolomytseva [5], O.A. Masliy [1], S.V. Onishchenko [1], A.V. Shevchuk [4], I.B. Shevchuk [5, 6] and others.

Main goal. Highlight the impact of information technology on the economic security of regions.

Presenting main material. With the comprehensive use of information and Internet technologies, not only the level of socio-economic development of the regions is growing, but also new sources of threats to its economic security are emerging.

The economic security of the region in the context of development and application of information technology can be defined as the state of the region's economy associated with the use of information technology in business and IT

development, which provides economic independence and ability to stable and continuous development [6, p.5].

The economic security of the region is an integral part of the economic security of the state, and it is already a component of national security. Threats to the economic security of the region may arise from the use of information technology to organize information processes using computer technology at the level of regional management, at the level of individual enterprises or organizations, etc. (use of pirated software; targeted virus attacks; spyware in conditions of aggravation of the Ukrainian-Russian confrontation, the development of e-business and the expansion of territorial boundaries of regional markets) and the functioning and development of the IT sector (IT industry) in the region (simplified taxation system; increasing shadowing of the regional economy; demand for IT products in the domestic market, human capital and education, intellectual migration, the lion's share of foreign direct investment in total investment in the IT sector, foreign economic activity) [5, p. 351–361].

In general, the system of economic security of the region in the context of development and application of information technology should include the following elements: 1. Diagnosis and identification of the existing state of economic security of the region. 2. Identification of threats to the economic security of the region from the use of information technology by business entities and from trends and problems in the development of the IT sector in the region. 3. Assessment of identified threats. 4. Development of effective mechanisms for their prevention. 5. Ensuring an increase in the level of economic security of the region in compliance with the balance of national, regional and local interests. 6. Monitoring the level of economic security of the region.

An integral part of ensuring the economic security of the region is the monitoring of the level of threats, which should ensure the timely detection of

potential threats in order to apply effective measures to prevent them and neutralize the negative impact.

The main tasks of monitoring the economic security of the region in the context of development for the use of information technology include: – monitoring the state of development of the IT sector of the region and the level of ICT use in the activities of enterprises; – timely identification of changes occurring in the IT sphere of the region and in the activities of economic entities of the region in the process of using information technology, and the reasons that caused them; – prevention of negative trends leading to the formation and development of tensions in the IT sphere and socio-economic space of the region to prevent threats to its economic security; – implementation of short-term forecasting of development trends of the most important processes in the IT sphere of the region and in the functioning of economic entities from other spheres of economy, due to the widespread use of IT in commercial, management and production activities; – assessment of the effectiveness of methods, organizational structures and processes of managing the economic security of the region in terms of information development of society and the deep penetration of IT in various areas of management and economic activity at the regional level.

Monitoring of economic security of the region in the context of development and application of information technologies should be carried out in compliance with the following principles: – systematic – systematic collection of information to monitor and control the development of informatization of regional authorities, public and private sectors of the regional economy. development of the IT sphere in the region, as well as their forecasting; – cost-effectiveness - aimed at ensuring the organization of monitoring, collection, processing and analysis of information on the state of economic security of the region, which does not require large

material costs, provides not too complex analysis and evaluation procedures and provides comprehensive information; – identities - compliance with the correspondence between the monitoring system and the object of study; – purposefulness - the monitoring system should be focused on the development of information and analytical support for the analysis of the economic security of the region; – unity - the object of observation must be the region as a holistic socio-economic system, which is the process of transformation of industrial society into an information society, information society into a knowledge society, the processes of interaction of the IT industry and other sectors of the economy, etc .; – complexity - includes systematic monitoring of all components of economic security in the region and potential threats; – alternatives - the use of different sources of information about the object of study and the use of different methods for its analysis and evaluation; – efficiency - timely collection of information about the object of study and providing the results of its analysis, which will provide an immediate response to threats to economic security of the region in the information dimension and identify measures to counter and neutralize them; – representativeness and adequacy - provides for monitoring on the basis of statistically significant data, which will provide an opportunity to adequately assess the state of economic security of the region and the timely detection of signs of threats [6, p. 6-7].

Application of monitoring of such plan will allow:

- 1) to conduct an express analysis of crisis situations in the IT sphere of the region and other spheres of activity of people in the territory of the region related to the use of IT, and to make a rating of its districts according to the level of threats to economic security;

- 2) to conduct an in-depth analysis of crisis situations in the region's economy and the system of regional governance that will arise in the process of informatization of society, to justify a set of measures to localize and neutralize their sources.

The results of monitoring the economic security of the region are the basis for developing a set of effective measures to overcome the crisis and eliminate dangerous deviations from the threshold values of economic security in the region as a result of various forms of informatization of society within a particular area [6, p. 7].

The mechanism of economic security of the region, associated with the intensification of informatization processes and development of the IT sphere, as well as other mechanisms of economic security, must meet the following requirements [3, p. 18–25]: – function within the existing legal framework; – ensure reliable protection of national and regional economic interests; – provide an opportunity for forecasting and timely prevention of threats and adverse processes in the economic security of the region; – function effectively in both normal and emergency situations; – provide for constant monitoring of the state of economic security.

In addition, it must: provide measures to counter threats, which are aimed at strengthening the state of economic security, as well as to prevent and neutralize possible threats; – contain effective forms and methods of creation, improvement and development of the economic security system of the region; – constantly improve in accordance with today's requirements.

The Mechanism for Economic Security of the Region (MESB), related to the intensification of informatization processes and the development of the IT sphere, should perform the following functions:

1. Protective function (prevention of threats to the region's economy).
2. Regulatory function (regulation of the internal environment of the region).
3. Preventive function (anticipation and further prevention of threats, risks, critical situations in the socio-economic and informatization processes of the region).
4. Innovative function (development and implementation of innovative solutions and measures to overcome threats to the region's economy, such as emerging or already operating).
5. Social function (achieving the highest level and quality of life of the population of the region through mutual partnership of economic entities, society, different social groups and meeting their various needs).

It should also be based on the principles of timeliness, complexity, continuity, legality, adaptability, dynamism and development, rationality, scientific validity, objectivity, logic, uniformity.

The mechanism of ensuring the economic security of the region (MSEBR), associated with the intensification of informatization processes and development of the IT sphere is strategic (elimination of contradictions or their localization or weakening), tactical (elimination of threats or prevention of their impact) and operational (elimination of consequences). threats) levels.

Ukraine is experiencing a rapid development of computerization of all spheres of life, which creates new opportunities for the development of national economies. However, the spread of information technology, unfortunately, has a negative character, which is manifested in the emergence of computer crime. That is, it is a crime committed through the use of information technology, the so-called "white-collar crime". White-collar crime is a set of crimes that are characterized by a criminal belonging to the number of persons acting as representatives of the state, business, officials and officials. These types of crimes include economic fraud,

corruption, industrial espionage, tax evasion, false bankruptcies and others. Of all the crimes, this is perhaps the greatest economic damage to modern society. In modern criminology, instead of the term "white-collar crime", the terms "official crimes" and "corporate crime" are more often used. We will note that this type of crime not less than others violates safety of Ukraine and its regions.

Cybercrime is an international and national manifestation in space. International applies to groups of individual countries, national - within the borders of an individual state. The dominant manifestations of such crime are: unauthorized access to information in automated systems; falsification of computer information; computer terrorism; computer crime in the field of economics; economic espionage of competitors with the help of computers; theft of money and valuables; fraud on the Internet and in Internet commerce; computer hooliganism; illegal information brokerage; organized computer piracy and theft of system and application software; hacking; the spread of computer viruses; theft of intellectual property; computer sabotage; computer economic blackmail; information blockade and other methods of computer pressure; use of computer technology for extortion; transmission of unauthorized e-mails (spam); information wars.

Today we can identify the following main groups of computer crimes with the use of computer information technology, which have an extremely acute impact on the economic situation of a particular enterprise and the region as a whole: 1. Crimes that directly affect information computer technology (ICT). That is, crimes are aimed at the destruction, distortion, blocking of computer information, violation of the order of computers, their systems and computer networks. 2. Crimes in which ICTs play the role of an intermediate element, after the impact on ICT you can get someone else's property, secret information, etc. 3. Crimes in which ICT is only an automated means of crime. These include forgery of documents, seals, stamps, securities, excise stamps or control stamps,

dissemination of illegal information, knowingly false information about the threat to public safety, destruction or damage to property, and so on. 4. Crimes in which ICT is a means of information support of criminal activity [4].

To ensure the economic security of the region, it is important to develop and implement a system of measures to identify threats at the stage of their emergence, rather than passively monitor the results of their negative impact. Therefore, the tools of state regulation of the process of preventing threats to the economic security of the region include economic (tax rates and benefits, transfers, direct budget investments, grants, soft loans, discount rates, tariffs, currency restrictions, creating a competitive environment, etc.) methods, levers and tools, and organizational (state support, consulting assistance, staffing assistance, information support, creation of IT clusters, development of IT mobility, strengthening cooperation between education, business, government and IT representatives, development and modernization of information infrastructure, monitoring and control, etc.), institutional (budget funds, technology parks, business incubators, think tanks, etc.), administrative (registration, licensing, quotas, competitions, tenders, etc.), regulations (decisions, orders, orders, instructions, strategies, concepts, plans, forecasts, programs, etc.) [1, p. 20–24] and social (conducting business trainings and IT trainings, realization of joint social projects, etc.) methods, levers and tools.

At the same time, the identified threats require intensification of activities of both public authorities and regional government and local self-government bodies, public organizations (IT clusters, IT associations) to improve the socio-economic policy, information policy, innovation policy, development and implementation of a set of measures focused on improving the economic security of the region in the context of development and application of information technology.

To counter threats and ensure economic security in Ukraine and its regions, according to I.B. Shevchuk, O.V. Kolomytseva, it is necessary at the national and regional levels: – to improve the regulatory framework for the development of the market environment for the functioning of the IT sector and the use of IT in the real sector of the economy; – continue the process of economic reform and deepen cooperation with the European Union; – develop mechanisms to support business entities in the IT sector; – strengthen the activity of IT investors and create conditions for successful implementation of investment programs and informatization projects; – develop and implement long-term regional development programs aimed at deepening the processes of informatization and capacity building of the IT sector of the regional economy; – modernize IT education in higher education institutions; – develop information and telecommunication infrastructure; – to diversify the areas of e-government; – to promote the formation and create conditions for the effective functioning of cluster formations; – to develop the IT potential of the region, etc [6, p.10].

Conclusions. To ensure the economic security of the region, associated with the intensification of informatization processes and the development of IT, it is necessary to successfully implement an appropriate mechanism that will include tools, methods and levers of security, as well as information and analytical system to assess the level of economic security. security and efficiency of economic security management, implemented using modern information technologies, methods and models of analysis and presentation of information. This mechanism should perform protective, regulatory, preventive, innovative and social functions, and should be based on the principles of timeliness, complexity, continuity, legality, adaptability, dynamism and development, rationality, scientific validity, objectivity, logic, uniformity. The purpose of its implementation is to ensure a level of economic security at which the processes of informatization in the region

and the IT sector will create the basis for socio-economic growth and ensure a high quality of life within the territory.

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