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SECURITY MANAGEMENT OF ENTERPRISE DEVELOPMENT UNDER CLUSTER INTERACTION CONDITIONS

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THE PURPOSE OF THIS ARTICLE. Is to substantiate the role of cluster interaction in ensuring the economic security of enterprise development under current conditions, as well as to develop practical recommendations for improving security management mechanisms based on partnership cooperation.

RESEARCH METHODS. A set of general scientific and specialized methods was used. In particular, analysis and synthesis were applied to systematize theoretical approaches to economic security and cluster interaction; the comparative method was employed to identify the advantages of the cluster model; induction and deduction were used to form generalized conclusions based on the study of Ukrainian cluster practices. A systems approach made it possible to consider the cluster as a component of an integrated economic security system, while the monographic method and content analysis were used to study scientific publications. Empirical methods, including observation and case analysis, served to substantiate practical conclusions regarding the effectiveness of cluster interaction in times of crisis.

PRESENTATION OF THE MAIN RESEARCH MATERIAL. The article examines the role of cluster interaction as a mechanism for ensuring the economic security of enterprise development amid systemic challenges, including armed conflict, energy instability, and crisis phenomena. The theoretical foundation of the cluster approach is substantiated, which involves cooperation among enterprises, research institutions, and government bodies to achieve synergy in production, innovation, and risk

management. A comprehensive methodological approach is employed to identify key factors influencing economic security within clusters. Practical recommendations are provided to improve management, information security, digitalization, and strategic planning. It is determined that clustering increases the adaptability and competitiveness of enterprises under challenging economic conditions. Particular attention is given to the analysis of risks associated with cluster interaction, including uneven development of participants, information vulnerability, and dependence on state support. The article proposes the development of balanced strategies and inter-cluster coordination bodies to ensure transparency and resilience in cooperation.

CONCLUSIONS FROM THE CONDUCTED RESEARCH. Cluster interaction is an effective mechanism for enhancing the economic security of enterprises by strengthening partnerships, promoting the exchange of resources and information, and ensuring business adaptability amid systemic crises and external challenges. At the same time, to fully leverage the potential of the cluster model, it is necessary to improve management approaches, particularly through the development of digital technologies, regulatory support, and the formation of risk-oriented strategies. This will ensure sustainable development and competitiveness of enterprises in the long-term perspective.

KEYWORDS: economic security of enterprises; cluster interaction; risk management; strategic development; partnership cooperation; clustering; innovation infrastructure; crisis management; competitiveness.

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14	0	0

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УПРАВЛІННЯ БЕЗПЕКОЮ РОЗВИТКУ ПІДПРИЄМСТВА В УМОВАХ КЛАСТЕРНОЇ ВЗАЄМОДІЇ

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МЕТОЮ ДАНОЇ СТАТТІ є обґрунтування ролі кластерної взаємодії у забезпеченні економічної безпеки розвитку підприємств в сучасних умовах, а також формування практичних рекомендацій щодо вдосконалення механізмів управління безпекою на основі партнерської кооперації.

МЕТОДИ ДОСЛІДЖЕННЯ. Застосовано комплекс загальнонаукових і спеціальних методів, зокрема для систематизації теоретичних підходів до економічної безпеки підприємств та кластерної взаємодії використано аналіз і синтез, порівняльний метод для виявлення переваг кластерної моделі, а також для формування узагальнених висновків на основі вивчення практики українських кластерів застосовані методи індукції і дедукції. Системний підхід дозволив розглядати кластер як складову цілісної системи економічної безпеки, тоді як монографічний метод і контент-аналіз використовувалися для дослідження наукових праць, а емпіричні методи, зокрема спостереження та аналіз кейсів, - для обґрунтування практичних висновків щодо ефективності кластерної взаємодії в умовах кризових явищ.

ВИКЛАД ОСНОВНОГО МАТЕРІАЛУ ДОСЛІДЖЕННЯ.

У статті досліджується роль кластерної взаємодії як механізму забезпечення економічної безпеки розвитку підприємств в умовах системних викликів, зокрема збройного конфлікту, енергетичної нестабільності та кризових явищ. Обґрунтовується теоретична основа кластерного підходу, що передбачає кооперацію підприємств, наукових установ і органів влади для синергії у виробництві, інноваціях і управлінні ризиками. Використано комплекс методів для дослідження,

що дозволяє виявити ключові чинники впливу на економічну безпеку в межах кластерів. Практичні рекомендації спрямовані на вдосконалення управління, інформаційну безпеку, цифровізацію та стратегічне планування. Визначено, що кластеризація підвищує адаптивність і конкурентоспроможність підприємств у складних економічних умовах. Особлива увага приділена аналізу ризиків кластерної взаємодії, серед яких нерівномірність розвитку учасників, інформаційна вразливість та залежність від державної підтримки. Запропоновано розробку збалансованих стратегій і міжкластерних органів координації для забезпечення прозорості і стійкості взаємодії.

ВИСНОВКИ З ПРОВЕДЕНОГО ДОСЛІДЖЕННЯ.

Кластерна взаємодія є ефективним механізмом підвищення економічної безпеки підприємств, сприяючи зміцненню партнерських зв'язків, обміну ресурсами та інформацією, а також забезпеченню адаптивності бізнесу в умовах системних криз і зовнішніх викликів. Водночас для максимального використання потенціалу кластерної моделі необхідно вдосконалювати управлінські підходи, зокрема через розвиток цифрових технологій, нормативно-правового забезпечення та формування ризик-орієнтованих стратегій, що забезпечить стійкий розвиток і конкурентоспроможність підприємств у довгостроковій перспективі.

КЛЮЧОВІ СЛОВА: економічна безпека підприємства; кластерна взаємодія; управління ризиками; стратегічний розвиток; партнерська кооперація; кластеризація; інноваційна інфраструктура; антикризове управління; конкурентоспроможність.

Statement of the problem. The current economic realities are characterised by a high level of instability, which is due to both global transformations and local challenges. One of the key factors that significantly affects the economic activity of business entities in Ukraine is the ongoing armed conflict, which causes the destruction of infrastructure, disruption of logistics chains and a general deterioration in the investment climate. Additionally, the intensification of the global crisis, energy instability, inflationary waves and political uncertainty create a challenging operating environment for domestic businesses.

In such conditions, there is an urgent need to rethink approaches to managing the development of enterprises, especially in terms of ensuring their economic security. Economic security is seen as a basic condition for achieving the strategic and tactical goals of an enterprise, ensuring its stability, viability and competitiveness.

One of the promising areas of improving the economic sustainability of business entities is clustering, which involves the creation of voluntary associations of enterprises, research institutions, educational institutions and public authorities to achieve synergies in production, innovation and logistics. According to scholar I.F. Prokopenko, "the cluster model is not only a form of territorial association of economic entities, but also a tool for reducing risks through cooperation and resource sharing" (Prokopenko, 2018).

At the same time, despite the potential of the cluster model, the mechanisms for ensuring the economic security of enterprises in the context of cluster interaction, especially in the context of systemic crises and military threats, have not been sufficiently studied in the scientific and applied fields. There is a need for scientific substantiation of ways to improve managerial approaches to the security of enterprise development based on partnerships, digitalisation, information transparency and strategic planning within clusters.

Thus, the problem statement is the need to develop a modern enterprise development security management system, taking into account the cluster approach as an effective mechanism for overcoming external challenges and internal vulnerabilities. This determines the relevance of the study and determines its scientific and practical significance.

Analysis of recent publications on the problem. The issues of clustering, economic security of enterprises and innovative development were considered in their works by such scholars as V. Geyets, S. Ilyashenko, L. Frolova, O. Amosha, I. Chabaniuk, N. Reznik and others. For example, V. Gayets emphasises the need to create sustainable institutional structures in a transformational economy (Gayets, 2007), and S. Ilyashenko considers innovation clusters as a catalyst for the growth of the economic potential of regions (Ilyashenko, 2006). At the same time, the works of L. Frolova

emphasise the importance of information security in the context of interorganisational interaction (Frolova, 2020).

Thus, despite considerable attention to certain aspects of clustering and security, the mechanisms for ensuring the economic security of enterprise development within the framework of cluster interaction in the context of crisis and military challenges have not been sufficiently studied. This requires further research to develop effective management approaches, integrate digital tools, and strengthen cross-sectoral cooperation.

Statement of the main results and rationale. The economic security of an enterprise is the state of protection of its internal environment from threats that interfere with the implementation of strategic and tactical goals. It covers various aspects: financial stability, production efficiency, human resources policy, information security and legal support. According to I. Chabaniuk, economic security is a dynamic characteristic that requires constant monitoring and adaptation to changes in the external environment (Chabaniuk, 2020).

Threats to economic security include financial risks, technological lag, instability of human resources, market fluctuations, administrative pressure and external force majeure. The studies only emphasise that a lack of adaptability to such threats significantly increases the vulnerability of enterprises in times of crisis.

Thus, economic security should not be seen as a one-off result or achievement, but rather as a process that requires a systematic approach to risk management, investment in innovation, and building sustainable communications with all stakeholders. A special role is played by the strategic flexibility of the enterprise - its ability to quickly rebuild business models, change the cost structure, reorient sales markets and adapt to changes in the regulatory environment.

As noted by V. Ponomarenko and O. Kuzmin, effective economic security is possible only with the introduction of strategic management based on risk monitoring, threat forecasting and the formation of adaptive response mechanisms (Ponomarenko & Kuzmin, 2017). N. Repina emphasises that the key to the sustainability of an enterprise under conditions of uncertainty is the combination of innovative activity and effective risk management (Repina, 2019). The modern understanding of economic security should be closely linked to the concept of sustainable development and the ability of an enterprise to cluster. Participation in production and innovation clusters allows enterprises to access common resources, technologies, knowledge and markets, which significantly increases their competitiveness and reduces the level of external threats.

Thus, economic security is not only a guarantee of an enterprise's survival, but also the basis for its development in a competitive economy and global transformations.

Clusters help to strengthen ties between enterprises, research institutions and government agencies, allowing them to form a common infrastructure and develop collective strategies. For example, scientist O. Amosha notes that clusters are an effective tool for mobilising the innovative potential of the region (Amosha, 2019). As for the cluster model, it should be noted that it helps to reduce risks, increase investment attractiveness and intensify cooperation ties. This allows not only to ensure a prompt response to threats but also to form an effective risk management system at the inter-organisational level. The cluster model is one of the most promising tools for improving the economic security of enterprises, especially in an unstable economic environment. Its key advantage lies in the ability to combine the efforts of various cluster members – enterprises, research institutions, government agencies, and financial institutions – to achieve a synergistic effect. Such interaction not only reduces the cost of innovation, logistics, or staff development, but also allows for the creation of collective mechanisms for preventing and responding to crises. In particular, within the cluster, businesses can collectively assess external threats, build up resource reserves, share critical information, and implement common standards for data protection, financial reporting, and environmental safety. This contributes not only to the growth of trust between participants, but also to the resilience of the entire regional business environment.

Thus, cluster interaction becomes the foundation for long-term economic security, where risk management becomes systematic and proactive. Participation in a cluster allows a company to move beyond a reactive security model and into strategic partnerships with other market participants, which is critical in the face of global challenges, technological competition and economic instability.

Cooperation within the cluster is based on a contractual basis, which creates a predictable legal environment. This minimises the likelihood of conflicts, facilitates the implementation of joint projects and the creation of common risk management systems. In his conclusions, the researcher N. Reznik notes that the development of clusters should be accompanied by the creation of internal monitoring and coordination systems (Reznik, 2020). Consequently, enterprises that are part of clusters are better able to cope with logistical, legal and financial challenges.

In the digital era, effective management of information flows is critical to ensuring the competitiveness of an enterprise. According to L. Frolova, information interaction should be carried out in compliance with high security standards (Frolova, 2020). Implementing common information security

standards in a cluster (e.g., data protection, encryption, access restrictions) helps to avoid leaks of commercially sensitive information, increase trust between partners, and ensure rapid knowledge exchange.

In times of crisis, clustered enterprises are able to use available resources more efficiently, spread risks and maintain production activities. Scientists, in particular S. Ilyashenko, note that clusters play the role of a stabiliser in conditions of instability (Ilyashenko, 2006).

Based on the analysis of the functioning of Ukrainian clusters, it can be argued that horizontal ties and support from local businesses are critical for maintaining performance in times of war and economic downturn. Therefore, information security in a cluster environment is not only a technical function, but also an element of a strategic management culture. Cluster members have a shared responsibility for protecting information assets, which involves developing collective policies, regularly updating security protocols, and training staff. The growing role of digital platforms, electronic document management and cloud services necessitates deeper integration of IT solutions with risk management systems. In this context, the cluster becomes not only an economic but also an information shield for its members.

In addition, modern researchers such as Y. Lysenko and N. Lytvyn point out that information transparency and openness within the cluster increase its attractiveness to investors and government support, while requiring a high level of cyber security (Lysenko & Lytvyn, 2021).

This creates new challenges for management that should be taken into account when building cluster strategies. Thus, in the digital economy, information security issues should not be considered in isolation, but in conjunction with organisational resilience, adaptability and digital maturity of the cluster. It is through systemic information interaction that it is possible to achieve not only effective management but also long-term economic security of enterprises.

The study found that the key risks of cluster interaction include: uneven development of cluster entities, insufficient regulatory support, the threat of confidential information leakage, and high dependence on government support. Scientific analysis indicates that these factors can significantly reduce the efficiency of cluster associations and hinder their development in the long term. In order to minimise these risks, it is advisable to introduce independent mechanisms for conflict resolution, in particular through the creation of inter-cluster coordination structures or arbitration bodies. In addition, it is necessary to develop a corporate governance system within the clusters, which involves establishing transparent procedures for decision-making, distribution of responsibilities, monitoring of obligations and protection of information resources. These measures will help to increase the level of internal

sustainability of cluster formations, their adaptability to external challenges, and preserve the long-term economic security of participants.

Priority areas for improving security in the cluster model include

- development of risk-based management strategies;
- creation of inter-cluster councils;
- improving the regulatory framework for clustering;
- investment in cybersecurity;
- training of management personnel in crisis management.

Thus, the implementation of these areas will not only strengthen the internal resilience of clusters but also ensure their ability to respond effectively to external challenges. An integrated approach to risk management, institutional support, and human capital development are key factors in creating a sustainable and secure cluster environment.

Conclusions and prospects for further research. Cluster interaction is an effective mechanism for improving the economic security of enterprises in the face of external threats and instability. Coherence of actions, information exchange, innovative cooperation and support from the state create a favourable environment for sustainable development.

The author believes that the cluster approach can provide Ukrainian enterprises with the necessary level of adaptability, flexibility and competitiveness in the global market. Participation in clusters contributes to the formation of joint mechanisms for counteracting risks, stimulates development dynamics, and expands access to technology, financing, and educational resources. Such a model makes it possible not only to increase the individual sustainability of an enterprise but also to strengthen the economic security of the region as a whole.

In addition, cluster interaction is a platform for integrating modern approaches to managing information security, digital transformation and sustainable development. It allows for the formation of trust networks between participants, ensures a faster response to changes in the external environment, and facilitates the development of common security strategies. This is especially true in times of martial law, economic downturn and the destruction of traditional logistics and financial chains.

Thus, in order to achieve a high level of economic security, it is advisable for a modern enterprise not only to implement internal protection mechanisms, but also to actively participate in clusters as a form of collective protection, cooperation and development. Further research in this area should focus on the development of specific tools for cluster security management, evaluation of the effectiveness of inter-organisational interaction and improvement of the state policy of supporting cluster initiatives.

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