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Research Article

Ensuring Security in Crisis: Risk Mitigation Strategies and Response Planning

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ABSTRACT

Introduction: National security is ensured through the formation and implementation of strategic management policy. The process is aimed primarily at overcoming risks and threats, preventing them and recurrence. Security management is particularly relevant in the current crisis conditions caused by the Russian invasion of Ukraine, external pressure and instability in all areas of national security.

Objectives: The study aims to theoretically analyse and formulate practical recommendations on national security management in a crisis in the context of strategies and mechanisms for ensuring it.

Methods: It uses several scientific methods, including systemic and economic analysis, synthesis, comparison and scientific abstraction, statistical methods (regression and correlation analysis), K-means and multivariate cluster analysis.

Results: The article examines the types of crises likely to occur in the security sector both within society and in the context of external influence. It defines a "fragile state" as a consequence of a crisis in one or more national security subsystems. Among the methodologies for analysing the level of "fragility", the research suggests the approach of the Peace Foundation, which measures the Fragile State Index. The latter covers the sectors of cohesion (security apparatus, fragmentation of elites, group grievances and divisions), economy (poverty, inequality and economic development, outflow of intellectual labour), politics (state legitimacy, public services, human rights and the rule of law) and society. It is determined that the Fragile State Index for Ukraine reached a critical value in 2023, which makes it necessary to effectively revise management strategies to counter threats in a crisis. Empirical data emphasise the importance of synergy of efforts and a high level of coordination to protect territorial integrity and national sovereignty in the context of the rapidly changing geopolitical situation. It is substantiated that the sustainability of national security is determined, in particular, by the level of integration of digital innovative risk management solutions. The study analyses the National Cyber Security Index (NCSI) cybersecurity rating of digital development and the specifics of integrated information security systems (IPS).

Conclusions: Thus, the study results are of practical value in improving the anti-crisis management paradigm in the field of national security, as well as in the formation of appropriate plans for responding to challenges and preventing risks.

Keywords: national security, state national security policy, geopolitical changes, crisis phenomena, public administration, information security.

INTRODUCTION

The dynamics of the geopolitical European landscape have caused a significant imbalance in the international legal order, significantly complicating protecting national interests in a crisis. Global uncertainty and unpredictability have led to a significant decline in the level of security of states against the backdrop of Russia's aggression against Ukraine. In the current circumstances, there is a need to upgrade the state national security policy system, which involves improving management methods, principles, tools and structures and intensifying the protection of national interests from threats and risks to territorial integrity and sovereignty in the long term.

The crisis conditions of the war, among other things, affect investment security as an indicator of the overall national security of the state. The share of the business sector that assesses Ukraine's investment climate as unfavourable has increased from 5% to 53% in the 6 months since the beginning of the war [1]. At the same time, the most significant risks to investment are caused by the destruction of infrastructure, which is critical in the energy sector. In this regard, upgrading the national security governance model should include increasing the stability of the energy system, identifying reserves to increase the country's investment attractiveness, and attracting international successful experience in the digitalisation of management processes.

A number of contemporary researchers are actively studying the issue of security governance in the context of instability and crisis. Some authors focus on the features of innovative management models [2–4]. Other scholars [5, 6] see the harmonisation of political and socio-economic aspects as the basis of state security regulation.

Some scholars [7, 8] position the formation of a stable foundation in the form of information, organisational, legal and human resources to effectively counter threats as the basis of the national security strategy. At the same time, Javed and Faizan [9] note that the gradual transition to the Industry 4.0 digital economy both creates new opportunities for improving national security and leads to new threats, as the openness of complex information systems causes increased risks to information security

Bonavolontà and D'Angelo [10], Mandel and Irwin [11] contributed significantly to developing a methodological framework for digital optimisation of national security. Some aspects of the organisational, legal and institutional support for national security management were considered by Biden [12], Klijn and Koppenjan [13]. At the same time, many issues within the scope of the study remain unresolved, which determines the topic's relevance. In particular, cybersecurity and the investment climate are important components of national security in times of crisis, which requires attention to creating appropriate strategies for developing these security areas. Also, corruption is a threat to national security, which destroys public trust in governance institutions and causes internal socio-political imbalances that require further research.

The study aims to theoretically analyse the factors of the national security "architecture" and to formulate practical recommendations for managing national security in times of crisis in the context of strategies and mechanisms for ensuring it.

LITERATURE REVIEW

The scientific debate on national security governance is significant in the modern theoretical and practical field. In particular, Zágon and Zsolt [14], Sirleaf [15] consider the current context of the destabilising impact of the crisis on security processes. The authors see the phenomenon of national security as an open system of public administration, which is formed and operates through a criterion-based mechanism of regulation and control. At the same time, scholars emphasise the importance of public administration in the context of ensuring national security in terms of guaranteeing the rule of law and democratic principles, transparency and compliance with specific accountability, as these factors are considered fundamental to the security of the nation.

Dimitropoulos [16] argues that ensuring national security is based on optimising approaches to public administration processes, separating the defence and security spheres, and implementing critical reforms to manage social dynamics. In continuation, Rass et al. [17] note that the mechanisms of national security governance should be as complementary as possible to international standards. They should demonstrate practical capacity to implement foreign and domestic policies oriented towards democratic development and strengthening national security.

Albahar [18] proposes developing the potential of regional and local governance structures as components of public security management. According to the scientist, this approach allows taking into account the specifics of regional

development and, in general, promotes the development of public-private partnerships. At the same time, as the scientist notes, public administration plays a significant role in ensuring national security and determining information and regulatory functions.

At the same time, according to several scholars [19, 20], the national security public administration system is highly vulnerable to internal socio-political dynamics. An additional threat to security is the general decline in public trust in the authorities.

In continuation, Yurekten and Demirci [21] emphasise the need to integrate balanced management strategies and mechanisms for implementing state policy on national security. These strategies should take into account factors of the external and internal environments. At the same time, the authors emphasise that current global crises are creating significant pressure on state governance systems, intensifying the destabilising effects of internal factors.

Broeders [22] notes that the crisis phenomena caused by the war cause, in aggregate, significant institutional dynamics. There is an active transformation of informal institutional formations, and increased risks of instability destabilise established mechanisms of public administration, which in synergy actualises the issue of ensuring national security at various administrative levels. The scientist sees a way out of this situation by integrating innovative regional and national development models based on the concepts of public-private partnership and active interaction between the state, society and business. Given this, the priority role in managing security in crisis conditions is assigned to forming and integrating social and financial mechanisms of institutional transformations.

This idea is further developed by Zheng et al. [23], who emphasise the need for coordinated efforts between the state and society to achieve national security goals. According to the researchers, practical cooperation allows for rapid adaptation to the dynamics of risks and challenges, effective response to them, and the development of preventive protection strategies.

Against this background, it becomes clear that insufficient interaction in the context of public-private partnerships and a decrease in the level of public involvement in management processes lead to a minimisation of the progress of democratic standards and transparent algorithms of administrative processes. Lau et al. [24] argue this point. The authors note that corruption is another threat to national security in times of crisis, which has a destructive impact on public trust in governance institutions and causes internal socio-political imbalances.

Some scholars [25] draw attention to additional risks to the functioning of the national security system. These include imperfect institutional support, lack of guarantees of the rule of law, and the need to improve staffing of management processes. The authors are convinced that the low effectiveness of public administration of national security is mainly due to systemic shortcomings of financial, economic and socio-political processes, particularly uncontrolled corruption, depletion of the national economy, and distortions in the development of democracy.

Modern researchers' publications also highlight the problematic issues of integrating digitalisation tools into the security sector [26], ensuring the complementarity of strategic documents [27], strengthening institutional capacity, and methodology for information protection in the national security sector [28]. The numerous and diverse nature of scientific developments in the field emphasises the importance of an in-depth study of national security management in crisis conditions.

METHODS

The study applied general and special scientific methods. In particular, systemic and economic analysis, synthesis, comparison, scientific abstraction, statistical methods (regression and correlation analysis), K-means, and multivariate cluster analysis were used.

The research process involved two main stages: the collection of informative data and its analytical processing. In the first stage, primary sources of information were used. The research materials included industry-specific scientific papers, publications, and materials from scientific and practical conferences in the field of national security administration for the period from 2020 to 2024. Also, statistical data from official sources (NCSI, Fragile State Index, Democracy Index, Corruption Index) The sample size of information sources was justified in the context of practical realities and taking into account the elements of national security identified in the literature review, for the successful implementation of the study.

The data analysis was carried out using mixed methods: quantitative methods of statistical analysis and qualitative methods. With the help of scientific abstraction and system analysis, the essence of the phenomenon of public administration of national security was determined, and the main functionality, methods and tools of this process were identified. The system analysis made it possible to establish the essence of definitions and conceptual categories, while the synthesis allowed to combine the selected aspects in a meaningful way from the identical and essential to the diversity, integrating general and individual aspects into a single concept.

The abstraction of potential practical feasibility was used, considered a process of mental distraction from the standard properties of management technologies, with the simultaneous identification of the desired significant properties.

Using multifactor cluster analysis and the k-means method, the author classifies a number of states by the indicators that determine their system of national security governance. Graphical and tabular methods were used to illustrate the obtained empirical data. The methods of generalisation and systematisation were used to formulate the conclusions of the analytical processing of empirical data.

RESULTS

Ensuring national security requires adherence to several principles: priority of national interests; adequacy of response, unity and balance; mutual responsibility of the state and society; public-private partnership; reliability and transparency; complementarity with the requirements of international law. The issue synergises theoretical and practical dimensions in improving the current legislative framework, developing and implementing effective strategic documents, and developing an algorithm for timely identification, prevention and elimination of threats to national security by public administration. The qualitative indicators of the national security system's success are the state's defence capability, controllability of security processes, public awareness, sustainability, and adequacy of management processes.

Against the backdrop of increased risks of unpredictable geopolitical dynamics, escalating instability, and military crises in Ukraine and neighbouring states, there is a need for an effective international empirical assessment. The process involves calculating the Fragile State Index for each country. This index makes it possible to assess the effectiveness of state governance of national security and identify bottlenecks in this area.

It is worth noting that the methodology for determining the Fragile State Index includes aspects of vulnerability to current challenges and threats, existing unresolved conflicts of national importance, and the risk of potential state collapse. The index allows forecasting potential consequences, particularly the dynamics of security environment parameters in the national and global context, the risks of national sovereignty's destruction and state institutions' legitimacy. At the same time, an increase in the Fragile State Index represents a growing crisis in society, a decline in national security, and increased vulnerability to external threats and internal conflict.

The Fragile State Index studies in 2020–2023 show significantly higher scores for countries bordering Ukraine due to the escalation of the military conflict. In particular, the index has an FSI range of 68.6–95.9 for Ukraine and 64.5–67.4 for Moldova (Figure 1).

The dynamics shown in Figure 1 represent significant differences in the management capacity of state authorities to ensure national security in different countries. For example, the EU countries have a higher level of governance system in terms of guarantees of state sovereignty. At the same time, Ukraine and Moldova, vulnerable transition economies, demonstrate higher values of the Fragile State Index. Noting that Ukraine has suffered from the destructive impact of the war, the index values have reached critical levels (95.9 points in 2023).

In 2023, the overall European geopolitical landscape was markedly destabilised. The military conflict in the region intensified the overall political instability. At the same time, a short-lived crisis can catalyse upgrading security strategies, optimising state-society interaction, and strengthening specific components of national security.

The Democracy Index measures the progress of democratic transformation. Its dynamics for 2020–2023 (Figure 2) allow us to track characteristic trends. In particular, the EU member states in the study sample belong to countries with imperfect democratic process development, as evidenced by the Democracy Index range of 6.01 to 8.00. At the same time, Ukraine and Moldova, countries in transition, are characterised by hybrid democracy (Democracy Index 4.01–6.00).

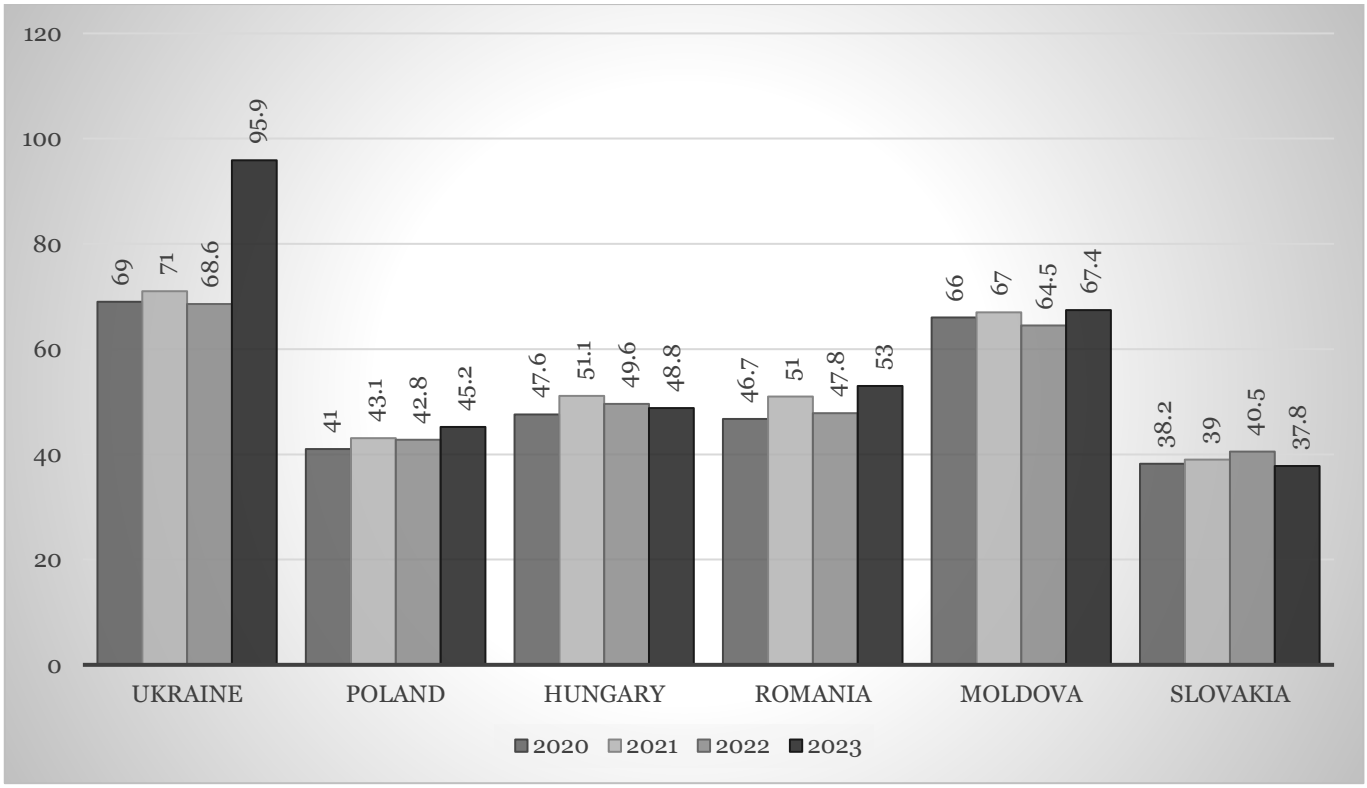

Figure 1: Dynamics of the Fragile State Index in 2020–2023

Source: [29–32]

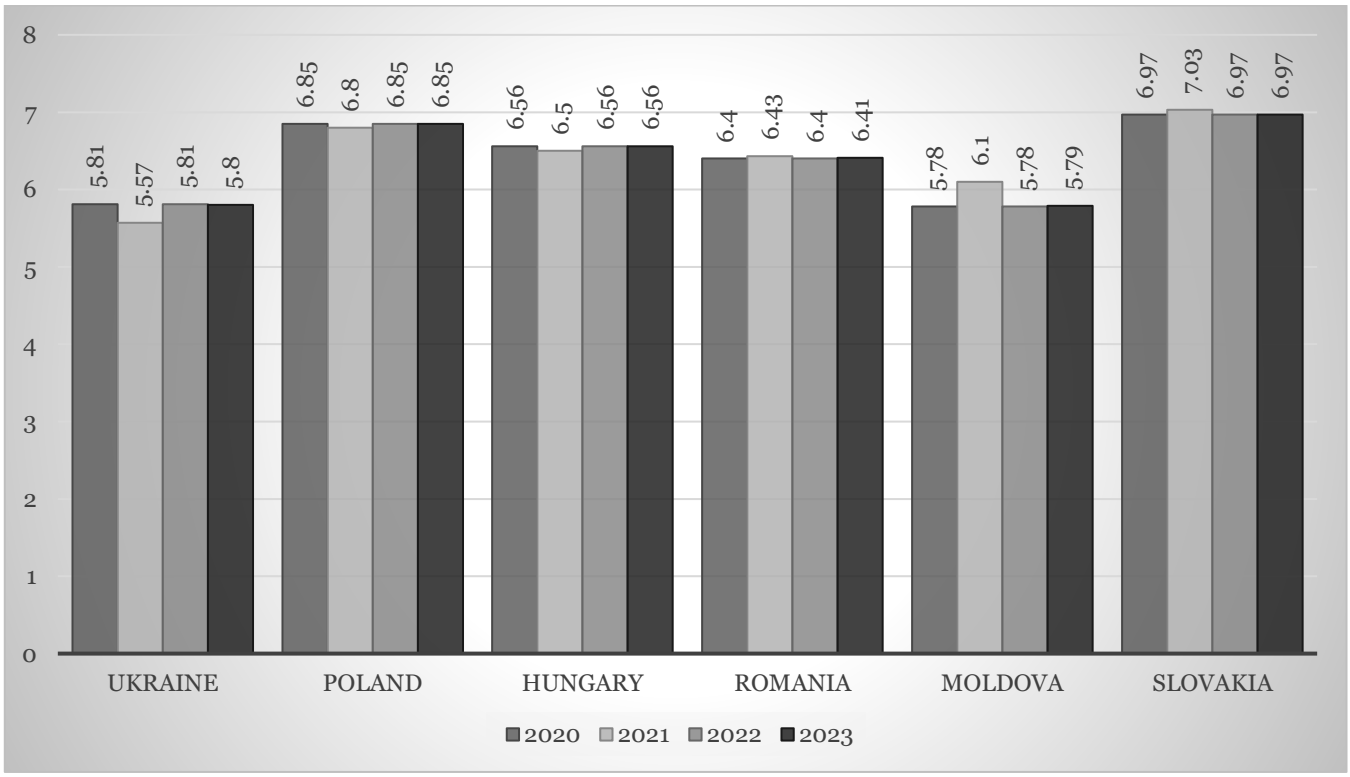

Figure 2: Dynamics of the Democracy Index in 2020–2023

Source: [33–36]

Another important indicator of the effectiveness of the state national security management system is the Corruption Perceptions Index. Figure 3 shows its dynamics in the countries of the study sample for the period 2020–2023.

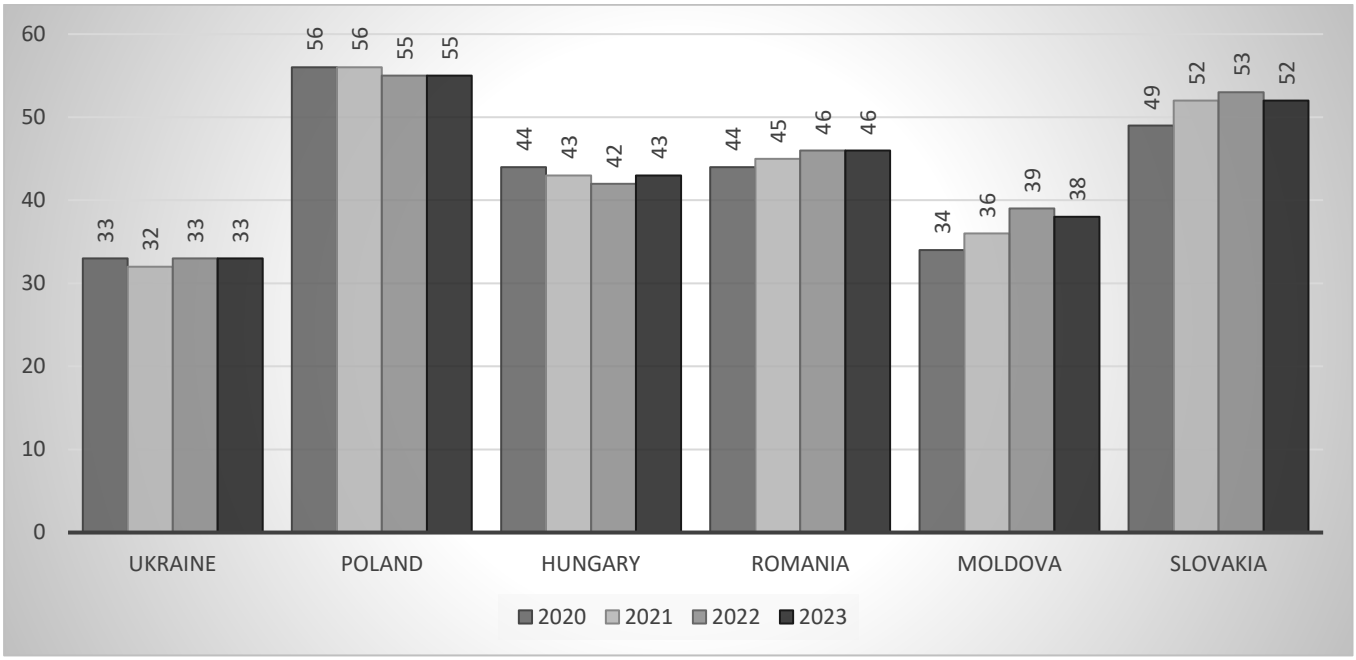

Figure 3: Dynamics of the Corruption Perceptions Index in 2020–2023

Source: [37–40]

Identification of asymmetries involves cluster analysis. The task of clustering is formalised as follows: for a given set of countries I, I = {i1 , i2 , ..., in }, characterised by a set of attributes (Fragile States Index, FSI; Democracy Index, DI; Corruption Perceptions Index, CPI), it is necessary to build a set of clusters in such a way as to obtain a data model that is a mapping of the set I to the set C:

$$F: I \rightarrow C \qquad (1)$$

So, the goal of clustering is to build such a set:

$$C = \{c1 , c2 , ..., cm\} \qquad (2)$$

where *cj* is the cluster; *kj* is the cluster centroid.

According to the k-means method, each iteration consists of two steps: updating clusters and updating centroids. As a result of the clustering, the normalised Fragile States Index (FSI) value was obtained, which allowed us to determine the boundaries of the two clusters. In the parameters DI – CPI – FSI, we describe the state security administration's functioning system. The normalised centroid values are cluster 1–0.68 and cluster 2–0.45. Typical representatives of the studied sample in the best cluster regarding the effectiveness of national security governance (cluster 1) are Slovakia and Poland; in the worst cluster (cluster 2) – Ukraine.

To analyse in detail the differences in the managerial capacity of public authorities to ensure national security during the crisis in the countries of the two clusters – relatively stable European countries and transition economies – it is necessary to identify differences and common features through categorisation. The latter should be implemented through the tools of multivariate cluster analysis using the k-means method (Table 1). At this stage, the use of Statistica 8.0 software is optimal.

Table 1: Cluster differentiation of individual European countries by the dynamics of the Fragile State Index, 2020–2023

2020		2021		2022		2023	
Country	**Cluster number**	**Country**	**Cluster number**	**Country**	**Cluster number**	**Country**	**Cluster number**
Poland	1	Poland	1	Poland	1	Poland	1
Slovakia		Slovakia		Slovakia		Slovakia	
Hungary		Hungary		Hungary		Hungary	
Romania		Romania		Romania		Romania	
Ukraine	2	Ukraine	2	Ukraine	2	Ukraine	2
Moldova		Moldova		Moldova		Moldova	

Source: [29–32]

The clustering emphasises the differentiation between the two clusters of European countries in the context of the effectiveness of the national security system. At the same time, it should be noted that there is a pronounced inverse correlation between the Fragile State Index and the overall level of development of democratic processes in the studied countries. Thus, countries characterised by instability of state progress - Ukraine and Moldova – have a significantly lower level of democratic processes and high level of corruption, and these factors further destabilise the system of public administration of national security.

To identify the mutual influence of the level of development of democratic processes in the countries of the study sample, the level of their corruption and state instability as determining factors of the effectiveness of the national security governance system, regression and correlation analysis were conducted. The primary information for them is summarised in Table 2. The results of the correlation and regression analysis are presented in Table 3.

Table 2: Primary information for correlation and regression analysis of the study sample

Country	**Democracy Index**				**Corruption Perceptions Index**				**Fragile State Index**			
	2020	**2021**	**2022**	**2023**	**2020**	**2021**	**2022**	**2023**	**2020**	**2021**	**2022**	**2023**
Ukraine	5,81	5,57	5,81	5,8	33	32	33	33	69,0	71,0	68,6	95,9
Poland	6,85	6,8	6,85	6,85	56	56	55	55	41,0	43,1	42,8	45,2
Hungary	6,56	6,5	6,56	6,56	44	43	42	43	47,6	51,1	49,6	48,8
Romania	6,4	6,43	6,4	6,41	44	45	46	46	46,7	51,0	47,8	53,0
Moldova	5,78	6,1	5,78	5,79	34	36	39	38	66,0	67,0	64,5	67,4
Slovakia	6,97	7,03	6,97	6,97	49	52	53	52	38,2	39,0	40,5	37,8

Table 3: The correlation and regression analysis results of the factors influencing the dynamics of the Fragile State Index of a sample of European countries for the period 2020–2023

Period	**Linear dependence**	**Approximation factor**	**Statistical significance of the model (Fisher's F-test)**
2020	$Y = 123.29 - 0.56\ x_1 - 0.59\ x_2$	0,959	29,18
2021	$Y = 116.70 - 0.31\ x_1 - 0.75\ x_2$	0,966	35,60
2022	$Y = 114.72 - 0.32\ x_1 - 0.72\ x_2$	0,967	36,10
2023	$Y = 113.92 - 0.32\ x_1 - 0.71\ x_2$	0,968	36,70

Source: calculated using Statistika 8.0 based on [29–40]

The correlation and regression analysis of the impact of the level of development of democratic processes in the countries of the study sample, the level of their corruption and state instability in period 2020–2023 demonstrates the characteristic values of the approximation coefficient (0.958–0.968 throughout the study period) and the statistical significance of the model (the values of the Fisher's F-criterion are in the range of 29.18–36.7), which indicates a reasonably strong correlation between the identified variables.

There is also a correlation between the decline in the Corruption Perceptions Index and the Democracy Index and the increase in the Fragile State Index Annual Reports. The respective regression coefficients in 2020 were r = -0.59 for the Corruption Perceptions Index and r = -0.56 for the Democracy Index; in 2021, r = -0.75 and r = -0.31, respectively; in 2022, r = -0.72 and r = -0.32; in 2023, r = -0.71 for the Corruption Perceptions Index and r = -0. The countries involved in military operations are characterised by lower national security governance efficiency than the EU countries.

Today, the information aspects of national security require special attention. Cybersecurity in the public sector should be based on the principle of effective implementation of the functionality of the relevant public authorities. The National Cybersecurity Index (NCSI) allows us to determine the potential of public administration in mitigating cyber threats. The NCSI ranking (Figure 4) for 2023 allows us to identify the leaders of digital development among the countries of the European continent.

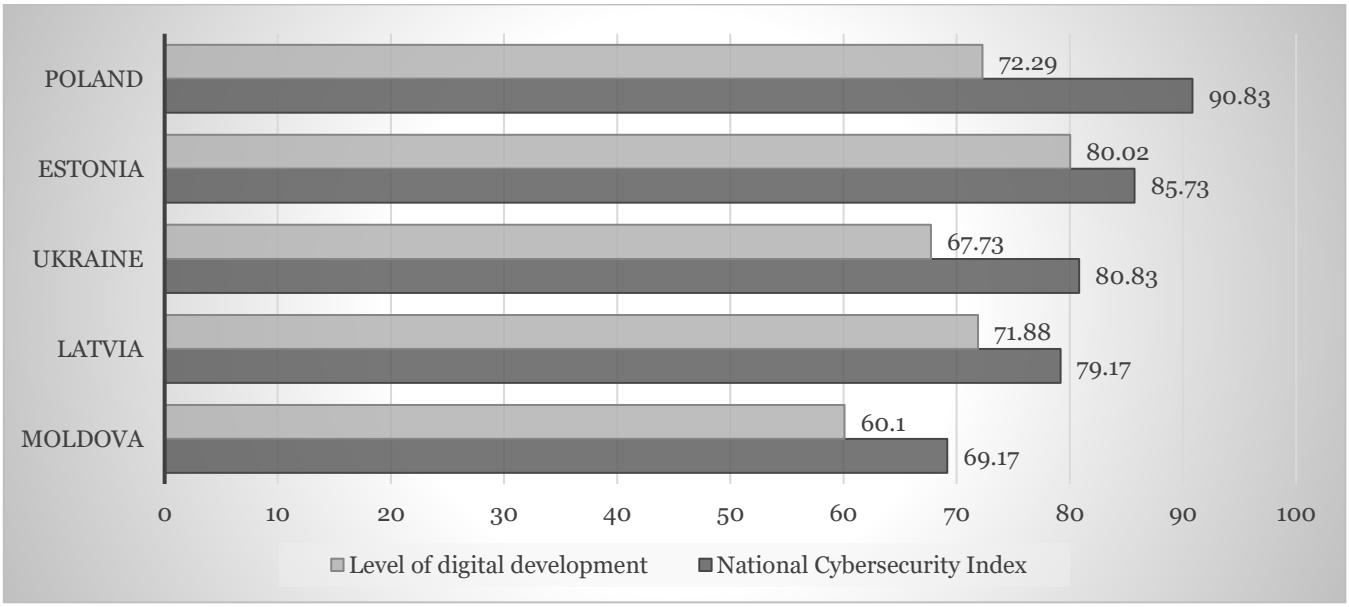

Figure 4: NCSI ranking of selected European countries, 2023

Source: [41]

The NCSI rating allows for assessing the level of security of the national information space, the state of implementation of sectoral policies, and forecasting the dynamics of stability and development of international cooperation. Modern integrated information security systems (IPS) are currently successfully used in the national security sector, as they allow managing access to confidential data and ensure the integrity of critical system resources. The concept of digital sovereignty, presented by the European Political Strategy Centre (EPSC), represents the reliability of the communications infrastructure, the provision of digital needs and the possibility of regulatory influence in this area.

Investment security is another important component of the country's national security in the crisis.

According to the statistics of Ukraine's external sector economic activity, which was destabilised by the war (Figure 5), the investment sector has experienced significant dynamics.

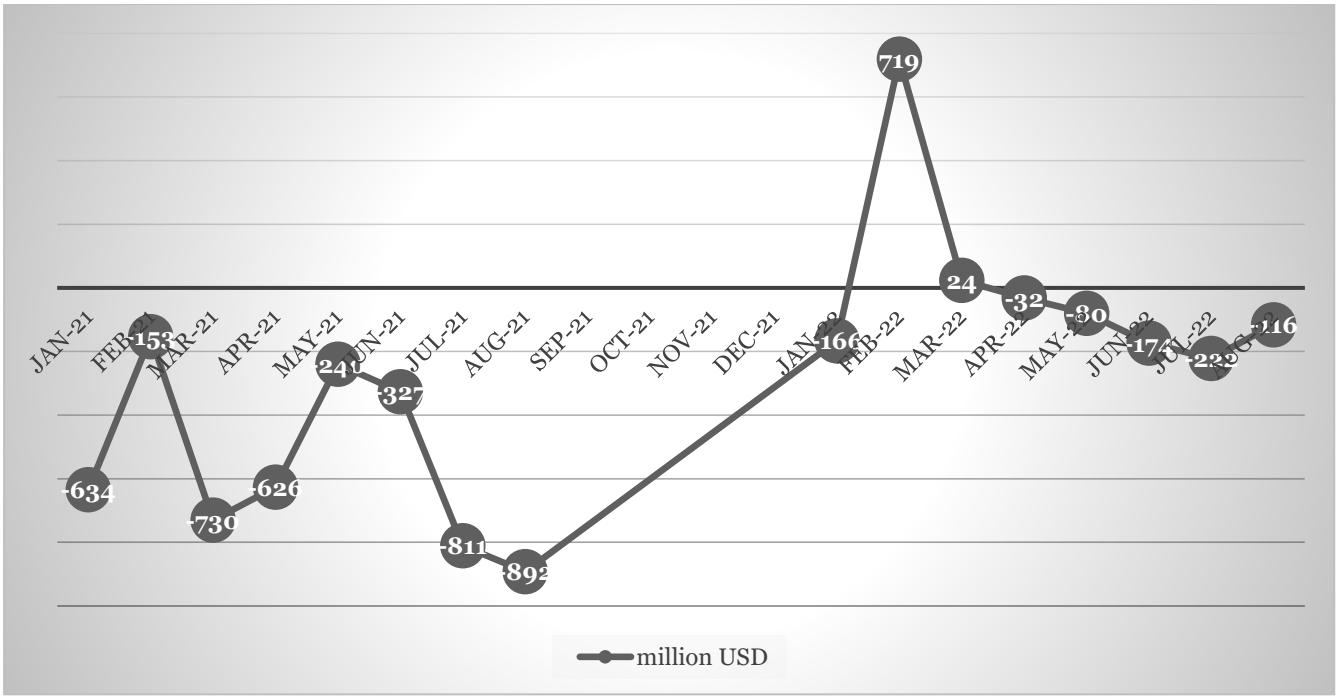

Figure 5: Dynamics of direct investments (balance), mln USD SOURCE

Source: [42]

The graph shows a significant spike in February 2022, and the performance of the subsequent months of 2022 is much better than in 2021.

The Law of Ukraine "*On State Support of Investment Projects with Significant Investments in Ukraine*" (09 August 2023) was adopted to stimulate the attraction of strategic investors to Ukraine's economy, increase the investment attractiveness of Ukraine, create new high-paying jobs, and increase the competitiveness of the economy through the introduction of state support for large investment projects

The primary purpose of the Law is to stimulate the attraction of foreign and domestic investments by simplifying the requirements for investment projects with significant investments and improving the forms of state support for the implementation of such projects, which will create favourable conditions for attracting a wider range of investors and increase the number of investment projects with significant investments, as well as contribute to the development of the regions where they will be implemented.

Private investments are considered an important tool for maintaining economic security in times of crisis and uncertainty. Optimising the investment climate requires active financial incentives, including project support programmes for industrial projects, interest compensation on investment loans, interest-free lending for projects to ensure the functioning of critical infrastructure, and stimulating the transfer of innovative technologies

Thus, the empirical data analysis results demonstrate a close relationship between the level of development of democratic processes, corruption and the overall effectiveness of public administration of national security. In addition, cybersecurity and the investment climate are important components of national security in times of crisis, which requires the development of appropriate strategies for developing these security areas. A timely operational response to threats to information security will minimise territorial integrity and sovereignty risks. In contrast, proper investment security guarantees economic support even during crises and instability.

DISCUSSION

According to Broeders [22], actualising the issue of national security governance against the backdrop of geopolitical instability requires the introduction of innovative management solutions and digital optimisation opportunities in

the field. In the information security sphere, scholars [19, 20] see the need to implement comprehensive measures to prevent information expansion and integration into the global information space while maintaining the autonomy of the national security sphere.

Current sectoral studies see the active involvement of digital technologies' potential in the state governance system as one way to optimise the national security system. In particular, Huang and Zhu [26] consider the possibility of digitalising a significant share of management processes. Gupta et al. [27] position the primary goal of this process as the protection of critical national security information.

Dimitropoulos [16] and Zheng et al. [23] focus on the capabilities of artificial intelligence in the concept of national security policy implementation. The researchers emphasise the need for a dosed and phased process of integrating new-generation digital tools into security management, including cloud technologies, artificial intelligence, and blockchain. At the same time, Zágon and Zsolt [14], Sirleaf [15] note that the state's implementation of functions to protect national interests in the digital age involves a certain level of interference by state authorities in the life of society.

Arauz et al. [28] emphasise the need for practical interaction between the state, society and business on the principles of democratic development and partnership. The researchers identify information, human resources, and regulatory and institutional support as the main areas that can be used to optimise the state of the modern security environment.

Yurekten and Demirci [21] analyse the specifics of the geopolitical dynamics of threats to national security and aspects of vulnerability to them. The authors are convinced that critical infrastructure facilities require maximum investment, which will increase the level of national resilience to intrusions.

Bonavolontà and D'Angelo [10], Mandel and Irwin [11] publish papers stating that investment development is a priority in the system of economic transformations amid crisis and instability. The researchers consider investment tools a tool for successful national economic recovery.

At the same time, as this study shows, countries with economies in transition are more vulnerable to conflicts and crises, which require significant management resources to ensure national security and reduce risks and threats. Priority measures should include optimisation of communication interaction between state governing bodies and the public, levelling conflict in the functioning of national security management bodies, and improving the quality of their core functions. These measures should be integrated into national and regional plans to ensure state security, which will allow the practical defence of the state's interests in the event of the destabilising impact of external and internal threats and risks.

The results of the analyses in this study demonstrate a close relationship between the level of corruption, the state of development of democratic processes, and the overall effectiveness of the national security governance system. Therefore, it is necessary to emphasise the priority of anti-corruption measures. Timely operational response and adopting preventive measures in this area will reduce risks in times of crisis and instability.

The most dangerous forms of corruption are usually observed in countries in a political, economic or social crisis. Ukraine belongs to this group of countries. The eradication of corruption involves clarifying the legal framework, ensuring the complementarity of requirements with the European environment, and addressing the persistent misperception of corruption as a victimless offence. The level of corruption is an indicator of the ability of the public administration to solve problems in the public interest. Therefore, to ensure national security in times of crisis, preventing corruption risks should be a central part of the overall strategy.

CONCLUSION

The study results of the national security governance system indicate a significant vulnerability of the security landscape and instability of the geopolitical situation on the European continent. The destructive impact of the external and internal environment dynamics causes significant risks and challenges.

The above analysis results show that military threats have the most destructive impact on national security. In 2023, political destabilisation became a characteristic feature of a number of the European countries studied. Ukraine, characterised by a critically high Fragile State Index score (95.9), is inherently threatened by an increased threat to state sovereignty and territorial integrity and is more vulnerable to crises and conflicts, which require significant management resources. At the same time, according to the analysis of the sample under study, the member states of

the European Community (Romania and Slovakia, Poland, and Hungary) are characterised by a higher level of socio-political development and, thus, a higher level of national security.

According to the study, Russia's invasion of Ukraine has increased geopolitical instability on the European continent. As a result, the level of state security in several countries has significantly decreased. Ukraine's Fragile State Index value of 95.9 indicates an increased risk of disintegration. The results of the empirical data analysis demonstrate a close relationship between the level of development of democratic processes, corruption and the overall effectiveness of public administration of national security. In addition, cybersecurity and the investment climate are important components of national security in times of crisis, which requires the development of appropriate strategies for developing these security areas.

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