PROBLEMS OF INFORMATION SUPPORT OF UKRAINIAN POLITICAL SECURITY

^aVALENTYNA GOSHOVSKA, ^bARTEM GANDZIUK, ^cLYDIIA DANYLENKO, ^dANDRII SHEMCHUK, ^eANDRII HACHKOV

^aDoctor of Political Sciences, Professor, Taras Shevchenko National University of Kyiv, 64/13, Volodymyrska St., Kyiv, Ukraine, 01601.

^bAssociate Professor of the Department of Parliamentarism, Taras Shevchenko National University of Kyiv, 64/13, Volodymyrska St., Kyiv, Ukraine, 01601.

^cDoctor of Pedagogical Sciences, Professor of the Department of Parliamentarism, Taras Shevchenko National University of Kyiv, 64/13, Volodymyrska St., Kyiv, Ukraine, 01601.

^dDoctor of Philosophy in Political Science of the Educational and Scientific, Department of Parliamentarism, Taras Shevchenko National University of Kyiv, 64/13, Volodymyrska St., Kyiv, Ukraine, 01601.

^eDoctor of Philosophy in Political Science of the Educational and Scientific, Department of Parliamentarism, Taras Shevchenko National University of Kyiv, 64/13, Volodymyrska St., Kyiv, Ukraine, 01601.

email: ^avgoshovska.@gmail.com, ^bgandzyk-artem@bigmir.net, ^cap1.@ukr.net, ^da.v.shemchuk@gmail.com,

^egachkov.@gmail.com

Abstract. Preservation of the territorial integrity and sovereignty of Ukraine in conditions of instability and uncertainty is the main strategic goal of the country. It significantly depends on the level of political security of the state and its information support. The purpose of the study is to substantiate the theoretical and applied foundations of the study of problems of information support of Ukrainian political security. The methodological basis of the study consists of methods of economic analysis and fundamental research, in particular: analysis, synthesis, comparison, system analysis, analogies, generalization, systematization, grouping, cluster analysis, graphical, and tabular. As a result of the research, it has been determined that ensuring the political security of Ukraine significantly depends on the effectiveness of information support. The main threats to the political security of Ukraine are identified: political comption, low level of political resonsibility, and lack of an effective system of counteracting political risks and threats. The significant influence of the factor of disinformation spreading on the level of political security of Ukraine has been proven, as evidenced by the corresponding values of political stability indicators, which range from -1.87 to -1.10, and corruption control – from -0.87 to -0.76. It has been revealed that Ukraine has signs of the formation of information support of political security, taking into account external and internal threats to political security of Ukraine through the formation support of political security of users of political security of solving the problems of information support of political security of the methangent of information support of political security of the methangent of a set of measures to increase resistance to disinformation and improve the mechanism of exchange of information flows in the system of public authorities have been suggested.

Keywords: political system, politics, information support, political security, information, protection of national interest.

1 Introduction

Ensuring a sufficient level of protection of the state's interests from the impact of external and internal challenges, threats and dangers is conditioned by the need to achieve sustainable and sovereign development, the effective activity of public authorities, and the functioning of civil society. Implementation of the basic political values protection within the state requires strengthening its political security. It is worth noting that in the scientific discourse the study of the political security of the state is too indirect. In addition, the definition of the term "political security" is quite limited, which requires deepening scientific developments in this direction. Most scientific views focus on the consideration of political security as a set of special measures to protect the constitutional order, ensure state-building, and the formation of effective public policy. This has become especially acute in the context of Ukraine's military confrontation with the Russian Federation. Achieving a high level of political security requires proper information support of all processes taking place in the state. Given the above, the subject of research on the problems of information support of political security in Ukraine is extremely relevant and requires a detailed study.

2 Literature review

The threatening situation in the political sphere of Ukraine in recent years has been aggravated by new challenges and dangers of the Russian-Ukrainian war and significant crisis phenomena in the economy and society. Achieving a sufficient level of protection for the national interests of the state in the political sphere, according to Kosilova, 2011, is one of the most difficult challenges of our time. They consist in ensuring such a state of legal norms and the level of functioning of the relevant security institutions that allow guaranteeing the preservation and strengthening of political sovereignty and independence, territorial integrity, and constitutional order of the country.

Blikhar et al. consider the political security of the state as one of the components of national security and interpret it as a state of protection of the political interests of the state, society, and citizens from internal and external threats (Blikhar et al., 2018). This is done through the implementation of a set of measures to protect the rights and freedoms of all subjects, ensure the integrity and independence of the state and effectively counter political pressure in the international arena.

Rudakevich has quite clearly and comprehensively studied the main elements of the political security of the state, presenting its definition as a state of protection of the national interests of the state in the political sphere (Rudakevich, 2022). This is achieved by timely informing a set of institutions about the situation regarding political processes. This also includes taking appropriate measures to guarantee the status of the country as a full-fledged subject of international political relations. At the same time, the scientist formulated a list of indicators of political security, among which he distinguished: (1) the level of a legal guarantee of political rights and freedoms of citizens; (2) transparency of the electoral process to public authorities; (3) freedom of opposition activity; (4) transparency of public authorities and their responsibility to the public; (5) level of the fight against political corruption; (6) level of national consolidation; (7) compliance of political decisions with national interests; (8) level of political authority of the country in the international arena.

In turn, Kravchuk defines political security as a stable state and effective development of the country's political system, which allows it to respond quickly to internal and external destabilizing factors of influence (Kravchuk, 2016). At the same time, the scientist considers political security as a systemic phenomenon of society, which is designed to ensure the protection of national interests in the political sphere.

Ensuring political security in Ukraine, as noted by Gligorov & Landesmann, is under the influence of acute security, political and economic challenges (Landesmann, 2015). They found that the problems of its information provision are common for countries with economies in transition, the main of which include: (1) imperfect legal response to territorial threats; (2) insufficient level of democratic legitimacy; (3) slow pace of economic liberalization and international integration. In this context, Minakov identifies prospects for strengthening Ukraine's political security (Minakov, 2022). He argues that international support for Ukraine and the strengthening of Ukraine's partnerships within the framework of alliances with the UK and Poland are of positive importance in this direction.

Shelest & Khylko suggest that Ukraine's political security should be considered in the context of strengthening the regional Euro-Atlantic security of the European continent, in particular, the Black Sea region (Shelest & Khylko, 2022).

Torychnyi emphasizes the importance of building an effective system of information support for political security (Torychnyi, 2019). After all, the level of public awareness about the state and trends of the political sphere is too low, and the lack of modern means of information support of the political sphere reduces the level of its counteraction to destructive influences. Some scientists, in particular, Hrabar, associate the problems of information support of political security in Ukraine with the low level of information security in the political sphere, since the means of countering information threats are ineffective and do not allow to achieve the desired result (Hrabar, 2021),.

At the same time, the importance of information security in the political sphere is emphasized by Burrowes & Shannon (Burrowes & Shannon, 2021). They argue that information support for political security significantly depends on the level of digitalization of social processes, and ensuring the stability of information exchange significantly depends on the introduction of innovative digital technologies.

The importance of the information security factor in various spheres of public life is emphasized by Solomitsky et al., who determined that information infrastructure is extremely important in the process of state development and protection of its national interests (Solomitsky et al., 2021)).

Gavriltsov found that information support for political security in Ukraine is increasingly subject to manipulation (Gavriltsov, 2020). In the conditions of a full-scale war, due to the constant discrediting manifestations of false information at the international level, there is a situation of the country's image deteriorated.

Instead, Orel interprets the information support of political security as the result of specific interaction of state institutions on the exchange of information about the state and trends of the political sphere (Orel, 2018a). At the same time, deepening his research, Orel attaches great importance to the need to form a Political Security Strategy, in which he gives priority to the development of a mechanism for information support of political security (Orel, 2018b).

Prykhodko identifies several factors of political security, namely: (1) adherence to the political foundations of the constitutional order, which reflect the norms and principles of political relations; (2) a high level of political culture and self-awareness of the public; (3) implementation of the rule of law and respect for it; (4) effective mechanism for ensuring political rights and freedoms of individuals and citizens; (5) legitimacy of the authorities; (6) legalization of the political coalition and opposition; (7) close interconnection of political and economic security and ensuring their balance; (8) national peculiarities of the political system; (9) modernization of political institutions (Prykhodko, 2015).

Thus, having studied the scientific approaches to determining the essence of information support of the political security of Ukraine, it can be argued that in conditions of instability and persistent uncertainty, the problems of information exchange in the political sphere are exacerbated. This, in turn, causes significant imbalances in the development of the state and society and requires the formation of effective measures to counteract risks, threats, and dangers of a political nature.

3 Aim of the research

The purpose of the study is to substantiate the theoretical and applied foundations of the study of problems of information support in Ukrainian political security.

4 Materials and methods

The methodological basis of the study consists of methods of economic analysis and fundamental research. Methods of analysis and synthesis have been used to determine the essence of information support and political security. To carry out empirical studies of the state and trends of information support of political security, methods of comparison, system analysis, and analogy have been implemented. The method of systematization has been applied to summarize the results of the research and draw conclusions. Cluster analysis and k-means clustering have been used to group the countries of Europe and Ukraine according to the indicators of the Integral Public Administration Index and the Disinformation Resilience Index. Graphical and tabular methods have been implemented to display the results of the study.

The countries selected for the study are the Visegrad Group countries (Hungary, Poland, Czech Republic, Slovakia), the Eastern Partnership countries (Azerbaijan, Armenia, Georgia, Ukraine, Moldova, and Belarus), the Baltic States (Estonia, Latvia, Lithuania) and Romania.

The information basis of the study is the reporting data for 2018-2021: Worldwide Governance Indicators by the Integrated Governance Index and Disinformation Resilience Index in Central and Eastern Europe by the Disinformation Resilience Index.

5 Results

The existing problems of ensuring the stability of the state and society in Ukraine require an effective mechanism to strengthen security and protect national interests in the political sphere. The full-scale invasion of the Russian Federation into Ukraine, the annexation of large territories, and hostilities have caused a deep political crisis and require a rapid response to the emergence of destabilizing factors. The existing mechanism for informing public authorities about the processes and phenomena taking place in the state and society is not effective enough and is not able to sufficiently meet the current needs of users. As a result, the political system of the country becomes too vulnerable to external influence and requires additional means of protection. Ensuring a sufficient level of political security in Ukraine significantly depends on the state and trends of development of its information support.

Significant destructive changes observed in Ukraine today have led to several threats to political security. Among them, the most significant are the high level of political corruption, low level of political responsibility, and the lack of a system of effective counteraction to destabilizing influence on political processes. The main threats that reduce the level of political security in Ukraine are systematized in Figure 1.

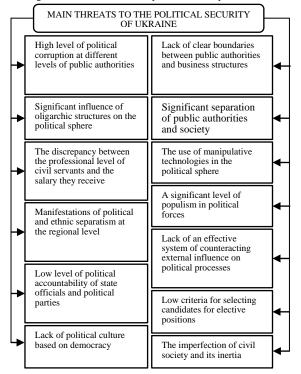
At the same time, it should be noted that threats to the political security of Ukraine are often classified into several types: (1) foreign policy, which includes encroachment on the territorial integrity and state sovereignty, interference of other states in the internal affairs of the country, political instability and military confrontation against the Russian Federation; (2) internal political, which include violations of the Constitution, legislative and regulatory acts by public authorities, interethnic and interfaith conflicts, manifestations of separatism, etc.

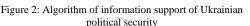
To identify all possible threats to the political security of the state, it is necessary to ensure the reliability, accuracy, and objectivity of information that characterizes their parameters. The decision-making process involves the processing of a significant range of information. Therefore, information support of political security is based on the implementation of a set of measures to collect, accumulate, process and analyze information about the phenomena and processes occurring in the political sphere and affecting the identification of threats and the formation of forecast indicators. Fig. 2 displays the algorithm of information support for the political security of Ukraine. It provides for a set of measures aimed at assessing external and internal threats, forming management decisions to strengthen political security, neutralizing threats, forecasting the possible state of its main parameters, and diagnosing the current level.

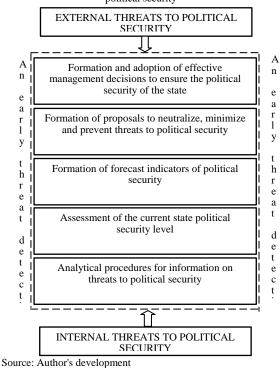
The level of effectiveness of information support of the country's political security is evidenced by the level of effectiveness of public administration. It can be assessed using the Integral Public Administration Indicator, which provides for the calculation of the level of exercise of the right to vote and

accountability, political stability, absence of violence, government effectiveness, quality of legislation, rule of law in the country, and control of corruption. It would be expedient to reflect the current state and dynamics in Fig. 3 to reflect the current state and dynamics of the values of the subindices of the Integrated Public Governance Index in Ukraine for the period 2018-2021. At the same time, it should be noted that the most critical values of such a subindex as political stability and absence of violence (in the range from -1.87 to -1.10) throughout the analyzed period are observed. This indicates the political crisis in Ukraine and the need to strengthen political security.

Figure 1: Main	threats to the	political se	curity of	Ukraine







At the same time, the values of the sub-index "control of corruption" and "rule of law" are quite critical, which also pose a significant threat to the political security of the state and require appropriate measures to counter these threats.

Significant positive developments toward reducing the level of political instability in Ukraine and strengthening the democratic foundations of development have already been made. This is evidenced by the gradual and stable growth of the analyzed indicator from -1.87 in 2018 to -1.10 in 2021.

Source: Author's development

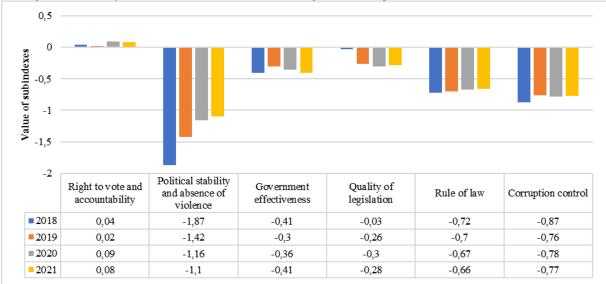


Figure 3: State and dynamics of the value of subindexes of the Integral indicator of public administration in Ukraine in 2018-2021

Calculated according to: Worldwide Governance Indicators, 2018–2021.

However, it should be noted that further strengthening of the country's political stability significantly depends on the information support of the political sphere and the quality of information flow processing. Quite often, the scientific literature raises the issue of ensuring the resilience of the political sphere to disinformation. It is established there that the spread of false information leads to a decrease in the state's ability to protect its national interests and strengthen the political system. Given the above, it is necessary to analyze the values of the Disinformation Resilience Index in Ukraine and compare them with the values of other European countries in 2018 and 2021 (Fig. 4 and Fig. 5).

According to the results of the conducted research, in 2018 (Fig. 4), the Disinformation Resilience Index was assessed in 14

countries: 4 countries of the Visegrad Group (Hungary, Poland, Czech Republic, Slovakia), 6 countries of the Eastern Partnership (Azerbaijan, Armenia, Georgia, Ukraine, Moldova, and Belarus) and 3 Baltic States (Estonia, Latvia, Lithuania), as well as Romania. The highest indicators of disinformation resilience were recorded in Moldova, Belarus, Latvia, and Slovakia, and the lowest - in Lithuania and Romania. As for Ukraine, it has mediocre values for all subindexes.

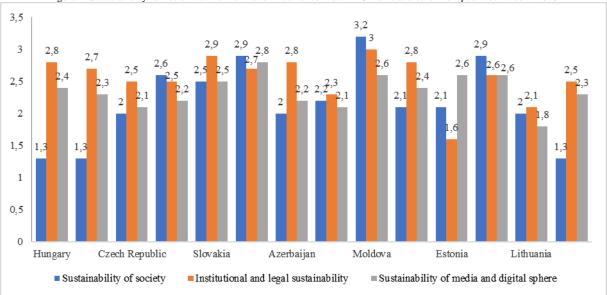


Figure 4: Status and dynamics of the Disinformation Resilience Index in Ukraine and other European countries in 2018

Calculated according to: Disinformation Resilience Index in Central and Eastern Europe in 2018; Disinformation Resilience Index in Central and Eastern Europe in 2021.

In 2021, the Disinformation Resilience Index was assessed among 10 countries: Hungary, Poland, the Czech Republic, Ukraine, Slovakia, Belarus, Azerbaijan, Armenia, Moldova, and Georgia. As a result, it was found that no clear pattern can be traced. If concerning one subindex there is an upward trend, then with the other there is a decrease (Fig. 5).

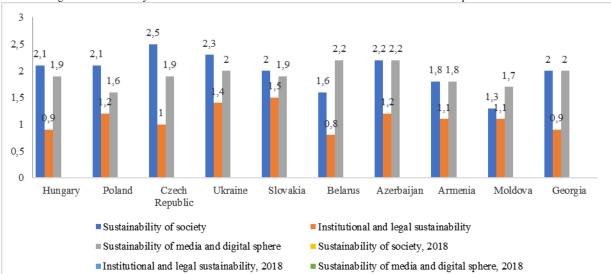


Figure 5: Status and dynamics of the Disinformation Resilience Index in Ukraine and other European countries in 2021

Calculated according to: Disinformation Resilience Index in Central and Eastern Europe in 2018; Disinformation Resilience Index in Central and Eastern Europe in 2021.

Taking into account some ambiguity regarding the dynamics of the Disinformation Resilience Index in Ukraine and other European countries, it is considered expedient to group the selected countries according to the indicators of the Integral Public Administration Index and the Disinformation Resilience Index to identify common and distinctive features of political security. The necessary calculations were carried out using cluster analysis technology (k-means clustering) and Statistica 7.0 software, and the results are systematized in Table 1.

2018			2021		
N⁰	Country	Cluster number	N₂	Country	Cluster number
1.	Hungary		1.	Hungary	1
2.	Poland		2.	Poland	
3.	Czech Republic	1	3.	Czech Republic	
4.	Slovakia		4.	Slovakia	
5.	Georgia		5.	Georgia	
6.	Azerbaijan		6.	Belarus	2
7.	Estonia		7.	Azerbaijan	
8.	Latvia	2	8.	Ukraine	
9.	Lithuania		9.	Armenia	
10.	Belarus		10.	Moldova	
11.	Ukraine				
12.	Armenia	3			
13.	Moldova	3			
14.	Romania				

Tab. 1: Grouping of European countries by the Integral Governance Index and the Disinformation Resilience Index in 2018 and 2021			
Integral indicator of public administration and Disinformation Resilience Index			

Calculated according to: Worldwide Governance Indicators, 2018–2021; Disinformation Resilience Index in Central and Eastern Europe in 2018; Disinformation Resilience Index in Central and Eastern Europe in 2021.

The research made it possible to establish that in 2018 and 2021, the countries of the analyzed group were divided into three groups following the common features of ensuring the effectiveness of public administration and counteracting the effects of disinformation. The first group in both analyzed periods includes such countries as Hungary, Poland, the Czech Republic, Slovakia, and Georgia. They are characterized as countries with a relatively high level of public administration efficiency. They adhere to the principles of unimpeded participation in the electoral process, there is a fairly high level of political stability and activity of public authorities. The current legislation is effective, and the control of corruption in the political sphere is carried out in a systematic and coordinated manner. Accordingly, society's resistance to disinformation is high, and measures to counter false information include strict sanctions and responsibility. Instead, these countries have a rather low level of institutional and legal resilience and a mediocre level of protection in the media and digital resilience subindex.

The second group includes such countries as Azerbaijan, Estonia, Latvia, Lithuania, and Belarus. In them, the level of public administration efficiency is characterized as mediocre. The presence of political problems is evidenced by numerous facts of falsification of election results, political corruption, and a low level of trust in the legislation. In turn, resistance to disinformation is too indirect, and the existing information support for political security needs to be reviewed and improved.

The third group consists of Ukraine, Armenia, Moldova, and Romania, which have a low level of public administration efficiency and significant disparities in all subindexes. This proves that there are problematic aspects of political security, and the resistance to disinformation is quite low. This, in turn, requires taking appropriate measures to develop an effective mechanism for information support of political security and protection of information flows.

Thus, the conducted empirical studies of the problems of information support of political security of Ukraine confirm their existence in the country. This is evidenced by a comparative analysis of the main parameters of Ukraine's indicators in the political sphere with the countries of the Visegrad Group, the Eastern Partnership, and the Baltic States.

6 Discussion

The substantiation of the theoretical and applied foundations of the study of the problems of information support of political security of Ukraine proves the presence of significant destructive changes in the political system of the country. As a result, the crisis phenomena of socio-political and economic nature are deepening. The calculations made in the direction of assessing the level of political security of Ukraine allowed establishing that there is a political crisis in the country. This crisis is caused by the destabilizing influence of external environmental factors and internal political instability and is significantly deepened by the full-scale invasion of the Russian Federation. At the same time, a significant impact on the political security of the country is revealed by information factors, in particular, the low level of information security of the political sphere and the increasing pressure on it from other states. This applies to the Russian Federation, which produces significant amounts of disinformation that changes the true perceptions of society about the state and trends in the political sphere. As a result, the level of political security in Ukraine is significantly decreasing.

In addition, the conducted comparative analytical studies on the indicators characterizing the political security of Ukraine and individual European countries made it possible to establish that Ukraine has common features of the formation of an information mechanism for ensuring political security with such countries as Armenia, Moldova, and Romania. They position a low level of resistance to disinformation and rather low indicators of public administration efficiency.

To eliminate the problems of information support of political security in Ukraine, it is advisable to direct considerable efforts to the timely detection and minimization of threats to political security and systematic diagnostics of the current state of security of the political sphere. It is equally important to establish international cooperation with highly developed European countries in the development and implementation of innovative means of protecting information flows in the political sphere.

7 Conclusion

Thus, the conducted studies of the problems of information support of political security of Ukraine give grounds for the conclusion that ensuring a sufficient level of political security in the country significantly depends on the effectiveness of the mechanism of information support of the political sphere and the coordinated interaction of the subjects of political relations in the direction of information flows exchange. It has been established that the essence of information support for the political security of the country is to form a set of measures to provide political institutions with reliable, accurate, objective, and impartial information. On its basis, it becomes possible to make appropriate management decisions to protect national interests in the political sphere and preserve the territorial integrity and sovereignty of the state. The main threats to the political security of Ukraine have been identified. Among the most important of them are the high level of political corruption, the lack of a system of effective counteraction to the influence of destabilizing factors on the political sphere, and the low level of political responsibility. It has been proven that the formation of the mechanism of information support of political security of Ukraine should take into account the impact of external and internal threats on the political system and measures to counteract them, diagnostics of the current level of political security, and the formation of its forecast values. The main ways of solving the problems of information support of political security of Ukraine through the formation of a set of measures to increase resistance to disinformation and its impact on public consciousness and activities of public authorities have been presented.

Literature:

1. Blikhar, V.S. (2018). Political science: educational and methodological guide (in diagrams and tables). under the editorship V.S. Blihara Lviv: PP "Aral", 540 p. Available at: http://dspace.lvduvs.edu.ua/bitstream/1234567890/1854/1/%D0%9F%D0%BE%D0%BB%D1%96%D1%82%D0%BE%D0%B B%D0%BE%D0%B3%D1%96%D1%8F_29_10_2018.pdf

2. Burrowes, K. & Shannon, J. (2021). How governments can push towards a better tomorrow. PwC. Available at: https://www.pwc.com/gx/en/issues/reinventing-the-future/takeon-tomorrow/government-challenges.html

3. EAST Center. Disinformation Resilience Index in Central and Eastern Europe in 2018. Available at: http://prismua.org/wp-content/uploads/2018/06/DRI_CEE_2018.pdf

4. EAST Center. Disinformation Resilience Index in Central and Eastern Europe in 2021. Available at: https://east-center.org/wp-content/uploads/2021/09/DRI-report-2021.pdf

5. Gavrillsov M.T. (2020). State information security in the national security system of Ukraine. Legal scientific electronic Journal, 2, 200–203. Available at: DOI https://doi.org/10.3 2782/2524-0374/2020-2/52

6. Gligorov, V. & Landesmann, M. (2015). The Ukrainian Crisis: Security Issues and Political–Economic Challenges. The Vienna Institute for International Economic Studies. Available at: https://wiiw.ac.at/the-ukrainian-crisis-security-issues-and-politi cal-economic-challenges-n-91.html

7. Hrabar, N. (2016). Information Security of Ukraine at the Present Stage of State Development. Available at: http://reposit sc.nuczu.edu.ua/bitstream/123456789/12391/1/stGrabar3.pdf

8. Kosilova O.I. (2011). Political security in the national security system of Ukraine. Legal informatics, 1 (29), 72–78. Available at: http://ippi.org.ua/sites/default/files/11koinbu.pdf

9. Kravchuk, O. (2016). Political security of Ukraine as a scientific and practical problem. International scientific Journal, 6, 3, 82–83. Available at: http://www.irbis-nbuv.gov.ua/cgibin/irbis_nbuv/cgiirbis_64.exe?C21COM=2&I21DBN=UJRN& P21DBN=UJRN&IMAGE_FILE_DOWNLOAD=1&Image_file _name=PDF/mnj_2016_6(3)_24.pdf

10. Minakov, M. (2022). Ukraine's Political Agenda for 2022: European Integration, Deoligarchization, and Economic Growth. Wilson Center. Available at: https://www.wilsoncenter.org/blogpost/ukraines-political-agenda-2022-european-integration-

deoligarchization-and-economic-growth

11. Official website of the World Bank. Worldwide Governance Indicators, 2018–2021. Available at: http://info.worldban k.org/governance/wgi/

12. Orel, M.G. (2018a). Political security as a component of national security: theoretical aspect. Scientific Journal of the Academy of National Security, 1 (17), 22–34. Available at: http://nbuv.gov.ua/UJRN/nivanb_2018_1_5

13. Orel, M.G. (2018b). The conceptual structure of the Process of Developing a Strategy for ensuring political security. Investments: practice and experience, 1, 86–92. Available at: http://www.investplan.com.ua/pdf/1_2018/18.pdf

14. Prykhodko, Kh.V. (2015). Political Security of Ukraine: Constitutional and legal aspects. Legal scientific electronic Journal, 1, 36–40. Available at: http://lsej.org.ua/1_2015/9.pdf

15. Rudakevich O.M. (2022). Security is political. Great Ukrainian encyclopedia. Available at: https://vue.gov.ua/

16. Shelest, H. & Khylko, M. (2022). Security in the Black Sea region after the Russian invasion of Ukraine. New Eastern Europe. Available at: https://neweasterneurope.eu/2022/09/29/security-black-sea-ukraine/

17. Solomitsky, A., Semenenko, O., Fedchenko, O., Taran, O. & Semeniuk, N. (2021). Information support constituents of the

State military Security. Journal of Scientific Papers "Social Development and Security", 11, 5, 212–220. Available at: DOI: 10.33445/sds.2021.11.5.20

18. Torychnyi, V.O. (2019). Information support for the national security of State with Reference to using computer technologies: public-administrative aspect. Pressing problems of Public Administration, 2 (56), 39–46. Available at: doi: 10.34213/ap.19.02.04

Primary Paper Section: A

Secondary Paper Section: AD