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DIGITAL TRANSFORMATION OF THE MILITARY SPHERE OF UKRAINE. PROBLEMS AND PROSPECTS

CYFROWA TRANSFORMACJA SFERY WOJSKOWEJ UKRAINY. PROBLEMY I PERSPEKTYWY

Abstract: The article is focused on the examination of the current problems and prospects of Digital transformation of the military sphere of Ukraine under the conditions of the Russian full-scale invasion. The author thinks that one of the key indicators of the level of digital transformation in Ukraine, in particular concerning the military sphere, is the index of digital transformation of the regions of Ukraine. The author notes that digital transformation of the military sphere of Ukraine will help to facilitate the maintenance of medical records and the faster passing of the medical commission, which is especially relevant during the war. Additionally, the author assumes that strengthening the capabilities of the national cyber security system to counter cyber threats regarding the aggression of the Russian Federation against Ukraine, it is aimed primarily at information and communication systems of state bodies of Ukraine, as well as at objects of critical information infrastructure.

Zarys treści: Autor koncentruje się w artykule na badaniu aktualnych problemów i perspektyw cyfrowej transformacji sfery wojskowej Ukrainy w warunkach rosyjskiej inwazji na pełną skalę. Uważa on, że jednym z kluczowych wskaźników poziomu transformacji cyfrowej na Ukrainie, w szczególności w odniesieniu do sfery wojskowej, jest

wskaźnik transformacji cyfrowej regionów Ukrainy. Zauważa, że transformacja cyfrowa sfery wojskowej Ukrainy ułatwi prowadzenie dokumentacji medycznej i szybsze przekazywanie jej komisji lekarskiej, co jest szczególnie istotne w czasie wojny. Ponadto autor zakłada, że wzmocnienie zdolności krajowego systemu cyberbezpieczeństwa do przeciwdziałania cyberzagrożeniom związanym z agresją Federacji Rosyjskiej na Ukrainę odbywa się przede wszystkim w obszarze systemów informacyjnych i komunikacyjnych organów państwowych Ukrainy. Obejmuje ono także obiekty krytycznej infrastruktury informacyjnej.

Key words: military sphere, full-scale invasion, digital transformation, information infrastructure.

Słowa kluczowe: sfera wojskowa, inwazja na pełną skalę, transformacja cyfrowa, infrastruktura informacyjna.

Introduction

Russia's full-scale invasion of Ukraine proved the significant role of the digital transformation of the military sphere to ensure the stability and flexibility of the Ukrainian state under wartime conditions. The priority in the domestic policy of digital transformations of the military sphere is bringing the structure of the digital sector of Ukraine closer to the requirements of the new reality in the conditions of the war and the post-war period.

Further, Ukraine's progress in military operations is possible only due to the maximum automation and increasing the speed of management processes both in the combat environment and in matters of the daily activities of the troops and in the organization of strategic decision-making in the entire defence system of the state. This, of course, includes automating decisions on passing of a medical commission, as well as ensuring the cybersecurity of state registries

Accordingly, the main task of the Ministry of Digital Transformation of Ukraine is to create organizational and technical conditions for the formation and use of a unified information environment in the field of defence through the application of unified standards, protocols, the provision of necessary services and the full use of information resources aimed at the effective use of defence forces with the necessary financial support.

The mechanism of the impact of digital policy on the military sphere

The concept of the military sphere is rather philosophical in nature and does not yet have a strictly scientific understanding. According to the dominant point of view, the military sphere is the area of military affairs. In a broad sense, it covers all issues of military theory and practice related to the formation, training of armed forces and their use in peacetime and war, as well as the preparation of the country and population for a military conflict (war or armed conflict). It includes the activities of Government to resolve issues of defence of the country and the armed forces.

Taking into account this circumstance, it is advisable to classify military-political processes according to the levels of their occurrence. In particular, the international level of functioning of military-political processes, covering two main sublevels – global and regional – as well as the national-state level, characterizing intra-society military-political processes and processes related to the military-political sphere of activity of military personnel and the army as a whole are of great interest.[1]

A more substantive description of military-political processes will be further carried out from the point of view of their interaction with the digital policy and especially from the standpoint of the influence of information on them. Therefore, we are forced to limit ourselves to the most general consideration of them, sufficient to understand the operation of the mechanism of information influence on these processes.

So, it is necessary to analyse the process of influence of digital policy on the military sphere in the form of a mechanism. The problem of studying the mechanism of any socio-political processes as a phenomenon is not new and occupies a very definite place in modern science.[2]

The concept of a mechanism is often used as a metaphor, appealing to something well-known and understandable, for example, to mechanical analogues, including the simplest ones. In any case, a mechanism is a model of the object being studied, so the use of this term is not mandatory but is often useful. Thus, some authors believe that the study of this mechanism makes it possible to more deeply and systematically explain the driving forces, patterns, stages, achieved and probable results of the transformation of Ukrainian society.

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[1] P. A. Kirschner, J. Sweller, R. E. Clark, *Why Minimally Guided Teaching Techniques Do Not Work: A Reply to Commentaries*, "Educational Psychologist" 2007, vol. 42, iss. 2, pp. 115–121.

[2] A. Martin, *Digital Literacy and the "Digital Society"*, "Digital Literacies Concepts Policies Practices" 2008, vol. 30, pp. 151–176.

To study the mechanism it is advisable to build a functional model and for this we consider the analysed process as a system. We agree with the statement that the system is characterized by the fact that it allows one to distinguish between what belongs to it and what does not, and to describe its interactions with the environment. That is, the inputs and outputs of the system are determined and it indicates how certain influences on the inputs will affect the system as a whole. The collection of information about the system ends with modelling, the process of organizing knowledge about this system. Consequently, in the modelling process we build and study a model not of an object, but of a system. But the model itself, having a certain integrity, can also be considered as a system. The model is not required to be true; it must be adequate and operational, that is, give satisfactory answers to the questions posed.

From the above reasoning, we can conclude the following: analysis of the mechanism involves, firstly, considering any process or phenomenon as a system, while insignificant connections, facts or processes are not considered. Secondly, the mechanism involves analysing processes not statically, but dynamically, that is, in a strictly defined sequence. Based on these conditions, we will build a workable model and analyse the mechanism of the impact of digital policy on the military sphere of Ukrainian society.

Let us begin our consideration of this mechanism with its subjects. To do this, it is necessary to answer the question: are all subjects of digital policy the subjects of the mechanism of influence on the military sphere? That is, can they all influence it?

In the most general terms, related to subjects of digital policy, various social groups (nations, nationalities, gender, age, professional and other groups) cannot directly exert such influence. But the political and a number of public institutions they create (the state, political parties, public organizations, movements and associations, the media, information and analytical centres and networks, including the Internet, etc.), as well as socio-political groups of people, those specializing primarily in the management of society (political elites, personnel management groups – managers, companies specializing in advertising and election technologies, etc.) can affect the military sphere.[3]

The state is the main subject in the mechanism we described. That is, it plans, organizes and conducts military policy. At the same time, the specifics of

[3] K. Trantopoulos et al., *External Knowledge and Information Technology: Implications for Process Innovation Performance*, "MIS Quarterly" 2017, vol. 41, no. 1, pp. 287–300.

digital policy allow us to assert that both political elites and the structures they create for conducting information and analytical activities through Government can and actively influence most processes and phenomena in the military-political sphere. Moreover, it is necessary to note the main contradiction, which is that reducing the subjectivity of this mechanism only to the state will simplify the mechanism to one component, which, according to Parkinson's law, leads any system to self-destruction. Therefore, it turns out that the state, as the main subject of military policy, must format itself, which is generally possible, but is unlikely to be effective.[4]

Thus, in our opinion, the state and Government should be interested in the emergence and use of the potential of other political and social actors.

The most consciously, purposefully and actively participating in the digital policy at present, in addition to internal political subjects, are also other states, international governmental and non-governmental organizations, coalitions of states and the bodies they create, mass telecommunication networks and mass media, international political, economic and financial elite groups, etc. which are able to use the results of the digital policy in the military sphere in their interests and the interests of a particular society (its individual groups), and conduct the development of society in the direction they need.

The processes currently taking place in the international arena are very ambiguous and contradictory; new entities are emerging that are very strong politically and economically that stimulates the process of creating and strengthening the transnational companies and corporations. It is difficult to give an accurate assessment of the political capabilities of leading transnational companies and corporations, but it seems that, unlike most economically developed states, international economic actors are more committed to economic and strictly political (but not military) methods of influencing socio-economic and political processes on the planet. Yet it must be recognized that their capabilities are enormous and also, apparently, within the framework of the globalization process, there is a great desire to look for new, less destructive ways to develop world markets for goods, services and capital. In this sense, the digital policy provides subjects of international law with rich new opportunities, including influencing the military-political sphere of a particular society and state.

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[4] D. R. Garrison, *Online Community of Inquiry Review: Social, Cognitive and Teaching Presence Issues*, "Journal of Asynchronous Learning Networks" 2007, vol. 11, pp. 61–68.

The next important element of the mechanism of influence of digital policy on the military sphere is the interests of its subjects. Here it should be noted that the interests of various subjects differ greatly from each other.[5]

In our opinion, these interests lie in understanding the need for the speedy formation of an information environment in the military sphere, information consciousness in government structures, among the military-political leadership, military personnel and representatives of organizations involved in the development and implementation of military-political decisions, information and information-analytical units in military forces, etc. so that a particular society and its military-political institutions do not remain aloof from the main vector of development of civilization, aimed at the formation of an information society.[6]

The point is that the sooner the military-political leadership of the state and the armed forces understand the need for targeted digitalization of the entire military sphere and the military-political processes taking place in it, the greater efforts they will make for this and the sooner this process will proceed. Apparently, the political interest lies in increasing efforts to digitalize the military sphere, which will allow authorities to effectively use all types of resources, including information and military ones in their own and public interests, ensure the security of individuals, society, the state and stabilize political regimes.

The index of digital transformation of the regions of Ukraine

One of the key indicators of the level of digital transformation in Ukraine, in particular concerning the military sphere, is the index of digital transformation of the regions of Ukraine. The index of digital transformation of the regions of Ukraine was developed by the regional digitization team of the Ministry of Digital Transformation of Ukraine.[7] The index is one of the tools for measuring the

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[5] G. Westerman, D. Bonnet, *Revamping Your Business Through Digital Transformation*, "MIT Sloan Management Review" 2015, vol. 56, iss. 3, pp. 2–5.

[6] P. Parviainen et al., *Tackling the Digitalization Challenge: How to Benefit from Digitalization in Practice*, "International Journal of Information Systems and Project Management" 2017, vol. 5, no. 1, pp. 63–77.

[7] Ukrinform, *Stan ta perspektivi cifrovoi transformacii osnasenna zbrojnih sil Ukraini visokotehnologicnimi zrazkami ozbroenna ta vijskovoi tehniki*, https://www.ukrinform.ua/rubric-presshall/3327366-stan-ta-perspektivi-cifrovoi-transformacii-osnasenna-zbrojnih-sil-ukraini-visokotehnologicnimi-zrazkami-ozbroenna-ta-vijskovoi-tehniki.html, (accessed 19.01.2022).

processes of digitization in 24 regions of the country. Such an analysis allows to determine the efficiency of authorities in the direction of digitalization, as well as to see the needs for digital transformation, in particular in the military sphere.

The purpose of the Index was to create a base for researching the level of digital transformation in regional authorities. The results allow authorities, analysts, developers and other interested parties to optimize digitization processes in the regions.

The index contains the following 8 main blocks: institutional capacity; Internet development; development of Administrative Services Centres; "paperless" mode; digital education; business card of the region; penetration of basic electronic services; industrial digital transformation.

The results of the 2022 study (Table 1) show that the Index within Ukraine is 0.65 points out of a possible 1 point. In particular, the Dnipro, Ternopil and Odesa regions have the highest values (0.916, 0.910 and 0.836 points respectively). Among the blocks of the index of digital transformation of the regions of Ukraine, the highest values are observed in "Development of Administrative Services Centres," "Paperless mode" and "Development of the Internet" (0.771, 0.691 and 0.683 respectively).

Table 1. The index of digital transformation of the regions of Ukraine in 2022

Region	The value of the Digital Transformation Index of the regions of Ukraine
Dnipropetrovska	0.916
Ternopilska	0.910
Odeska	0.836
Poltavska	0.814
Lvivska	0.799
Rivnenska	0.794
Vinnytska	0.769
Zakarpatska	0.756
Volynska	0.720
Cherkaska	0.716
Zhytomyrska	0.692
Ivano-Frankivska	0.683
Khmelnytska	0.610

Region	The value of the Digital Transformation Index of the regions of Ukraine
Kyivska	0.588
Kharkivska	0.571
Chernivetska	0.540
Sumska	0.534
Chernihivska	0.522
Khersonska	0.500
Donetska	0.469
Kirovohradska	0.431
Mykolaivska	0.431
Luhanska	0.404
Zaporizka	0.370

Source: Ukrinform, *Stan ta perspektivi cifrovoi transformacii osnasenna zbrojnih sil Ukraini visokotehnologicnimi zrazkami ozbroenna ta vijskovoi tehniki*, https://www.ukrinform.ua/rubric-presshall/3327366-stan-ta-perspektivi-cifrovoi-transformacii-osnasenna-zbrojnih-sil-ukraini-visokotehnologicnimi-zrazkami-ozbroenna-ta-vijskovoi-tehniki.html, (accessed 19.01.2022).

One of the important components of the Index of digital transformation of regions of Ukraine is institutional capacity, which is the first stage in the digital development of the region and is implemented by digital leaders in the community.

The development of digital technologies increases the demand for IT specialists in government agencies. The actual number of employees in structural subdivisions for the digitalization in the Regional State Administration is 70.7% of the planned number. In the Chernivtsi, Kirovohrad and Chernihiv regions there is a demand for increasing teams in the direction of digital transformation.

Also, a "paperless" regime is being introduced in Ukraine with the aim of increasing the efficiency of authorities, reducing costs and optimizing services for the population. The "paperless" regime involves the use of digital infrastructure, such as cloud services, information systems and platforms. The research included measurement of electronic document flow processes, digitization of registers in regional authorities, and implementation of electronic services in various types of institutions. The value of this component of the Index of digital transformation of regions of Ukraine is 0.691 out of a possible 1. In the list of regions, the highest values are in the Poltava, Odesa and Dnipro regions (0.967, 0.958 and 0.952 respectively), and the lowest values are in the Zaporizhia, Ivano-Frankivsk and Chernivtsi regions (0.063, 0.162 and 0.390 respectively).

The key problems of digitalization in the military sphere of Ukraine

On 19 May 2023, the State Secretary of the Ministry of Internal Affairs of Ukraine held a meeting regarding the activities of the military medical commissions of health care institutions that belong to the sphere of administration of the Ministry of Internal Affairs of Ukraine and the State Emergency Service of Ukraine.

At the meeting, a number of issues were discussed regarding the optimization of the operation of medical centres of health care institutions, which belong to the sphere of management of the Ministry of Internal Affairs of Ukraine, routes of medical examinations and accessibility for people with reduced mobility. It was noted that digitalization is the number one task for military medical commissions. Currently, the issue of digitalization of military medical commissions remains a priority for the Government and the Ministry of Internal Affairs of Ukraine. This will help to facilitate the maintenance of medical records and the faster passing of the medical commission, which is especially relevant during the war. Accordingly, a single electronic database will be introduced precisely to solve this problem.[8]

In turn, it was noted that the department understands all the problems of military medical commissions, in particular concerning certificates.

In addition, the electronic database will allow storing and processing of medical information about candidates, which facilitates the maintenance of medical records and more accurate and convenient processing of this information.

The launch of the electronic queue for passing military medical commissions was also announced. Therefore, automation will allow the regulationof queuesfor each doctor's office.

The prospects of digital transformation of the military sphere of Ukraine

Among the prospects of the digital transformation of the Ukrainian economy which can have a significant impact on the military sphere, it is necessary to highlight the following:

[8] National Institute for Strategic Studies, *Ohlyad tsyfrovoyi transformatsiyi ekonomiky Ukrayiny v umovakh viyny (zhovten' 2022)*, https://niss.gov.ua/en/node/4725, (accessed 19.01.2022).

1. Opening of funding for the restoration of Ukraine's digital infrastructure by the EU. According to the CEF European funding programme "Connecting the backbone for digital global gateways," dated 12 October 2022, domestic mobile operators and Internet providers have the opportunity to participate in the competition and in the deployment of strategic networks, contributing to the improvement of the quality of communication with EU countries, in particular through underwater cable systems, satellite infrastructure and connection to Internet exchange points. Through the platform UNITED24 funds are already coming in for modernization and construction of digital infrastructure, strengthening of cyber protection, as well as further development of new digital technologies. In particular, within the framework of the memorandum signed between the Ministry of Digital Transformation of Ukraine and the telecommunications company "Kyivstar," the telecom operator transferred UAH 150 million for digitalization. The priority funds in the amount of UAH 84.9 million, which will contribute to strengthening the security and reliability of digital infrastructure during a full-scale war, will be directed to:

- modernization and development of the basic state registers of the Ministry of Justice of Ukraine to provide the population with new digital services in the social and construction spheres (the State Register of Property Rights and the State Register of Civil Status Acts);
- implementation of projects on the digital transformation of the notary (e-notary) and waybills (e-TTN);
- modernization and development of transport registers of the Ministry of Internal Affairs of Ukraine in order to provide digital services for registration and re-registration of cars in "Diya," issuing digital driving licenses, etc.

2. Opening the opportunity for Ukrainian business entities to participate in competitions of the European Union Programme"Digital Europe" until 2027, for the development of digital infrastructure with a total programme fund of €7.6 billion. About €6 billion are provided for the financing of projects in the directions available to Ukraine. Fund raising will also be facilitated by the adopted draft law "On the National Informatization Programme," which will ensure the proper level of implementation of informatization, digitization and e-government projects and is aimed at solving a number of the following tasks:

- Ukraine's integration into the global information space;
- information security and cyber protection;

- application of information and digital technologies in public administration and socio-economic relations.[9]

3. Supporting the economy of Ukraine by purchasing military bonds in the "Diya" application with up to 16% guaranteed profit. As of 25 October 2022, Ukrainians purchased 70,000 military bonds worth almost UAH 70 million, which are working for the victory of Ukraine.

4. Strengthening the capabilities of the national cyber security system to counter cyber threats regarding the aggression of the Russian Federation against Ukraine, aimed primarily at information and communication systems of state bodies of Ukraine, as well as at objects of critical information infrastructure.[10]

In October 2022, Ukraine, as part of the UA30 cyber reform, joined the US and EU cyber security month with the aim of drawing public attention to cyber security and creating a full-fledged cyber protection ecosystem. The Ministry of Digital Transformation of Ukraine, together with the FAVBET Tech company, is deploying an IT army and organizing its own cyber troops, who are already dealing a devastating blow to the enemy's IT infrastructure 24/7. After the changes to the Tax Code come into force, FAVBET Tech plans to integrate new payment instruments and implement settlements with the seven most popular virtual coins. For the purpose of cyber protection of state information resources and objects of critical information infrastructure, a corresponding draft law was submitted for consideration by the Verkhovna Rada of Ukraine.

Conclusions

In general, the implementation of the planned measures will contribute to the digital transformation of the economy and, accordingly, the military sphere of Ukraine in order to ensure the stability and flexibility of the state and the integration of Ukraine into the international digital space on a strategic basis. The activation of relevant processes has the potential to attract funds within the framework of the European EU programme "Digital Europe" and the financing programme for connecting the Ukrainian highway to digital global gateways and increasing the digital potential of Ukrainian companies, their structural modernization and, as a result, strengthening their sustainability in the post-war period.

[9] *Mincifri pro pidsumki ta plani shodo cifrovizaciyi*, Uriadovy kurier, https://ukurier.gov.ua/uk/news/mincifri-pro-pidsumki-ta-plani-shodo-cifrovizaciyi/, (accessed 19.01.2022).

[10] Ibidem.

Bibliography

Dandeker C., *New Times for the Military: Some Sociological Remarks on the Changing Role and Structure of the Armed Forces of the Advanced Societies*, "The British Journal of Sociology" 1994, vol. 45, no. 4, pp. 637–654.

Garrison D. R., *Online Community of Inquiry Review: Social, Cognitive and Teaching Presence Issues*, "Journal of Asynchronous Learning Networks" 2007, vol. 11, pp. 61–68.

Kirschner P. A., Sweller J., Clark R. E., *Why Minimally Guided Teaching Techniques Do Not Work: A Reply to Commentaries*, "Educational Psychologist" 2007, vol. 42, iss. 2, pp. 115–121.

Martin A., *Digital Literacy and the "Digital Society"*, "Digital Literacies Concepts Policies Practices" 2008, vol. 30, pp. 151–176.

Parviainen P. et al., *Tackling the Digitalization Challenge: How to Benefit from Digitalization in Practice*, "International Journal of Information Systems and Project Management" 2017, vol. 5, no. 1, pp. 63–77.

Trantopoulos K. et al., *External Knowledge and Information Technology: Implications for Process Innovation Performance*, "MIS Quarterly" 2017, vol. 41, no. 1, pp. 287–300.

Westerman G., Bonnet D., *Revamping Your Business Through Digital Transformation*, "MIT Sloan Management Review" 2015, vol. 56, iss. 3, pp. 2–5.

Ligazakon, *Tsifrovzatsya ukranskoi armii zakon priynyato*, https://biz.ligazakon.net/news/224940_tsifrovzatsya-ukransko-arm-zakon-priynyato, (accessed 19.01.2022).

Mincifri pro pidsumki ta plani shodo cifrovizaciyi, Uriadovy kurier, https://ukurier.gov.ua/uk/news/mincifri-pro-pidsumki-ta-plani-shodo-cifrovizaciyi/, (accessed 19.01.2022).

National Institute for Strategic Studies, *Ohlyad tsyfrovoyi transformatsiyi ekonomiky Ukrayiny v umovakh viyny (zhovten' 2022)*, https://niss.gov.ua/en/node/4725, (accessed 19.01.2022).

Ukrinform, *Stan ta perspektivi cifrovoi transformacii osnasenna zbrojnih sil Ukraini visokotehnologicnimi zrazkami ozbroenna ta vijskovoi tehniki*, https://www.ukrinform.ua/rubric-presshall/3327366-stan-ta-perspektivi-cifrovoi-transformacii-osnasenna-zbrojnih-sil-ukraini-visokotehnologicnimi-zrazkami-ozbroenna-ta-vijskovoi-tehniki.html, (accessed 19.01.2022).

Summary

One of the key indicators of the level of digital transformation in Ukraine, in particular concerning the military sphere, is the index of digital transformation of the regions

of Ukraine. The index of digital transformation of the regions of Ukraine was developed by the regional digitization team of the Ministry of Digital Transformation of Ukraine.

Digitalization is the number one task for military medical commissions. Currently, the issue of digitalization of military medical commissions remains a priority for the Government and the Ministry of Internal Affairs of Ukraine. This will help to facilitate the maintenance of medical records and the faster passing of the medical commission, which is especially relevant during the war. Accordingly, a single electronic database will be introduced precisely to solve this problem.