

UDC 342.9

DOI <https://doi.org/10.32849/2663-5313/2021.8.06>**Igor Ivanov,***Candidate of Legal Sciences, Candidate of Technical Sciences, Honoured Worker of Transport of Ukraine, Chairman of Zaporozhoblavtotrans Association, 30, Pokrovska street, Zaporizhzhia, Ukraine, postal code 69063, ieivanov@gmail.com***ORCID:** orcid.org/0000-0002-9650-1293Ivanov, Igor (2021). Information technology in activities of the National Police of Ukraine. *Entrepreneurship, Economy and Law*, 8, 42–46.

INFORMATION TECHNOLOGY IN ACTIVITIES OF THE NATIONAL POLICE OF UKRAINE

Abstract. *The aim of the article* is to analyse information support of the National Police of Ukraine and proposals for its improvement. **Results.** The article analyses information support of the National Police. It reveals that, in current conditions, the tasks of the National Police cannot be performed without auxiliary activities which do not directly implement objectives prescribed by law but are necessary for their achievement. The article covers the content of such concepts as information uncertainty which means a discrepancy between the actual and required awareness of police officers of reality, which does not allow them to solve individual tasks of their service; information need, that is, a certain state of the service performer arising in connection with the need to obtain information for the accomplishment of the duties; information procedure, that is, a set of functionally homogeneous regular actions (operations) performed by officers of the National Police of Ukraine; information process, that is, a set of logically structured, interrelated and organized information procedures leading to the achievement of information support objective; the information system, that is, an organizational and technical system in which information processing technologies are implemented using software products and equipment. The environment of activity, which is composed of dominating and uncontrolled sectors, is described. One of the software products of the information-telecommunication system “Information Portal of the National Police of Ukraine” makes it possible to analyse the concepts of receiving and recording information, organising it for further transfer or processing (generation of new information). **Conclusions.** The article substantiates theoretically that police officers are linked not only by information but also by function: they perform individual tasks within the scope of their duties. It is noted that all information systems of the National Police of Ukraine, regardless of their architecture and scope of application, generally contain the same set of components: functional, organizational and data processing.

Key words: information technology, information and telecommunication systems, software product, information procedures, legislation.

1. Introduction

The active development of information processes and the introduction of new inventions, achievements and technologies into production and management processes have resulted not only in the progressive development of our State but become a trigger of increasing crimes and the advancement of the means and methods of committing them. Therefore, information support of the National Police of Ukraine becomes more relevant. It breaks new ground for crime prevention and promotes effective and accurate decision-making for the detection of crime.

The information system of the National Police of Ukraine is rapidly progressing in current circumstances, but pressing problems arise as information systems can't yet fully fulfil their purpose. In view of this, the improvement of information technology in the activities

of the National Police of Ukraine is particularly relevant.

Analysis of recent research and publications. The Ukrainian researchers have contributed to studying the issues of information support of the National Police of Ukraine' they are as follows: V. Antonenko, V. Vishnia, L. Hlinenko, O. Komisarov, I. Krasnobryzhyi, M. Kryshchanovych, S. Mamchenko, V. Miroshnychenko, N. Morze, V. Pavlysh, S. Prokopov, E. Ryzhkov, Yu. Rohushyn, I. Shevchuk and others. However, the dynamics of the modern development of information society in general, including the activities of the National Police of Ukraine, require delving into this problem, which has not been sufficiently analysed in the scientific community.

The purpose of the article is to analyse information support of the National Police of Ukraine and proposals for its improvement.

2. Information support of the National Police of Ukraine

In current conditions, the duties of the National Police of Ukraine (hereinafter – NPU) cannot be performed without auxiliary activities that do not directly implement objectives prescribed by law but are necessary for their achievement (Vyshnia et al., 2016). One of such activities performed by the NPU, in accordance with article 25 of the Law of Ukraine “On the National Police,” is information and analytical support (Pietkov, 2020). This term is referred to regular activities to obtain an information product or provide information services. The author considers the content and defines the main components of the concept.

The need for information and analysis is driven by the information uncertainty of individual operational tasks of the NPU. Information uncertainty is understood as a discrepancy between the actual and required reality awareness of police officers, which does not allow them to solve individual tasks of their service. For example, now the NPU doesn't have access to customs information resources required for police officers to verify the legality of foreigners or foreign-registered cars in Ukraine or the like.

Therefore, the information need is a certain state of the performer of the service activities arising in connection with the need to obtain information for the accomplishment of the duties. Moreover, the problem of identifying, describing and assessing the information needs of police officers is one of the main problems of information support of the NPU. The settlement of the mentioned problems makes it possible to formulate information and analytical requirements.

The information needs determine the objective of information support of the NPU, which is to provide police officers with information of the required quality within the appropriate time and the existing technical and organizational structures, the legal regulatory framework and funding.

The potential providers of information support of the NPU are the Department of Information and Analytical Support of the NPU (which is the administrator of the information and telecommunications system “Information Portal of the National Police of Ukraine” (hereinafter – IPNP)) or other units of the NPU that provide access to information resources; the NPU's staff who have obtained access to the use of the IPNP system information in the prescribed manner (Ministry of Internal Affairs of Ukraine, 2017; National Police of Ukraine, 2020). The object of information support is the psychophysiological state of personal or group knowledge of significant elements of reality (Antonenko et al., 2016).

Structuring the core components is a necessary but insufficient condition for understanding the essence of the activity, since it does not take into account a number of factors that are not directly part of the concept but create a certain environment of the activity. The environment of activity is composed of dominating and ungoverned sectors. The dominating sector refers to the funds at the disposal of the actor and the elements of the reality available to be affected. An uncontrolled sector consists of a group of elements which the actor cannot influence but which must be kept in mind as limitations.

In order to describe the environment, the author presents the most relevant components of the environment from the actor's perspective: $D = (d1, d2, d3)$, where D is the dominating sector; $d1$ is the police officers (employees) who implement information procedures; $d2$ is technical means of collecting, transferring, processing and storing information; $d3$ is material resources. $C = (c1, c2, c3, c4)$, where C is information support conditions; $c1$ is the legal basis (orders, guides, regulations, instructions); $c2$ is an organized set of methods and rules for handling information; $c3$ is the control command; $c4$ is the obstacle.

One of the methods of delineating the environment is to define the system through the inputs and outputs by which the system communicates with the environment. Within the environment, a necessary and sufficient set of procedures for achieving the objectives of information support is defined.

The information procedure is considered as a set of functionally homogeneous regular actions (operations) performed by officers of the NPU. The objectives of information procedures are to move information in space (collection, distribution, transfer, etc.) or to transform it in time (input, output, storage, processing, etc.) invariantly to the method of the procedure and the means used. Information is considered as a subject matter of the activity that is being carried out, processed and used.

An information process is a set of logically structured, interrelated and organized information procedures leading to the achievement of information support objective. It is difficult to give an exhaustive list of information procedures, since different information process models, specific in terms of the source of theoretical constructions, exist but the process may generally include such procedures as reception, generation, transformation, use, storage, destruction and transfer of processing results to the consumer (person, machine, other information system) (Morze, 2015).

3. Analysis of the Law of Ukraine “On Information Protection in Information and Telecommunication Systems”

According to the definition of State Standard 2392-94, an information system is a communication system providing for the collection, search, processing and transfer of information. Under the Law of Ukraine “On Information Protection in Information and Telecommunication Systems”, information (automated) system is an organizational and technical system in which information processing technologies are implemented using software products and equipment (Verkhovna Rada of Ukraine, 1994).

In addition, Ukrainian legal regulations involve the following interpretations of this concept: an information system is an automated system; a computer network or communication system; an organizational and technical system for processing information by means of hardware and software; a system for receiving, processing, storing, displaying and recording data on the technical status of structures, systems, elements, their properties and/or operation; an interrelated set of tools, methods and personnel used to store, process and release information to achieve this objective (Krasnobryzhyi et al., 2018).

The analysis shows that currently several generally accepted definitions of an information system exist in a general and narrow sense. For example, in general, an information system is a system that carries out or includes information processes: search, collection, processing, storage and transfer. In an information system, one, two or more such processes may occur simultaneously. The processing of information depends on the content of the original information, but information is not interpreted while processing but only transformed following the previously developed algorithms. In a narrow sense, an information system is a set of information, technical, software and organizational tools needed for the automated processing of information.

However, in the course of the study of basic concepts and definitions from the perspective of systemic analysis, the elementary level of their structural perception is of interest. The concepts of “elementary information process” and “elementary information system” are basic under the formalised description of the information system irrespective of its definition.

The author briefly studies such concepts as the reception and recording of information, its organization for further transfer or processing (generation of new information). For example, the principle of operation of one of the software products of information and telecommunication system “Information Portal of the National Police of Ukraine” permits analysing them. For example, the operator “102” of the IPNP, using

the potentials of the automated workplace (AWP), performs 24-hour reception of information on the special line “102” about the commission of criminal, administrative offences or events and enters it in the electronic card “102” of the IPNP, where information is generated, that is, get structured form and properties (electronic messages, audio recordings, etc.). During the generation of information, it is transformed, namely the incompatibility of its properties caused by different nature and/or an organizational form are eliminated – the properties of the output information of one function are complied with the properties of the input information of another function. When the user made these operations, in our case, an operator of “102” using the IPNP system, information is transferred, that is, information is moved through communication channels from one place to another. Consequently, other users (dispatcher, duty officer and others) use it, i. e. they carry out semantic processing incl. for the generation of new information and transfer it to official police task tablets (Ministry of Internal Affairs of Ukraine, 2020).

Together, these types of information relationships are peculiar to the organizational structure of the NPU. It should be borne in mind that the police officers (employees) of the NPU units are linked not only in terms of information but also functionally: they perform certain tasks as part of their duties. In addition, information and functional relations are complemented by reporting relationships.

Therefore, an element of the organizational structure (police officer/employee) is identified as an element of the information system. Given that the police officers (employees) are organized into units, the latter can be considered as subsystems in terms of information, and the NPU unit can be considered as an information system. In this case, relationships with outside organizations and citizens are interrelations with the external environment. The presentation of the organizational structure of the NPU in the form of an information interoperable facilities system allows one to make an important conclusion: the consideration of its information support at the organizational level is the most common, specifically oriented on invariant technologies of information relationships. In other words, the information systems of the NPU are composed of individuals and teams who carry out targeted substantive activities. This makes it possible to describe the information systems of the NPU as organizational systems.

The physical implementation of information processes in the NPU is maintained by the availability and functioning not only of a large num-

ber of police officers (employees) ($d1$), but also of many technical means ($d2$). Given target homogeneity of $d1$ and $d2$ (performing information functions), they can be merged into one $M = d1 \in d2$. Therefore, M is composed of elements of the organizational and technical structure that support information processes.

By relying on the above, the information system of the NPU can be formally defined through an expression that describes its structural properties: $S = (d1, d2, r)$, where $d1, d2, r$ are elements of the organizational and staffing structure, mechanisms and information relationships.

The most important characteristics of an information system are the boundaries and the element basis. Information systems are open, thus interacting with the external environment. However, the separation of the system from the environment is usually not trivial (Kryshtanovych, 2016). More recently, the definition of a system includes an observer, along with elements, relationships, their properties and objectives, since the relationship between the researcher and the system being studied is evident. Therefore, in view of the position of the observer (from the point of view of the police officer/employee of the NPU), the general purpose of the information system is to service semantically significant flows of information requests from police officers/employees in the context of the performance of duties. This means that the structure and characteristics of information are significant for the performance of the NPU activity.

Moreover, from the perspective of the “abstract” observer, the target function of an information system is the transformation of input information into output information. At the same time, the information system becomes invariant both to the semantics of information, the activities of the NPU and to the organizational and technical structure. This is a functional aspect of the information system.

Different approaches to the definition of an information system enable to analyse various aspects of information support for the NPU. However, improving information support for the NPU requires integration of the views considered.

Therefore, the concept of “information system” can be defined symbolically: $S = (i, o, f, m, c)$, where i is the input information; o is the output information (the purpose of information support); f is the information process, m is the mechanism of functioning; c is the conditions of functioning. This expression describes the purpose of the information systems of the NPU.

The improvement of information support comprise the characteristics of information system, as follows: closed information processes; continuous operation; shared use of information resources; discretionary, versatile, stochastic nature of information processes; high quality requirements of all information process procedures; the lack of a priori information on the characteristics of information processes; the large scope and heterogeneity of information processed; the organizational and legal regulatory mechanism for information processes; increased reliability (Pavlysh, Hlinenko, 2013).

4. Conclusions

Therefore, all information systems of the National Police of Ukraine, regardless of their architecture and scope of application, generally contain the same set of components: functional, organizational and data processing. Information and analytical systems and technologies allow the National Police of Ukraine to optimize and rationalize management functions using the potentials of the latest means of receiving, generating, processing and transferring information. The improvement of the quality and timeliness of police duties requires a more effective exchange of information between the National Police of Ukraine and other bodies subordinate to the central executive authorities. This will be the topic of our further research.

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Ігор Іванов,

кандидат юридичних наук, кандидат технічних наук, заслужений працівник транспорту України, голова Асоціації Запоріжжяоблавтотранс, вулиця Покровська, 30, Запоріжжя, Україна, індекс 69063, ieivanov@gmail.com

ORCID: orcid.org/0000-0002-9650-1293

ІНФОРМАЦІЙНІ ТЕХНОЛОГІЇ В ДІЯЛЬНОСТІ НАЦІОНАЛЬНОЇ ПОЛІЦІЇ УКРАЇНИ

Анотація. *Метою статті* є аналіз стану інформаційного забезпечення Національної поліції України, а також пропозиції щодо його покращення. **Результати.** У статті здійснено аналіз інформаційного забезпечення Національної поліції України. З'ясовано, що в умовах сьогодення розв'язання Національною поліцією України службових завдань неможливе без здійснення допоміжних видів діяльності, які безпосередньо не переслідують нормативно визначені цілі, проте необхідні для їх досягнення. Розкрито зміст понять «інформаційна невизначеність» (під яким розуміється невідповідність фактичного й бажаного станів інформованості поліцейських про навколишню дійсність, що не дає змогу вирішувати окремі завдання їх службової діяльності); «інформаційна потреба» (це певний стан суб'єкта службової діяльності, який виникає у зв'язку з необхідністю отримання відомостей, що забезпечують розв'язання службових завдань); «інформаційна процедура» (це набір однорідних у функціональному плані дій (операцій), які регулярно здійснюються працівниками Національної поліції України); «інформаційний процес» (це сукупність логічно впорядкованих, взаємопов'язаних та організованих інформаційних процедур, що веде до досягнення мети інформаційного забезпечення); «інформаційна система» (це організаційно-технічна система, у якій здійснюється реалізація технологій обробки інформації з використанням програмних продуктів та устаткування). Охарактеризовано середовище діяльності, яке становлять сфера домінування та некерована сфера. На прикладі роботи одного з програмних продуктів інформаційно-телекомунікаційної системи «Інформаційний портал Національної поліції України» проаналізовано процеси приймання та фіксації інформації, організації її для подальшої передачі або оброблення (генерація нової інформації). **Висновки.** Теоретично обґрунтовано, що поліцейські пов'язані між собою не лише інформаційно, а й функціонально, тобто вони виконують окремі види робіт у межах службових завдань. Констатовано, що всі інформаційні системи Національної поліції України незалежно від їх архітектури та сфери застосування, як правило, містять один і той самий набір компонентів: функціональні, організаційні та оброблення даних.

Ключові слова: інформаційні технології, інформаційно-телекомунікаційні системи, програмний продукт, інформаційні процедури, законодавство.

The article was submitted 13.08.2021

The article was revised 02.09.2021

The article was accepted 20.09.2021