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ELECTRONIC CRIMINAL PROCEEDINGS: INTERNATIONAL EXPERIENCE OF USING INFORMATION SYSTEMS FOR ALGORITHMIZATION OF CRIMINAL JUSTICE

Олена Антонюк. ЕЛЕКТРОННЕ КРИМІНАЛЬНЕ ПРОВАДЖЕННЯ: МІЖНАРОДНИЙ ДОСВІД ВИКОРИСТАННЯ ІНФОРМАЦІЙНИХ СИСТЕМ АЛГОРИТМІЗАЦІЇ КРИМІНАЛЬНОЇ ЮСТИЦІЇ. Стаття присвячена дослідженню та порівняльному аналізу міжнародного досвіду використання програм та інноваційних технологій в сфері кримінальної юстиції в деяких країнах світу та визначенню основних причин дисбалансу тенденцій розвитку та впровадження подібних систем в Україні; способам та засобам отримання, та можливостям реалізації права на сбір, подання та доступу до інформації та до доказів в електронному кримінальному провадженні.

Актуальність цієї статті полягає в необхідності аргументованого порівняльного аналізу позитивного та ефективного досвіду діючих систем інформатизації кримінальної юстиції різних країн, задля вирішення проблеми реформування кримінальної юстиції України, шляхом створення інформаційної системи досудового розслідування – електронного кримінального провадження в Україні, з метою удосконалення сучасної концепції електронної складової частини кримінального провадження задля реалізації принципів демократичного суспільства, таких як доступ до правосуддя, як одного з найголовніший принцип забезпечення законодавчих прав і свобод людини в демократичній державі.

У дослідженні проведено аналіз досвіду функціонування інноваційних технологій в електронних системах органів кримінальної юстиції в розрізі огляду застосування різноманітних інформаційних програм за моделлю та способами отримання та збереження інформації; аналіз результатів роботи стратегічних елементів програм; порівняння комплексних методів підходу до впровадження інноваційних процесів організації, застосування та контролю в електронному кримінальному провадженні в різних країнах. За результатами дослідження відзначено основні напрями роботи, необхідної для впровадження системи сучасного та ефективного електронного кримінального провадження в Україні.

Ключові слова: *електронне кримінальне провадження, діджиталізація кримінальної юстиції, алгоритмізація електронного кримінального провадження, електронні системи органів кримінальної юстиції.*

Relevance of the study. Dynamic development of modern strategic elements of algorithmization and implementation of artificial neural network technologies in the sphere of criminal justice in the developed countries such as the USA, Japan, China, Germany, have become viable to be implemented and applied on a large scale and envisage promising directions for the development of smart technologies.

The development of the area of digitalization of the criminal justice system in different countries can be studied through the analysis of the experience of functions of electronic systems which use various innovative programs such as the ones in the USA ("Oasis", "Magic Lantem"), England ("Transforming Through Technology"), Germany ("INPOL-neu", "rsCASE", "Koyote", "Fall Bearbeitungs-System Thuringen", Hungary (National Computer Board), Belgium ("e-Justice", "Tax-on-Web", "Police-on-Web"), etc., therefore, we can conclude that numerous countries are far more advanced in this respect. This good practice also has advanced

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development in the following countries: Saudi Arabia, South Korea, the Republic of Kazakhstan, Singapore, Estonia and others. In the meantime, as of now, the practice of our native application of the principle of informatization and digitalization of the criminal proceedings uncovered how imperfect and outdated it is, exposed the difficulties of law enforcement as well as the absence of a unified national concept of the electronic criminal proceedings in Ukraine [2, 16, 17].

Recent publications review. Dynamic development of the functions of world electronic systems of the criminal justice system bodies encourages the systematic scientific studies of this experience. The development trajectory of the digitalization processes in the criminal justice systems in different countries pertains to the plane of academic interest of many native researchers. These studies are reflected in the academic papers by A. Stolitnii, V. Shepitko, K. Branovitskiy, L. Golovko, O. Zhuchenko, M. Mayetniy, G. Chigrin, O. Sirenko, etc [1-4].

The article's objective is to investigate the development of modern elements of algorithmization and implementation of artificial neural network technologies in the sphere of criminal justice

Discussion. The development of the modern electronic medium in the work of the criminal justice system in different countries can be studied on the basis of the following examples [5-16]:

1) The development of the information society in Lithuania: In 2011, the Government approved a program (2011-2019), in which were specified certain objectives of the governmental sector to expand the scope of eligibility and use of public electronic services. In order to promote the governmental strategic goal, the National Court System (NCS) implemented a project to develop electronic services in the courts, and on July 1, 2013 the web portal of govenmental electronic court services (EPP) was launched as a separate LITEKO module. Extra emphasis should be placed on the integration with the recently developed pre-trial investigation information system (IBPS). Since 2017, the pre-trial investigation procedure has been performed entirely through the information system, including all procedural actions of the courts at this stage. It is the first step in the electronic review of criminal cases, which is currently at the development stage. Meanwhile, the judiciary and procedural legislation often remain conservative and inert. Therefore, the decision-making and management system of IT systems must be built in such a way so that it is able to respond promptly to new challenges, reasonably adapt to existing norms and requirements (sometimes initiating legislative changes) and skillfully accommodate to different interests.

2) Due to the fully automated litigation and electronic means of communication – the so-called e-Justice decisions – Estonia has one of the most efficient judicial systems in the world. The central information system – Electronic File (e-File) – provides access to various stages of criminal, civil and administrative proceedings, court decisions and procedural acts to all parties, including citizens. The development of e-File was driven by the need to separate data storages that functioned independently of each other. Being an integrated system, the Electronic File provides simultaneous exchange of information between information systems of different parties: police, prosecutors, courts, penitentiaries, probation organizations, executors, free legal aid system, tax authorities and customs, public support center, lawyers and citizens. Electronic File is an online information system that collects documents regarding civil, administrative, criminal proceedings and proceedings concerning misdemeanor offenses, as well as allows you to take appropriate action, insert data and process it. Electronic File enables the parties of the case and their representatives to submit documents to the court in electronic form and to control the course of the corresponding court proceedings. Citizens can also appeal lawsuits and decisions, make payments related to proceedings, as well as make inquiries in the Criminal Records Database concerning themselves and others. The system allows persons to see only the proceedings in which they participate. The public part of the Electronic File is secure because you require an ID or mobile ID to log in. Electronic File saves time and funds because data is entered only once and communication between the parties is done electronically. The Estonian e-File project has received a special award from the "European Crystal Scales of Justice Award 2014", which is awarded for innovative practices that promote efficiency and high quality of justice.

3) Judicial Information System (JIS) in the Republic of Moldova is an automated information system which consists of multiple interrelated resources, information technologies and methods. The main purpose of JIS is the registration, processing and application of the information related to the court requirements and legal proceedings from the moment of their registraion to the point of their archiving and publication. Users have permission to acess the information and data stored in the JIS, in accordance with the competence and authority they

possess and on the basis of the legal regime of the information or data to which access is granted. The level of access to information for each participant corresponds with the level of their obligations and access profile. When registering a request for an indictment, inquiry, minutes of meetings and appeals, the system ensures a logical connection between the main category and the indicator of the case file. This ensures that the data in the case file is entered correctly. This data is then displayed in all further statistical reports. The new version of the Integrated Proceedings System (IPS) allows the person to access and edit Microsoft Word documents directly in the system. This ensures the security and confidentiality of data, as well as the storage of all corresponding documents in the IPS. The current version 5.0 of the IPS has been at the stage of experimental operation since 2019 and has been gradually implemented in all courts. Improving the functionality of this version is an ongoing process.

4) In Italy the control over the judicial system and the development of the IT system is assigned to the Ministry of Justice; therefore, the Ministry determines key roles. The Judicial Council is responsible for the matters related to the status of judges and prosecutors, and has recently gained responsibility to organize courts and prosecutors' offices. Lawyers – of whom there are approximately 300,000 in Italy – are organized in local bar associations (one in each local court), which are controlled by the National Bar Council. The Agency for Digital Italy (AgID) is the technical body of the Council of Ministers responsible for coordinating e-government initiatives and in a broader meaning, the national digital innovation strategy. It sets technical standards and components for a national e-government platform.

The state of the electronic litigation in criminal proceedings is fragmented. The SICP crime information system is the digital foundation for criminal proceedings. It was developed as a unique system that works for both courts and prosecutors with full regard to the organizational characteristics of the two institutions and the rules procedural code. It consists of various modules that offer registration and data collection, document management (including statistics), document work, workflows and data interaction with external databases. SICP database The SICP database is the main element of data collection in criminal proceedings. The data structure established between prosecutors and courts ensures the seamless interaction of data between the two institutions. The long list of software modules allows users to register, update and manage data, as well as use this data to support many of the tasks performed by prosecutors and courts in criminal proceedings. NdR Portal – (Crime Report Portal). The portal should be used by police officers across the country to report crimes to the appropriate prosecutor's office. The data is automatically uploaded to the SICP prosecutors' database, while the corresponding clerks check the data.

Re.Ge.WEB is the foundation of the system that ensures document management functions (registration and data management), integrated in the workflow system, which, based on the status of the proceedings, makes various procedural actions provided by the procedural code available to users. Clerks in courts and prosecutors' offices use this module for permanent document circulation. In addition, clerks should use different, somewhat compatible programs to work with specific procedures.

A&D is "Acts and Documents" module which allows you to compile procedural documents using data collected in the database and using verification mechanisms designed to reduce errors. It is mainly used to support the performance of tasks by clerks. "Point of work with criminal proceedings" (Digital desktop of the magistrate): this module ensures a set of functions essential for prosecutors and judges to manage the workload. It offers such functions as scheduling hearings integrated into the calendar of judges and prosecutors as well as the function of automatizing the work of courts and prosecutors' offices. SNT is the notification system that allows electronic transmission of messages to lawyers and expert witnesses. Notifications require a digital signature.

5) In Azerbaijan, all information about every case (procedural documents of the parties, data of participants of the process, information about procedural actions and events, material and procedural documents of courts, audio recordings) is stored in the centralized information system of all courts called AZEMIS (Electronic Judicial Information System of Azerbaijan). The system was created in 2014 and since then it has been maintained and constantly developed by the Ministry of Justice as part of the Judicial Services and Intelligent Infrastructure Project (JSSIP) in collaboration with the World Bank. In 2014, the portal of the governmental electronic court services (Electronic Cabinet) was launched as a separate AZEMIS module. The electronic cabinet (special portal emehkeme.gov.az) allows the parties to form and submit procedural documents to the court in electronic form, to read the documents of the electronic case, to manage

information about court fees, court expenses and fines. AZEMIS is integrated with 30 information systems and registers of other institutions, such as Azerbaijan Automated Tax Information System, Penitentiary Service Information System, Enforcement Proceedings Information System, Register of Individuals, Register of Legal Entities, Electronic Notary Service, Traffic Police Electronic Database, Information System of Electronic Criminal Cases, the State Register of Real Estate, the information system of banks, credit institutions, mobile operators, retail markets, etc., and it continues to be integrated.

6) According to the Judiciary Act, the Judicial Information System (JIS) of Latvia is a governmental information system developed by the Government of Latvia (Ministry of Justice).

In Latvia, there is only one centralized JIS, which was developed in 1998 and introduced in 1999 (in courts across the country in 2003). The system is maintained and developed by the Latvian Judicial Administration and is currently being transferred onto a new platform within the E-case project (Electronic Case). Authorization is ensured by: a password (provided by the Judicial Administration), electronic signature, electronic ID, Internet banking (through the portal Latvija.lv). The main advances in the JIS are currently being carried out within the framework of the E-case project launched in 2018. The Judicial Administration of Latvia is responsible for the management and administration of the project on all levels: development of an electronic case: interaction with the prosecutor's office, prisons and the probation service; development of new software for JIS (JIS 2).

After introducing the unified E-case and ensuring cooperation with the prosecutor's office, prisons and the probation service, it is planned to ensure interaction with other ISs: the registers of the Ministry of Internal Affairs, state police, forensic experts. The most important aspects of the development of the JIS are providing a fully electronic cycle within the procedure, reducing of the duration of proceedings and ensuring access to information, including fully electronic exchange of information between the court, parties and other participants in court proceedings. According to the strategic vision (concept) of the E-case solution, which is being developed involves both the development of existing IS and the implementation of new solutions. Users of the portal: parties, lawyers, experts, probation officers and clients, prisoners and their relatives. The electronic catalog of cases will be developed to ensure centralized case management, control over the access rights and data exchange between ISs integrated into the E-case (at stage 1 there will be interaction between the E-case IS of prosecutors, probation, penitentiary system, courts (JIS 2) and public E-case portal). The electronic catalog will serve as an information exchange point, but the case file will be stored in the system where it will first be registered. For instance, if the prosecutor's office registers evidence in a video format, the evidence will be stored in the IP of the prosecutor's office, but with the support of an electronic catalog of cases, judges and court employees will have access to evidence through JIS 2 and parties through the E-case portal.

7) The Austrian justice system, as a modern and innovative organization, provides necessary services to the society. It generates an annual income of 1.6 billion euros and employs about 11,900 people.

The Justice Automation Program (VJ) is a foundation in Austria. It assists all courts and prosecutors' offices in keeping registers of over 66 different types of proceedings. Some types of proceedings (for example, the payment order procedure) are fully automated; court decisions are issued automatically and sent by the centralized mailing service. Documents and decisions are transmitted through the Electronic Legal Notification System (ELC), and the court fee is charged as a cashless payment.

EliAs is an electronic integrated assistance for prosecutors; The IT solution is designed to facilitate the administration of case materials during the preliminary investigation of criminal cases and, for the most part, to replace a huge amount of materials in paper form (approx. 600,000 per year). Upon completion of the initial stage of proceedings against unknown offenders (UT) will be processed through EliAs (about two thirds of all cases). In order to do this, based on incoming (via ELC) reports, clearly structured EliAs files are created and transmitted to (district) prosecutors.

The goal of IVV is comprehensive automated administration of prisoners. This program, which has been in use since the beginning of 2000, includes records of prisoners in the main areas of prison administration and timing.

Electronic transmission of legal messages (ELC). Electronic transmission of legal communications with the courts was first introduced back in 1990 as a means of communication with the parties, which would be on a par with the submission of documents in print. With the

introduction of this system, Austria was the first country in the world to establish electronic transmission of legal communications. Electronic transmission of legal messages provides electronic document management and automatic receipt of detailed information on the case in the IT applications of the justice system.

Since 2013, Austrian citizens who use a mobile phone application for a signature which is called a citizen's card [Bürgerkarte] can send all applications to all courts and prosecutors' offices online via a secure web portal; and foreign nationals who use the complaint identification system in accordance with the EU eIDAS Regulation have been able to do so since 2018.

As one of the most prominent e-government programs in Europe in 2001, the Electronic Communication System was awarded the EU e-Government brand.

Justiz Network. In the early 1980^{s}, the Austrian justice system began to create a comprehensive information network. This network (Corporate Network Austria / CNA) supports the common Austrian use of information technology by all courts, prosecutors, prisons and the Federal Ministry of Constitutional Affairs, Reforms, Deregulation and Justice through a dual node called the Federal Computing Center [Bundesrechenzentrum/BRZ], where all the main applications of the justice system function.

Due to the progress in the field of digitalization in all areas, there is an increasing need of tools for efficient analysis, evaluation and processing of data in criminal cases. Apart from this, investigative bodies increasingly need additional support from experts in specific specializations to effectively deal with cases. The Austrian Department of Justice has responded, and in order to effectively structure and process large files, courts and prosecutors' offices can use "Normfall Manager" software (Manager of a standard case), which is designed to facilitate large data handling (reviewing, creating and identifying links, collecting information on the topic, etc.). They have also hired internal experts in the field of information technology and transferred them to the Central Office of Public Prosecutors for the Prosecution of Business Crimes and Corruption (Wirtschafts – und Korruptionsstaatsanwaltschaft).

Since 2018, the Artificial Intelligence Service has been in use and it has been "trained" to meet the specific requirements of the justice system, which can be expanded step by step into other spheres.

8) In 2017, for the first time in the history of independent Georgia, the judiciary officials developed and approved the Judiciary Strategy and Action Plan for 2017-2021 (Unified Court Proceedings System – UCPS). Like in many European countries, in the Georgian judicial system all information about every case (procedural documents of the parties, information about the participants in the proceedings, information about procedural actions and events, procedural court documents, audio recordings) is stored in the centralized information system of all courts which is called the Judicial System of Georgia (UCPS). All documents related to current lawsuits are submitted to the courts through the electronic case management system. In Georgia, this system is implemented throughout the country in courts of all levels (levels). This program is managed by the Department of General Courts. In Georgian courts, electronic cases are heard through an electronic case management program. Electronic proceedings in terms of the relevant court mean the electronic movement of documents (cases) from their receipt to the court to archiving or – in case of appeal – to the referral to a higher court. Hearing of a case in court begins with the submission of an application or claim through the electronic case registration system (ecourt.ge). Georgia's courts have introduced innovative service-oriented software that provides access to justice. Mechanisms for electronic transparency and proactive disclosure of information have been established, as well as a platform for electronic communication with citizens (service.court.ge). Electronic access to UCPS court decisions, in particular the software that is part of this system, has a special place in terms of ensuring access to justice. The software is directly user-oriented. The Lawyer Module was adopted in 2014, it allows the user to file a lawsuit remotely. This service is paid, and the cost is calculated according to the amount of material sent.

Prosecutorial module: involvement (integration) of various governmental institutions in the program of electronic case management will simplify the work of the judiciary, as well as the functioning of these institutions.

Before 2013, criminal judges used to work in an electronic criminal record program created by the prosecutor's office (hence, all documents were stored on prosecutors' servers), which was perceived as a threat to the independence of the judiciary. Starting from 2013, courts have operated only in their own criminal justice program and stored documents on their own server. However, this has led to the fact that instead of electronic proceedings, the prosecutor's

office is still forced to communicate with the court on paper. Integration into the program will have a positive effect on the prosecutor's office, as they will have access to generalized litigation practice, which will also improve the quality of the work of the prosecutor's office.

9) Israel's example in the sphere of digitalization of courts and the transition from paper to an online system of case management (hereinafter – SCM). In 2003, the Court Administration of Israel welcomed the development of a new software for managing cases in courts on the basis of electronic document management (electronic court cases). This SCM is called "NET-HA-MISHPAT" (which translates into "Justice Network"). The development and implementation of this software into the general courts system was supposed to have finished by the end of February, 2006. In reality, before September 2009, the program had been adopted in approximately 60 % of thelower and higher courts, and by the end of May, 2010, it had been adopted in all courts, except the Supreme Court, which uses different software. For limited review of cases and court decisions, access is provided via a link to the SCM through the Israeli Judiciary website: https://www.court.gov.il/ngcs.web.site/homepage.aspx. This website provides access to general information, such as information regarding the daily schedule of hearings in all courts; public decisions and final decisions in cases, as well as a list of cases pending in all courts (sorted by date). With the help of this site, the parties involved in a particular case may also view the following information about the case: general information about the case, dates of hearings and public decisions.

In order to perform an action in the system, lawyers need to make certain settings in the office computer system at their office (XML interface), and to access the SCM system you are required to have a card with a smart key. The card with a smart key allows you to identify the user when they're logging in and certify the electronic signing of documents. Smart card access allows you to take full advantage of all processes supported by SCM.

10) The informatization of Swedish criminal justice system regarding the implementation of electronic procedural processes and dedicated software products has been solved on the basis of RIF ("Rattsvasendets Informations Forsorjning"), a universal system for exchanging digital information between criminal justice authorities. As far as the legal aspect goes, RIF provides protection of personal data, electronic digital signature; software algorithms for the unification of the Swedish Criminal Code and the Swedish Criminal Procedure Code with the Swedish electronic system.

RIF provides digital exchange of "structured information" and electronic documents (regarded as "unstructured information" between the isolated electronic systems of the Swedish criminal justice system: BAS, BUS, (electronic system of the Swedish Tax System), DurTva (electronic system of the Swedish Police), Cabra (electronic the system of the Swedish Judicial Administration, which includes district courts and courts of appeal), etc.

11) The Electronic Proceedings Management System of the Czech Republic (ePMS) is an electronic system that digitizes physical documentation, which, in turn, allows the exchange of files in criminal cases between employees and departments. This makes the work of all those involved in criminal investigations, the police in particular, prosecutors and judges, easier. Therefore, it is a tool for administering and managing electronic versions of criminal case files, which are then made available online to all parties involved in the pre-trial investigation, each with separate levels of access and editing rights. This system helps to improve the coordination and supervision of the pre-trial investigation, which is difficult for the police and the prosecutor's office to overestimate. Documents such as criminal investigation plans, evidence, interrogations, prosecutorial orders, approvals and reports become instantly available online. As of today, it is a huge and well-designed electronic database called "Electronic Criminal Proceedings". Thus, it was an ideal system for Ukrainian prosecutors to get acquainted with.

In the Czech system, authorized police officers can monitor all cases assigned to their units online. They are able to track the progress of all tasks set by them or prosecutors. Any changes to the files uploaded to the system must be justified and reflected.

Prosecutors can coordinate certain steps of investigations online. The system is connected to 70 different databases of the police and state administrations, which are accessed directly in the system itself, which makes the lives of investigators significantly easier. Authorized officers can see the progress of specific criminal cases online, and the system itself can analyze the effectiveness of the investigation in the case. Tehre is also an option to "extract" statistics on criminal investigations from the system. However, the most impressive aspect of the the system is that it uses "electronic data boxes" (data boxes), which are something like an e-mail service that securely transfers case files to registered users. With the help of such e-mail accounts, which

work separately from ePMS, official messages, correspondence, summons and inquiries are instantly sent to registered users, regardless of where they are physically at the moment. And confirmation of their receipt is a special electronic stamp.

12) Digitalization of criminal proceedings in Kazakhstan: developed and implemented information system IS "TURELIK" ("Turelik" means Justice), as well as the "Unified Register of Pre-trial Investigations" (IS URPTI), which allowed to provide electronic registration of all criminal cases. The module "Electronic criminal case" was created, which allowed to automatize the stages of pre-trial investigation and prosecutorial supervision.

13) In russia, the State Automated System "Access to Justice" has been created and implemented, which eliminates unjustified red tape at the stage of criminal proceedings which provides access to justice (pre-trial proceedings) and reduces government spending by eliminating inefficient costs (2020).

14) In 2012, the "Zero Trust" system based on artificial intelligence was launched in China. Developed by the Chinese Academy of Sciences for "Internal Control, Evaluation or Interference in the Work and Personal Life of Civil Servants", "Zero Trust" currently operates in only 30 regions and cities – more than 1 % of China's administrative territories in a pilot project. Full-scale implementation of this system in China is expected in the near future, as there is a format of "distrust" of politicians to modern digital technologies.

The "Zero Trust" system has access to 150 secure databases, can create an analysis of the behavior of civil servants, detect suspicious transactions, alienation or acquisition of property, illegal construction, acquisition of land or demolition of houses, illegal enrichment using schemes.

One of China's most ambitious developments in this area is the "Police Cloud" system, which is designed to gather information from shopping history, food orders, visits to hospitals where DNA samples are collected and other sources. The system is similar to data collection methods for determining the social rating of citizens and integrates data sets ranging from IP addresses, accounts, phone numbers, incoming and outgoing calls and ending with the purchase of user data from private companies, while accessing mac addresses of personal computers and information from their routers.

15) Artificial neural networks are actively used by US police to prevent crime. Back in 2009, private American company Palantir Technologies developed modern software codenamed "Palantir" to predict the spread of crime. The company is known for working with intelligence agencies and government agencies, and a few years ago they secretly introduced police technology in one of the US cities to predict criminal offenses. The secret program detected and tracked the connections of gang members. It analyzed social networks and predicted the likelihood of certain people commiting a crime or becoming victims. The startup's collaboration with the New Orleans' authorities began in 2012. Palantir Technologies, whose regular customer was the Central Intelligence Agency, provided its software in the form of an unofficial charitable assistance. Most New Orleans' government officials, except for a small circle led by the mayor, were unaware of the project. The main operational functionality of this program is aimed at visualizing large amounts of information, which helps law enforcement officers to establish a cause-and-effect connection between the behavior of individuals and their offenses.

One of the tools of the HunchLab program combines crime statistics with social and economic data and other public information to determine the highest probability of an offense being committed. The practical use of this system by Chicago police has allowed the latest technology to significantly reduce crime. Another program, "Gotham", is used by police to identify and apprehend future criminals. Information from the protocols of detentions, materials of criminal cases are uploaded to a single database, which forms a corresponding list of persons who have some connections to crime.

16) Finland has made significant progress in the use of e-criminal justice, using a CMS called SAKARI. This system involves many parties in a single criminal process: the police, the prosecutor's office, victims and the courts. The case management system covers the work process of prosecutors and courts, and is linked to the system used by the police. The system registers and records all criminal cases in the country and ensures a continuous flow of information between the police, the prosecutor's office and district courts.

The SAKARI system provides the opportunity to manage all documents related to a criminal case in the electronic form, as well as to edit corresponding documents. The prosecutor's office and the courts exchange documents within the system in electronic form. Since the police are connected to the system indirectly (through a "bridge" between their own

internal system and the SAKARI CMS), the police and the prosecutor's office communicate via e-mail and exchange important documents, such as witness statements, electronically. However, as in the case of the Czech Republic, all documents must still be sent simultaneously in paper form by mail.

Thus, taking into account the examples of world experience in developing, implementing and using various innovative programs and electronic systems of digitalization of criminal justice, the advantages of using electronic software products aimed at combining various government databases for their effective use in the project "electronic criminal proceedings". The value of international experience, as an illustration of the list of effective mechanisms of electronic criminal procedure, indicates the possibility of algorithmic processes of collecting, using and storing information, which in our opinion can be taken as an example in developing our own national conceptual system of electronic criminal proceedings in Ukraine. Therefore, the way to create the concept of electronic criminal proceedings in Ukraine, as a system that digitizes physical documents in criminal proceedings – is not and cannot be the ultimate goal, but can only be a step towards creating an innovative modern domestic concept of electronic criminal proceedings with the possibility of a broad implementation of tools for algorithmization of criminal procedure interaction and electronic method of document creation and document circulation between the judicial and law enforcement systems of Ukraine.

It should also be noted that the reform processes, which are aimed, among others, at adapting domestic legislation to European standards, are typical of most areas of public administration. Thus, the main areas of work required for the implementation of modern, full-scale electronic criminal proceedings in Ukraine are [13; 16; 18-22]:

– radical reorientation of the modern approach of state e-government from the needs of the state apparatus to the needs of citizens;

– unification of electronic technologies in the field of e-government;

– personalization of access (access to information with limited access and other personalized services should be tied not to the state body of the information or service administrator, but to the citizen or legal entity directly affected by the information or service);

– radical reform of the digitalization process in order to increase the efficiency of the criminal justice system (the form of electronic document management must be basic, but also allow for a departure from the traditional paper form).

Consistent steps of implementation / improvement of electronic criminal proceedings in Ukraine, taking into account the listed experience of the countries are:

1. Urgent amendments to the procedural codes, which exercise the right to submit applications, evidence and other documents in electronic form, the ability to form electronic criminal cases, archives; to grant access to investigators, interrogators, detectives, prosecutors, lawyers and investigative judges to the materials of criminal proceedings, as well as other mechanisms for the implementation and use of electronic criminal proceedings.

2. Take measures to inform individuals about the procedure for obtaining electronic signatures as participants in the process.

3. Work on electronic criminal software: it must be functional, secure, effective, and at the same time accessible and understandable.

4. Transition to electronic document flow between the investigators, lawyers, the court and the prosecutor's office, the Ministry of Internal Affairs, fiscal authorities, etc. Governmental bodies should be directly interested in improving electronic criminal justice system, as this will save a lot of public money on tons of paper and supplies.

5. Provide the investigation bodies, courts and prosecutor's offices, the Ministry of Internal Affairs of Ukraine with technical means and employees responsible for performing the functions of electronic criminal proceedings.

Conclusions. Regarding the main areas of work on the implementation of modern and effective electronic criminal proceedings in Ukraine, taking into account the experience of developed countries, are a must:

– fundamental change of approach to the concept, method and mechanism of formation and principles of electronic criminal proceedings: from the needs of the state apparatus to the needs of joint interaction of criminal justice bodies and citizens (parties and participants in criminal proceedings);

– unification of electronic technologies during the formation of electronic criminal proceedings, taking into account international experience;

– personification of access (development, adjustment and implementation of gradation of

levels and levels of access to information (including restricted access and other personalized services), taking into account the possibility of realization of procedural rights of a person: citizen or legal entity who has a direct connection to certain information);

– radical reform of the process of formation and use of electronic criminal proceedings in order to increase the efficiency of the criminal justice system and the organization of a simple and accessible procedure for access to justice in Ukraine.

Conflict of Interest and other Ethics Statements

The author declares no conflict of interest.

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ABSTRACT

The article deals with the studying and comparative analysis of international experience of using software and innovative technologies in the criminal justice sphere in certain countries as well as determining of the key causes of the imbalance between the development tendencies and implementation of such systems in Ukraine; ways and methods of submitting and accessing the information and evidence in electronic criminal justice system.

The significance of this article is evident from the necessity of the comparative analysis of a positive and effective experience of the acting systems of informatization of the criminal justice system of different countries in order to resolve the issue of reforming the criminal justice system of Ukraine by means of creating an information system of pre-trial investigation – electronic criminal justice system in Ukraine with the purpose of improving the modern concept of the electronic component of the criminal justice system in order to realize the fundamental principles of a democratic society such as access to justice as one of the key principles of ensuring legislative rights and freedoms of a person in a democratic state.

This research paper contains the analysis of the experience of the innovative technology functions in the electronic systems of the official bodies of the criminal justice system in the context of reviewing the application of various information programs based on the model and methods of receiving and saving information; performance analysis of the program's strategic elements; comparison of the complex approach methods to implementing innovative processes of organization, application and control in the electronic criminal proceedings in different countries. Based on the research results, the main areas of focus have been established in order to implement the system of modern and effective electronic criminal proceedings in Ukraine.

Keywords: *electronic criminal proceedings, digitalization of the criminal justice system, algorithmization of the electronic criminal proceedings, electronic systems of the bodies of the criminal justice system.*

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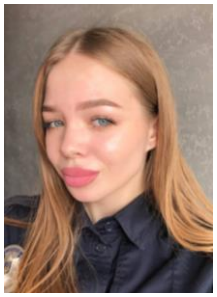

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ANALYSIS OF THE REASONS THAT AFFECT THE CRIME RATE DURING THE CORONAVIRUS PANDEMIC

Ганна Бідняк, Дар'я Оргієць. АНАЛІЗ ПРИЧИН, ЩО ВПЛИВАЮТЬ НА РІВЕНЬ ЗЛОЧИННОСТІ ПІД ЧАС ПАНДЕМІЇ, СПРИЧИНЕНОЇ КОРОНАВІРУСОМ. В науковій статті зосереджено увагу на вирішенні актуальної наукової проблеми щодо вивчення причин динаміки правопорушень під час карантинних обмежень та шляхів їх запобігання в Україні. Підґрунтям дослідження стали законодавчі та наукові джерела, аналіз яких дозволив дійти певних висновків.

В роботі була зроблена спроба систематизувати причини, які впливають на динаміку показників різних видів правопорушень у період пандемії коронавірусу. Наголошено, що карантинні обмеження вплинули на зростання числа випадків домашнього насильства, онлайн-шахрайства, інтернет-тренди небезпечних контентів, фальсифікації лікарських засобів та адміністративних правопорушень, однак, зменшилася кількість кишенькових крадіжок, хуліганства, вандалізму.

Ключові слова: *коронавірус, COVID-19, карантин, пандемія, криміналістична профілактика, правопорушення.*

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