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Activities of Law Enforcement Agencies in the Context of the Introduction of Innovative Technologies (Comparative Legal Aspect)

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Abstract

The objective of the study was to determine the legal mechanisms for the use of innovative technologies in law enforcement and to outline the main problems of their implementation in the fight against crime. The methodological scheme of the article was the use of theoretical and empirical research methods, as well as comparative, structural and logical methods, documentary, and systems analysis. It is established that the main types of modern technologies used in law enforcement are unmanned aerial vehicles, artificial intelligence, robotics, biotechnology, analytical and geographic information systems, explosion locators and chatbots. The problems of introducing innovative technologies into law enforcement were found to be objective and subjective. The ways of overcoming them are offered through the creation of legal mechanisms for the legal use of various modern technologies by law enforcement agents. It is concluded that effective mechanisms for the use of innovations in law enforcement will increase the effectiveness of crime prevention and enable law enforcement officials to avoid conflicts related to violations of citizens' rights and the protection of national security.

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Keywords: innovative technologies; law enforcement; implementation and innovations; modern technologies; postmodern legislation.

Actividades de los organismos encargados de hacer cumplir la ley en el contexto de la introducción de tecnologías innovadoras (aspecto jurídico comparado)

Resumen

El objetivo del estudio fue determinar los mecanismos legales para el uso de tecnologías innovadoras en la aplicación de la ley y esbozar los principales problemas de su implementación en la lucha contra la delincuencia. El esquema metodológico del artículo fue el uso de métodos de investigación teóricos y empíricos, así como métodos comparativos, estructurales y lógicos, documentales y análisis de sistemas. Se establece que los principales tipos de tecnologías modernas utilizadas en la aplicación de la ley son: vehículos aéreos no tripulados, inteligencia artificial, robótica, biotecnología, sistemas de información analítica y de información geográfica, localizadores de explosiones y chatbots. Se encontró que los problemas de introducir tecnologías innovadoras en la aplicación de la ley son objetivos y subjetivos. Se ofrecen las formas de su superación mediante la creación de mecanismos legales para el uso legal de diversas tecnologías modernas por parte de los agentes del orden. Se concluye que los mecanismos eficaces para el uso de las innovaciones en materia de aplicación de la ley aumentarán la eficacia de la prevención del delito y permitirán a los agentes del orden evitar conflictos relacionados con las violaciones de los derechos de los ciudadanos y la protección de la seguridad nacional.

Palabras clave: tecnologías innovadoras; aplicación de la ley; implementación e innovaciones; tecnologías modernas; legislación posmoderna.

Introduction

Current trends of globalisation intensify international competition in the field of innovative technologies. The state of innovation development is the main competitive advantage of the country and determines its level of competitiveness in the international arena. Only the United States, the United Kingdom, Germany, France, and Singapore have achieved significant economic success through the transfer of innovative technologies

so far. Such realities of globalisation of modern technologies have caused a technological gap between the most developed and underdeveloped countries.

According to the report of the Global Innovation Index 2021 published on September 21, 2021, by the World Intellectual Property Organization, Switzerland, Sweden, USA and England are still the leaders of the innovation rating for the last three years (World intellectual property organization, 2021). Korea has joined the top five for the first time. The geography of global innovation, as the World Intellectual Property Organization noted, is changing unevenly. A striking example is the dynamic innovation development of the region of Southeast Asia, East Asia and Oceania over the last decade, which is increasingly closing the gap with the unchanging leaders of North America and Europe. As a result, five countries from the region have entered the top 15 economies this year: Korea (5), Singapore (8), China (12), Japan (13) and Hong Kong, China (14).

At the international level, developing countries find it extremely difficult to compete with their innovation potential with middle-income countries, which manage to catch up with more developed countries in terms of innovation. However, such countries successfully increase their innovation potential through international technology transfer, development of technologically dynamic services that are in great demand in the international market, which generally leads to a balance of innovation systems in the world.

Technological criminogenic risks of crime are becoming increasingly important every year. According to the 14th UN Congress on Crime Prevention and Criminal Justice, there were several technological criminogenic risks in 2020, namely:

- cryptocurrencies that have a high degree of anonymity of use, which leads to unhindered terrorist financing and money laundering.
- drug market created through DarkNet.
- illicit trafficking in weapons and explosives through the cryptocurrency market and DarkNet.
- human trafficking through the use of modern communication channels to find victims and potential buyers of live goods.
- abuse and exploitation of children because of their uncontrolled access to information technology.
- illegal movement of migrants due to the offenders' use of technology to study the routes of the border service (United Nations, 2018).

The Budapest Concept on Cybercrime was adopted to stop actions against the integrity and accessibility of computer systems, networks and computer data, as well as the abuse of such systems (Council of Europe, 2001). The provisions of the Concept ensure an appropriate balance between the interests of law enforcement agencies and respect for fundamental human rights enshrined in international treaties. They include the Council of Europe Convention for the Protection of Human Rights and Fundamental Freedoms of 1950, the UN International Covenant on Civil and Political Rights of 1966, the Council of Europe Convention for the Protection of Individuals about Automatic Processing of Personal Data of 1981, the UN Convention on the Rights of the Child of 1989, the ILO Worst Forms of Child Labour Convention of 1999, and the Council of Europe Conventions on Co-operation in Criminal Matters.

Thirty-five participating countries have committed themselves to a coherent policy to combat high-tech crime, as well as to create an appropriate law enforcement agency to prevent cybercrime and provide it with modern technical means to carry out its activities (Council of Europe, 2001).

However, the current level of innovative awareness of criminals and their access to modern technologies far exceeds the capabilities of law enforcement agencies. Therefore, increasing the effectiveness of law enforcement agencies in preventing high-tech criminal acts requires a wide implementation of modern developments in their activities, which will hinder offenders to violate the rights of citizens and help to protect the interests of national security.

Kolodyazhny (2020) studied innovative technologies through the prism of law enforcement activities, the prism of modern challenges of criminal law. Shevchuk (2020) the forensic scientist, examined the content and concept of forensic innovations. Matusiak and King (2020) developed the classification of modern policing technology. Hollywood *et al.* (2019) revealed modern challenges and legal background for the application of innovations in law enforcement. Shubenkova and Egorov (2020) analysed legal and technical forms of development of the digital law and order.

Simran and Nikhil (2020) outlined the place and role of innovation in cybercrime from the perspective of globalization. Soldatova (2013) studied technological measures to prevent cybercrime.

Many scientific works deal with the introduction of modern technologies in law enforcement activities and their legal enshrinement. Losavio *et al.* (2018) explored the technical means of digitalising the evidence base in forensics. Pramanik *et al.* (2017) analysed the intellectual bases for criminal investigations. Mastrobuoni (2020) studied forensic information technology. Matlala (2019) researched electronic and intelligent policing systems. Cracknell (2017) studied unmanned aerial vehicles (drones).

Nemitz (2018), Cath (2018), and Pagallo (2018) reviewed artificial intelligence systems and their general capabilities. Lum *et al.* (2017) analysed technologies and the resultant performance in law enforcement. Hendrix *et al.* (2019) considered geographic information systems.

Therefore, the aim of this study is to determine the features of the use of innovative technologies in combating crime and outline the main problems of their implementation in law enforcement.

The aim of the study involved the following objectives:

- find out the innovation policy of the leading countries and the possibility of using special technologies in the activities of law enforcement agencies.
- identify the main problems of introduction of innovative technologies in law enforcement agencies and suggest ways to solve them.

1. Methods and materials

The validity and reliability of the obtained results was ensured by the use of a set of general scientific (empirical and theoretical) and special methods (comparative, structural-logical, documentary and system analysis) of scientific knowledge.

Empirical knowledge provides the background for the theoretical method. Drawing certain theoretical conclusions first requires collecting information, which is empirical. Based on the relevant data that are empirical in nature, we processed them analytically and presented arranged results in the form of a certain theory.

Observation and comparison were used in the article as a kind of empirical research method. An empirical theoretical method was also used, analysis and synthesis, as well as a logical approach. A partial method is also applied, which refers to the theoretical methods of research, and consists in the definition, description, and interpretation.

The main materials, international, regional, and national legal acts, such as the Budapest Convention on Cybercrime, the International Code of Conduct on the Transfer of Technology, the Lisbon Strategy; plans, strategies and programs Europe 2020, Europe 2030, Horizon 2020; national legislation of European countries and the United States in the field of innovation and modern technologies. The information and empirical background of the study was statistics of the World Intellectual Property Organization, generalization of practical application of national legislation in the fields of scientific and technological, innovation activities and intellectual property, practical activities of law enforcement agencies, reference books, publications in periodicals.

2. Results

The use of modern technologies in law enforcement agencies in the member countries of the Organization for Economic Cooperation and Development is regulated by law in the field of law enforcement and in the field of development, creation, use of innovations, technology transfer and intellectual property.

In order to ensure innovation, the development of high-tech industries and the implementation of scientific and technical developments in the United States, laws were passed governing the financing of special programmes and the use of market mechanisms for innovation in the country, namely:

- National Science and Technology Policy, Organization and Priorities Act of 1976, which determines the general provisions of national policy in the field of nanotechnology (Congress. gov., 2010).
- The Stevenson-Wydler Technology Innovation Act of 1980, which enshrines a basic approach to the place of technology and industrial innovation in the US economy (Congress. gov., 2000).
- The Bayh-Dole Act or the Patent and Trademark Law Amendments Act, concerning the protection of intellectual property rights, which is the result of research funded by the federal government. This law gives the right to universities, small businesses, and non-profit organizations to patent their results of inventive activity and commercialise them (Govtrack, 2008).
- The Small Business Innovation Development Act of 1982, which introduces a rule that requires federal agencies to allocate certain funds for research (Congress. gov., 2006).
- The National Innovation Act (2005).
- The National Competitiveness Investment Act (2006).

To ensure the effective functioning of scientific and technological, innovative, and intellectual activities, the US government establishes a number of government scientific and technological programmes (Small Business Innovation Research Programme (SBIR), Small Business Technology Transfer Programme (STTR), US Innovation Partnership Initiative).

As in the United States, the EU is creating legal mechanisms to build an innovative environment that establishes a differentiated system of tax benefits and provides soft loans. In shaping the national innovation policy of the EU, the determinants are the rules of the EU common policy related to macroeconomic regulation, norms of economic, social, and regional

development, as well as measures to support science, technology and innovation through research framework programmes that establish basic conditions for innovation.

Regulatory and legal support of innovation in the European Union consists of regional strategies, framework programmes and national specialised legislation of its member countries (Table 1). To stimulate innovation, the EU approves strategies every decade: the Lisbon Strategy (2000-2010) (European Parliament, 2010), Europe 2020 (2010-2020) (European Commission, 2019a), Europe 2030 (2020-2030) (European Commission, 2019b), which include areas of innovation for the needs of public protection and law enforcement. In order to fulfil the objectives of Europe 2020, a new framework programme for scientific and innovative research — Horizon 2020 — was adopted (European Commission, 2020a).

One of its priorities is social challenges, which focuses on research and innovation programmes for law enforcement, in particular: Justice Programme and Hercule III. Table 1 presents the innovation policy of some EU countries.

Table 1. Innovation policy of foreign countries

Country	Regulatory support	Institutional structure	Funding
Austria	Laws "On the Promotion of Scientific Development" (1967); "On Universities" (2002)	National Council for Research and Technology Development; National Fund for Research, Technology and Development, Innovation Funds	2.5 % GDP
Belgium		Government of Belgium, Scientific and Technological Research & Development Program, EUREKA	1.9 % GDP
Denmark	Laws "On Technology and Innovation" (2002), "On Inventions in Public Research Institutions" (1999), "On Technology Transfer in Public Research Institutions" (2004), National Programme for Innovation Development, National Development Strategy in the Globalization	Government of Denmark, Ministry of Science, Technology and Innovation, Danish Agency for Science, Technology and Innovation, Supervisory Boards, Technology Service Institutes	

Spain	Law on Science (1986), National Plan and Programmes	Ministry of Science and Innovation, General Council for Science and Technology, Interministerial Commission for Science and Technology, National Plan	1.2 GDP
Italy	Law No. 42/82 on the Promotion of Industries of National Importance (1982)	Ministry of Economic Development of Italy, Foundation for Technological Innovation, innovation structures, technology parks or science and technology parks	
Germany	The High-tech Strategy	Ministry of Education and Research, Ministry of Economy and Technology, Expert Commission on Research and Innovation	2.5 % GDP
Finland	National Innovation Strategy	Ministry of Education, Ministry of Labour and Economy, Research and Innovation Council, Foundations	3.5 GDP
Switzerland	Federal Law "On Measures to Overcome the Crisis and Increase Jobs" (1954), Resolution of the Federal Council "On Encouraging the Development of Technology and Innovation" (1982)	State Secretariat for Professional Education and Technology, Federal Department of Economics	
Sweden	Law "On Development of Research and Innovation"	Ministry of Employment and Communications, Ministry of Education and Culture, Swedish Innovation Systems Development Agency, National, regional, sectoral programmes	3.7 GDP

Source: author's development based on (Verkhovna Rada of Ukraine, 2018).

Continuing our research, we classify the types of innovative technologies implemented in the activities of law enforcement agencies (Figure 1).

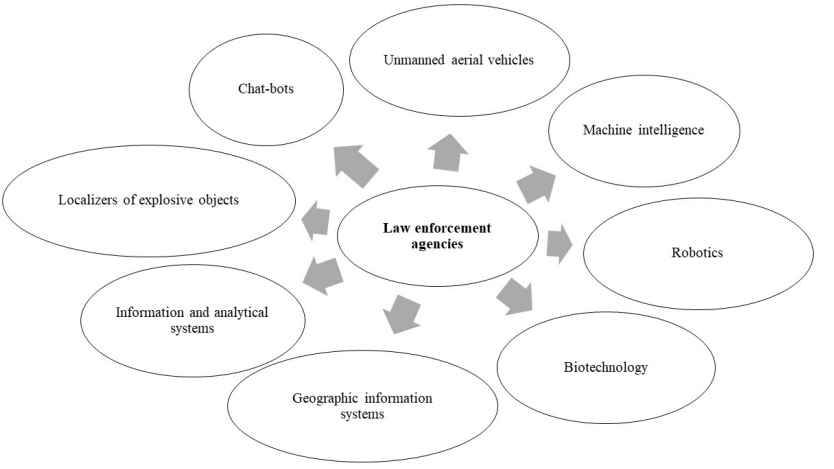

Figure 1. Types of innovative technologies implemented in the activities of law enforcement agencies

Source: author's development based on (Kolodyazhny, 2020: 178; Matusiak and King, 2020).

Unmanned aerial vehicles (hereinafter — UAVs) (including drones, quadcopters) are widely used in law enforcement. They allow law enforcement officers to perform the following official duties: patrolling and surveillance of large areas; search and detection of people using a thermal imager; control over the observance of order at mass events; monitoring of the traffic situation and analysis of the places of traffic accidents; coordination of actions of law enforcement officers from air.

Despite the fact that the EU is a leader in the production and use of UAVs, the EU has not adopted clear legal provisions establishing the rules of UAV flight. A resolution adopted by the European Parliament in 2015, which sets out general provisions on security and privacy when taking photos and videos through UAVs, as well as mandatory equipment of drones with chips with pilot registration data can be considered the only regulatory document adopted in the EU on the use of UAVs.

As the EU, many countries do not have uniform standards for the use of quadcopters and drones (Table 2).

Table 2. Terms of use of UAVs in different countries

Mandatory conditions for the use of UAVs	Countries
UAV flight rules are established by the relevant civil aviation service or agency	United States, Singapore, United Kingdom, Canada, Africa, Vietnam, Philippines, Indonesia, Malaysia, Australia
UAV registration required	USA, Russia
Restrictions on UAV weight and range	USA, Singapore, United Kingdom, Ireland, Canada, Africa, Australia
Prohibition of shooting in large crowds	Australia, Italy
Only an adult can be the owner of a UAV	Africa

Source: own elaboration.

Artificial intelligence in the activities of law enforcement officers allows to solve more complex economic and social problems, but its use in official activities requires the adoption of modern legislation in line with the realities of globalisation and the competence of law enforcement officers. The EU was one of the first international organizations to approve the Resolution on a Civil Liability Regime for Artificial Intelligence (2020/2014 (INL)) (European Parliament, 2020) and the White Paper on Artificial Intelligence (European Commission, 2020b: 10-19).

Paragraph 5 of the White Paper gave law enforcement agencies the right to use appropriate artificial intelligence tools to ensure the safety of citizens, with due respect for their rights and freedoms. However, the use of artificial intelligence by law enforcement officers is limited, it should not violate the right to personal data protection in the framework of criminal proceedings. Restrictions are provided for in paragraph 7 of the White Paper and Directive (EU) 2016/680 of the European Parliament and of the Council of Europe of 27 April 2016 on the protection of individuals with regard to the processing of personal data by the competent authorities for the prevention, investigation, detection or free movement of such data.

The current legal framework for the use of robotics in the field of crime prevention includes only the rules for the development of robotics. This is Resolution 2015/2103 (INL) of the European Parliament of 16 February 2017 on the civil law regulation of robotics with recommendations for the European Commission, which sets out general provisions for robotics and the Multi-Annual Roadmap of Robotics 2020 for Horizon 2020 (European Commission, 2020a). The provisions for the development of robotics were adopted at the legislative level only in Asian countries: the Law on the Development and Distribution of Intelligent Robots (South Korea), Japan's

New Robot Strategy, Master Plan for Robotics (South Korea), China's State Development Programme, Robotics Industry Development Plan (China).

In the military sphere, the use of military robots is limited by the decision of the UN meeting in 2013, which recommended that Member States impose a national moratorium on military robots and ensure compliance with international humanitarian law in all activities related to robotic weapons systems. Besides, military robots are equated with inhumane weapons, the creation and use of which is prohibited by the Convention on Prohibitions or Restrictions of the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or Have Indiscriminate Effects.

The use of modern biotechnology in reducing the potential for crime is limited by international law: European Parliament Resolution No. 327/88 on the Ethical and Legal Issues of Genetic Experiments; The Convention for the Protection of Human Rights and Dignity of the Human Being with Regard to the Application of Biology and Medicine, the Convention on Human Rights and Biomedicine and the Universal Declaration on the Human Genome and Human Rights.

The use of information-analytical and geographical information systems and chatbots in the fight against crime is based on information law. Using these modern information technologies, law enforcement officers undertake to comply with the rules on the protection of personal data of individuals in the automated processing of data provided for in Convention No. 108 of the Council of Europe and Directives 95/46/EC and 97/66/EC. They should also comply with the Convention of the International Telecommunication Union, which establishes common standards and rules in the field of telecommunications.

The use of locators of explosive devices by law enforcement officers is based on compliance with the requirements of the International Mine Action Standards, which establish common criteria for aspects of the humanitarian demining. The provisions of the Ottawa Convention, which obliges the destruction of stockpiles of antipersonnel mines and imposes a moratorium on their accumulation, production and transfer should also be complied with. It is also required to comply with international norms on counter-terrorism — the International Convention for the Suppression of Terrorist Bombing, the Declaration on Measures to Eliminate International Terrorism, the Convention on the Marking of Plastic Explosives for Detection, and the European Convention on the Suppression of Terrorism.

However, the introduction of such innovations in the fight against crime is extremely important, as it is associated with the applied function of law enforcement, moreover many modern technologies have not been implemented in practice. The reasons were different, both objective and subjective (Figure 2).

Subjective reasons for ignoring the introduction of innovative technologies in the activities of law enforcement agencies are related to the lack of interest of individual entities in innovation and, accordingly, in the acquisition of special knowledge for their application. Objective reasons are related to the unjustified refusal to apply new scientific and technical knowledge and research methods.

To overcome them, it is considered appropriate to create legal mechanisms for the lawful use by law enforcement officers of various modern technologies necessary for the performance of official duties, as well as to conduct educational activities with law enforcement officers regarding the latest technical developments and resultant performance indicators.

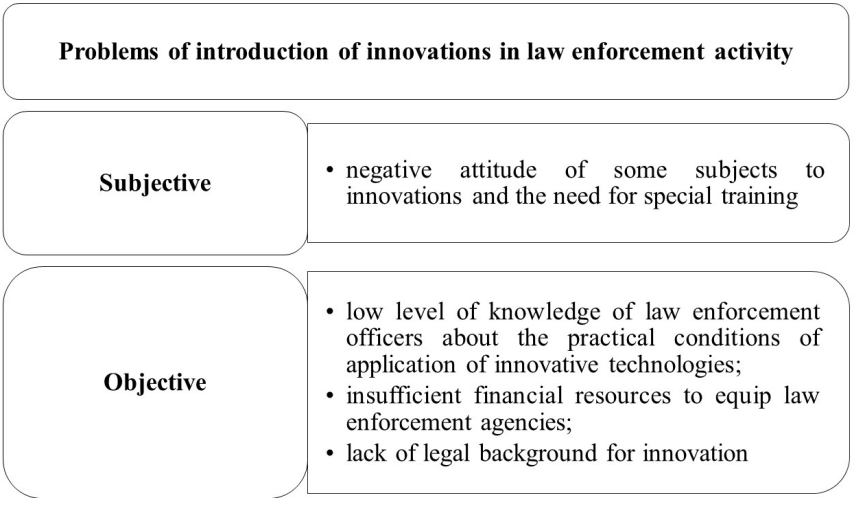

Figure 2. Reasons for ignoring the introduction of innovative technologies in the activities of law enforcement agencies

Source: author's development based on (Shevchuk, 2020: 151-152).

4. Discussion

Improving the effectiveness of law enforcement activities to prevent high-tech crimes requires the widespread introduction of modern developments in their activities, which will hinder crime to violate the rights of citizens and protect the interests of national security. The main types of modern technologies used in law enforcement include unmanned aerial vehicles, artificial intelligence, robotics, modern biotechnology, information-analytical and geographic information systems, localizers of

explosive devices; chatbots. This list is not exhaustive, it may change with the development of scientific and technological progress and the challenges of globalization.

The introduction of such law enforcement innovative technologies is based on the provisions of international treaties (Conventions, Directives, EU Resolutions) and the norms of national specialized legislation in the fields of scientific and technical activities, innovative development, and intellectual property. Their combination in each country determines the level of the legal mechanism for the application of innovations in law enforcement agencies.

Problems of introduction of modern innovative technologies in law enforcement activity relate to imperfection of the legislation concerning their use, insufficient financing of law enforcement agencies and low level of knowledge of law enforcement officers about innovations. According to Mastrobuoni (2020) and Hendrix *et al.* (2019), the need for introducing innovative technologies in criminology is due to the progressiveness of criminals compared to law enforcement officers in terms of the ability and scope of application of modern technology to commit various criminal offenses. After all, the traditional methods of policing, as Matlala (2019) noted, will not reduce crime by themselves. The use of innovative technologies, in particular information-analytical systems, as Akhmetov *et al.* (2018) noted, has a different meaning at each stage of criminal proceedings.

Shubenkova and Egorov (2020) emphasize that modern law-making and law enforcement agencies cannot effectively perform their functions without the adoption of legislative regulators aimed at regulating public relations in the digital environment. Wei-Jung (2020) emphasizes that the use of modern technologies by law enforcement officers without their proper jurisdiction is impossible. Pagallo (2018) criticizes the European policy on the ambiguity of determining the legal status of robotics, which leads to different interpretations in economic, civil, and criminal law relations.

According to Cracknell (2017), uneven legal application of innovative technologies in different countries, in particular UAVs, depends on the purpose of their use: commercial activities, official duties, research, environmental monitoring, crime detection. Hollywood *et al.* (2019) believe that law enforcement innovation can be addressed through the concerted collective efforts of the entire criminal justice community, including stakeholders from local communities, social services and providers.

According to Rosser *et al.* (2017), efficiency of use of information-analytical systems is possible only through the creation of norms which will clearly define the legal status of information technologies. The process of digitization of documents and regulation of data exchange processes

using electronic law enforcement systems, the procedure for access to information, the administration of justice using the capabilities of artificial intelligence require legislative regulation (Rosser *et al*., 2017: 569-572). According to Losavio *et al*. (2018), failure to resolve legal conflicts in the mechanisms of using modern information technology in the future will lead to conflicts related to police powers and guaranteed rights of citizens. The scale of conflicts will depend on the laws in each country (Losavio *et al*., 2018).

Nemitz (2018) believes that the introduction of law enforcement innovations, in particular artificial intelligence requires adhering to the rule of law, human rights and democratic principles. Supporting the position of the scientist, Cath (2018) recommends to follow clear instructions when using them in order to avoid personal conflicts. Benton and Newhall (2016) argue that the use of robotics is possible only through the introduction of effective legal mechanisms for their operation.

Lum *et al*. (2017) divide the problems of introduction of modern technologies in policing into technological and organisational, which are revealed through traditional approaches to their official duties. Pramanik *et al*. (2017) considers methodological imperfection of research to be the main problem of innovation in law enforcement.

The legal scholars view the issue of effective measures to combat cybercrime and training of future law enforcement officers as another important aspect in the implementation of innovations in law enforcement. According to Soldatova (2013), high latency, lack of official statistics and comprehensive research on cybercrime lead to the ineffectiveness of preventive measures, causing difficulties in combating this type of crime. Simran and Nikhil (2020) also believe that raising the level of knowledge of modern technologies of law enforcement officers will increase the security of cyberspace.

As Soldatova (2013) noted, the low level of legal consciousness of technical specialists in universities may lead in the future to committing crimes by students in the field of computer technology. Therefore, she proposes to carry out preventive work with such students and teach not only the introductory part of the basics of law, but also to provide in-depth legal knowledge on cybercrime.

The implementation of innovations in the law enforcement largely depends on the human factor, from ordinary employees to their managers. Shevchuk (2020) proposes to single out such a task of criminology as scientific support of introduction of innovative products, methods, techniques and means developed by forensic science into practice.

According to most scientists, the problems of introducing innovative technologies into law enforcement agencies are often associated with

methodological gaps that prevent the understanding and distinction between innovations and modern technologies. Innovation for law enforcement officers is something new, which, although in demand in practice, has not unfortunately found its effective practical application. As a result of the doctrinal analysis of these problems, we can note that scientists consider it reasonable to further research innovative technologies for law enforcement agencies, providing effective recommendations for their practical implementation, which would adjust the content and direction of innovative development of law enforcement.

Conclusion

Legal systems of innovation in different countries of the world provide an opportunity to develop their innovation policy in the conditions provided by each country. As a result, the creation of innovations in each country may differ from each other by different characteristics and have different conditions of legal and practical use. And this significantly affects the innovation of law enforcement agencies in different countries. After all, the uniform introduction of modern technologies in law enforcement in each country of the world would help to counter high-tech criminal manifestations in the world.

Innovative technologies for law enforcement agencies are the latest or improved technologies that significantly improve the efficiency of law enforcement agencies in the performance of their duties. Objective problems of introduction of innovations in law enforcement are a low level of knowledge of law enforcement officers about innovations; legal conflicts of mechanisms of their law enforcement by law enforcement officers; insufficient funding of law enforcement agencies. Subjective reasons include ignoring innovations by the management and ordinary personnel, and the need for special training.

The prospect of further research is to develop ways to implement modern developments in law enforcement agencies and create effective mechanisms for their implementation in the fight against crime. Therefore, we see further prospects in the empirical study, as well as theoretical and methodological justification of the effectiveness of law enforcement agencies through the use of innovations and legal support for the practical application of modern legal technologies.

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