🔓 **Research Article**

EFFECTIVENESS USING OF MODERN TECHNOLOGIES IN IMPROVING THE INSTITUTE OF FORENSIC EXPERTISE IN UZBEKISTAN

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ABSTRACT

The article analyzes the use of modern technologies in improving the institution of forensic examination in the Republic of Uzbekistan and the effectiveness of forensic examination on the example of the Republican Center for Forensic Examinations named after Kh. Sulaymanova.

KEYWORDS

Expertise, innovations, information, information technologies, electronic databases, information systems, unified information system "E-expertise".

INTRODUCTION

In the world, the rate of terrorism, human trafficking, illegal drug trade and crimes in the field of information technology is increasing rapidly. According to the data, 13759 people died, 16,683 people were injured , 1787 acts of terrorism committed in recent years, 190,000 people die prematurely because of drugs every year . In 2021 due to the increase in the number of cybercrimes, planned to allocate 6 trillion US dollars for the fight against this crime .

The improvement of the institute of using special knowledge in criminal cases considered urgent in the current situation, where the need to use capabilities of experts and specialists and modern technologies in

fighting against such crimes are increasing considerably .

The reforms being carried out in our country, along with the active introduction of digital technologies into social life, define priority tasks such as the use of electronic services by the population, the gradual transition of state services to electronic form, and the improvement of digital skills of the population.

The main goal of the introduction of information technologies in the activity of forensic expertise is to create an electronic workplace of an expert, conduct modern research based on collected electronic evidence, to create decent and modern facilities for people, and to get out of manual labor.

Accordingly, new innovative developments and information systems are being widely implemented in the Republican Center of Forensic Expertise named after Kh. Sulaymonova under the Ministry of Justice of the Republic of Uzbekistan. Today, a separate department responsible for the introduction of information technologies and innovations, organization of digital forensics – "Department for the introduction of information technologies and innovations", and several new information systems introduced.

Based on the decree of the President of the Republic of Uzbekistan dated January 17, 2019 "On measures of further improve the activity of forensic experts" it planned to introduce automated information-search systems and computer programs, electronic databases in forensic institutions. In order to ensure the execution of this task, the following issues envisaged:

- organization of automated workplaces of forensic experts;

- registering conclusions of expert and sending them to customers, as well as the introduction of an interdepartmental electronic document circulation system in order to send requests submitted by court experts requesting additional materials and to shorten the terms of their submission;

- issues such as the sequence of conducting forensic examinations, as well as control over the termination and extension of their term are included.

Accordingly, in 2019-2020, decided to develop the information system called "Accounting System of Forensic Expertise" and integrate it with relevant law enforcement agencies.

Today, the process of developing the information system of electronic document circulation has been completed and fully launched at the Center. The system consists of the following modules: administrator module, module for personnel accounting, module of reports on personnel accounting, module for registration of research files in the system, research file movement module, executive appointment module to research file; expert file assignment module, the module for forming an expert conclusion, module for agreement of expert conclusion with management, module of reports, etc.

The following tasks selected as a solution to the issues raised during the creation of the information system:

- implementation of an effective and accurate management mechanism for keeping records of expertise in the Republican Center of Forensic Expertise;
- automation of accounting of forensic expertise;
- increase the efficiency of information-analysis activities;

- organization of systematic analysis and planning in the conduct of forensic examination;
- alternative reporting process;
- keeping employee records;
- automating the activities of the registry office in the accounting department of forensic expertise;
- keeping records of the activity of forensic examination;
- automating the activities of experts in the part of keeping records of forensic expertise;
- automatic creation of statistical and approved report forms on forensic examinations.

In addition, the official website of the Republican Center of Forensic Expertise been redesigned and improved. Currently, this website serves to cover the information and news related to the activity of the Center in the form of articles, reports and analytical materials, to convey announcements and other information to the public based on the principle of openness.

In addition, the "Electronic Education Platform" information system developed in order to improve the qualifications and legal knowledge of state and non-state judicial experts to the level of modern requirements. This system consists of modules for registration, activation and deactivation of students, monitoring of attendance and course mastering indicators, sorting by organizations, test, video lectures, presentations and certificates.

As the amount of information in the information space increases, it becomes more and more difficult to find and use information for a specific sub-field. As a solution to this problem, there is a practice of wide usage of information portals in the developed countries of the world.

An information portal is a large Internet resource that provides detailed information on a specific topic. The information portal, unlike a simple thematic site, includes tools for communication with users, thematic mailings, and searching. The information portal allows visitors to communicate with each other.

The "sudexpert.uz" information portal developed, aimed at wide introduction of modern information technologies and innovations in the field of forensic expertise, including rapid delivery of information on forensic expertise to the population.

This information portal contains information about the history of the Republican Center of Forensic Expertise, the procedures and deadlines for review of appeals, laboratories and departments in the RSEM and its regional branches, accreditation in the field of forensic expertise, and the types of research conducted, the procedure for recruitment to the RSEM, the training center for forensic experts, the procedure for establishing a non-governmental forensic organization and the list of types of research conducted by them, requirements for becoming a non-state forensic expert and fee rates for conducting expert research.

Because of the creation and implementation of the sudexpert.uz information portal at the Republican Center of Forensic Expertise, the following opportunities created for the public:

- information on the activity of forensic experts was provided to the population in a convenient form;

– information is grouped and placed in a simple user interface;

- It has become possible quickly get information about the history of the Republican Forensic Expertise Center, information about the types of forensic expertise and research, requirements for becoming a

state and non-state forensic expert, deadlines for conducting research and much other useful information.

Along with activities based on digital technologies and the widespread use of information systems based on Internet technologies, some actions are being taken on the introduction (integration) of the single information system "E-expertise" designed to provide the collection of information about forensic experts and expertise, all types of information cooperation with the organizations involved in the implementation of expert actions and comprehensive automation of processing them.

The Decree of the President of the Republic of Uzbekistan dated July 5, 2021 "On Measures on Improve the Forensic Expertise System in the Republic of Uzbekistan" envisages the launch of a single electronic information system "E-expertise" from March 1, 2022 which is designed to collect information about forensic experts and expertise, comprehensive automation of their processing processes, delivery of information on forensic expertise activities to the population and authorized bodies, and provision of all types of information cooperation with organizations involved in the implementation of expertise activities.

In order to ensure the implementation of this task, a plan of measures for the implementation (integration) of the single information system "E-expertise" designed to collect information about forensic experts and expertise, complete automation of their processing processes and provide all types of information cooperation with organizations involved in the implementation of expertise activities, has been approved in agreement with the interested ministries and agencies.

The purpose of this new "E-expertise" single information system is:

- consolidate the processes in the field of forensic expertise in a single electronic space;
- increase the impartiality and transparency of forensic examination;
- confirm the forensic expert's conclusion using an electronic digital signature;
- create the possibility to obtain the conclusion of a forensic expert in electronic form;
- strengthen the executive control in the field of forensic expertise;
- transfer the documents to electronic form;
- transmit and receive data using encrypted methods;
- save the time needed to create reports with the help of the introduction of information technology tools;
- reduce the paper and postal costs by transferring the correspondence with the bodies authorized to appoint a forensic examination into electronic format;
- optimize the amount of time spent on conducting research.

Currently, on the basis of the concept of introducing the single information system "E-expertise", full integration with the information system "E-XSUD" of the Supreme Court of the Republic of Uzbekistan and the single information system "Electronic inquiry and preliminary investigation" of the General Prosecutor's Office of the Republic of Uzbekistan is being carried out.

For the download and integration of data, special connecting functions of separate information systems been developed, and attention is being paid to data transmission through specially protected channels.

Today, in this system, relevant work being carried out to adapt lawyers and citizens to electronic document exchange with forensic organizations.

The prospects for the full implementation of this project are as follows:

- introduction of specialized information systems for all state forensic expertise institutions. In this way, all information is stored in a decentralized manner and only the necessary information is integrated.
- information is exchanged quickly in an integrated system through a protected network with bodies authorized to appoint a forensic expertise. This, in turn, also serves to ensure its safety.
- web portal will be created for citizens and other organizations authorized to appoint forensic expertise. This ensures that they get the information without too much hassle.
- block-chain technology will be introduced in order to maintain the database and ensure the security of the information posted on the portal.

The following results expected at the end of the implementation of this project:

- ensuring impartiality and independence of judicial experts;
- increasing the quality and reliability of forensic examinations;
- creation of a mechanism for obtaining information about the cases of forensic examinations;
- saving examination time due to electronic document exchange;
- creating a directory of forensic experts;
- improving the possibilities of applying to forensic examination;
- creation of possibility to obtain analytical data on forensic expertise in real time.

At the same time, it serves drastically reduce the time spent on forensic research conducted by the pre-investigator, investigator and conducted by the courts as well as to make the process transparent and high quality.

In the conditions of global development, finding more modern, innovative ways to increase the essence of information technologies, providing comprehensive support to the process of information, and widely introducing them into life is becoming one of the important directions of forensic expertise. The continuous development of information technologies and the emergence of the Internet, together with the creation of wide opportunities, also led to coming out the crimes in the field of information technologies. Accordingly, a separate "Department of Forensic Computer Technical Expertise" established in the Center to conduct expert research on this type of crime. This department is carrying out work in a number of directions, such as recovery of digital evidence, obtaining information from them, encryption and decryption, digital analysis of data.

A number of special programs been created based on the specific features of the Republican Center of Forensic Expertise named after Kh. Sulaymonova. They are widely used in the practice of criminalistics by providing scientific and technological solutions to existing problems.

Based on the results of the analysis of the theory and practice of forensic examination, the following innovative technologies suggested for the further improvement of this field.

Firstly, in the process of forensic expertise, there is an opportunity to determine a particular person by examining biological traces in physical evidence with the help of DNA research. However, it is not possible to

determine the appearance of the unknown person who left these traces, including eye, eyebrow, hair and body color and height. This limits the possibility of finding the suspect.

Accordingly, taking into account advanced foreign experience, proposed to introduce NGS technologies that allow determine the phenotypic characteristics of the person such as hair, eyes, body color, race, approximate height and even age, from the biological trace left at the scene of the accident. This, in turn, makes it possible to narrow down the range of suspects and determine the identity of the criminal.

Secondly, according to the practice of forensic expertise, the cases of allowing some shortcomings in the initial registration of the traffic accident cause difficulties in clarifying the circumstances of this traffic accident later.

In particular, due to the lack of quality and speedy inspection of the place where the road traffic accident occurred, it causes inconvenience to other road users and causes various levels of traffic jams on the road as well as the disappearance or displacement of tracks, spills, and other objects left on the road by the traffic accident.

Accordingly, it proposed to provide the people responsible for inspecting the accident site with modern technical tools, including 3D scanners and drones designed to record and preserve the vehicles and their traces in a short period.

Thirdly, one of the most promising areas of application of innovative technologies in the field of forensic examination is the widespread usage of 3D modeling.

3D modeling used to scan the scene for later perception through virtual reality. It is used in many foreign countries such as India, Japan, Russia, Belarus, China, Germany, Switzerland, France, Great Britain, USA and Israel to conduct forensic auto-technical, forensic-ballistic, trasological, forensic-construction, forensic-portrait and forensic-medical examinations. It allows you to study without damaging the objects of expert research. Especially in the framework of forensic construction-technical expertise, it is possible to carry out high-quality expertise studies even in the absence of the object project and other technical documents using this technology.

Fourth, it is suggest use of modern computer programs based on artificial intelligence algorithms, in particular, NeoFace Watch (Japan), Adobe Premiere Pro (USA) to conduct forensic portrait examinations.

These programs compare human faces in video and photo files with the help of artificial intelligence and calculate the similarities between 0-1.

CONCLUSION

In conclusion, it is worth noting that today it is necessary to improve the conditions that help to increase the effectiveness of court expert activity. In today's information age, it is impossible to imagine the improvement of the institute of forensic expertise without modern technologies. Accordingly, forming the professional skills of forensic experts in the use of information technologies, creating an electronic desktop of experts and providing them with modern technologies, is one of the priorities.

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