

DOI: <https://doi.org/10.57125/FEL.2023.12.25.12>

How to cite: Mikayılov, A. S. ođlu (2023). Innovations in the Criminal Procedure of the Republic of Azerbaijan: Prospects for the Implementation of Modern Methods and Technologies in the Work of Specialists. *Futurity Economics&Law*, 3(4). 190-208. <https://doi.org/10.57125/FEL.2023.12.25.12>

Innovations in the Criminal Procedure of the Republic of Azerbaijan: Prospects for the Implementation of Modern Methods and Technologies in the Work of Specialists

Mikayılov Anar Sahrab ođlu

Senior Eeacher of the Department "Criminal Process" of the Police Academy of the Republic of Azerbaijan, Police Lieutenant Colonel, <https://orcid.org/0009-0005-3367-3687>

Corresponding author: a.s.mikayilov@gmail.com.

Received: August 29, 2023 | **Accepted:** November 27, 2023 | **Available online:** December 10, 2023

Abstract: Digital technologies are increasingly penetrating all areas of human activity, including the judicial system. Information technologies are being integrated into criminal proceedings in the form of video conferencing during court hearings at various levels and electronic submission of motions, petitions, and complaints. The study aimed to identify and systematise the theoretical foundations of organising criminal procedure through information technologies. These technologies are used for organising the activities of officials and bodies conducting criminal proceedings, collecting, verifying, and evaluating evidence, controlling the activities of officials and bodies involved in criminal proceedings, and ensuring the security of information technologies used in criminal proceedings in the Republic of Azerbaijan. A review of studies conducted between 2015 and 2023 was carried out to achieve this goal. The search for publications relevant to the research topic was conducted in the Scopus and Web of Science databases. As a result of a two-stage selection process, 17 relevant studies were identified, characterised by the lowest risk of bias in their findings. The results of the study state the argumentation of the position that, at the present stage, it is necessary to create a unified digital environment of criminal justice, including the transition to recording the course of procedural, as well as investigative, actions employing technical means and saving the results in electronic form. It is essential to improve electronic document flow between state bodies and officials within the framework of criminal procedure relations and to expand the use of remote forms of procedural actions at any stage of criminal proceedings, including the participation of all interested parties in court hearings. It is

equally essential to provide the victim with the opportunity to track the progress of a criminal case online via the Internet, from filing an electronic application to the sentencing. It is considered adequate for the future to introduce a convenient and reliable technology of certification of a procedural document by any participant in the criminal process instead of its usual signature.

Keywords: e-justice, criminal justice, digital technologies, technical means, law enforcement agencies, digitised information.

Introduction

Nowadays, information is one of the determining factors in the development of society. This is due to the transition to a digital economy, i.e., the automation of processes related to all social spheres of life, including the administration of justice. The convenience of digitised information and computer technology makes life easier for members of society and allows them optimising and rationalising many of their daily activities.

In recent decades, information technologies, represented by both hardware and software, have become widespread in the system of cognitive tools that help to achieve the goals of proof in criminal cases. In turn, the development of technology, as a historical process, steadily leads to the emergence of related social relations, which are subsequently transformed into legal relations and require timely and relevant legal regulation.

The Criminal Procedure Code of the Republic of Azerbaijan (2000) as a regulatory act aimed at implementing criminal law provisions also introduces new norms providing for the detection of crimes using information and telecommunication means. Thus, the criminal legislation of Azerbaijan was supplemented with provisions regulating the conduct of criminal proceedings in electronic form, collection of information evidence, and was supplemented with provisions on search and seizure of electronic evidence.

Information technologies have been developing quite actively in recent years, but the problems of introducing digitalisation into criminal proceedings have become the subject of scientific research relatively recently (Maiorova, 2022). Certain issues of studying the use of information technology in criminal proceedings have been investigated in the following studies.

Zazulin (2020) analyses the functions of digital information and technologies that they perform in modern criminal procedure in different countries of the world. The author explores the essence of digital phenomena and their significance in the further development of criminal procedure legislation. According to the author, it is possible to distinguish three functions performed by digital information technologies in criminal proceedings: communicative, evidentiary, and intellectual. Within the framework of the study of the communicative function, the author proposes a classification of countries according to the level of implementation of electronic document management in criminal procedure and also describes the peculiarities of implementation of these functions in different countries of the world.

According to Završnik (2020), the automation caused by big data analytics, machine learning, and artificial intelligence systems is forcing humanity to reconsider fundamental issues of criminal justice at the present stage. The author describes the automation that has taken place in the field of criminal justice, explores the clash between artificial intelligence systems and the law in the analysis of case law, as well as some human rights violations that may arise in the process of using information technology in criminal justice.

The important preventive role of information technology in the fight against crime is emphasised by Kanjo et al. (2021), who note that criminal activity is a widespread problem in modern culture and society, and most countries face unacceptable levels of crime. According to the scientist, technological innovations have been one of the main driving forces that have led to the continuous improvement of

crime control and crime prevention strategies (e.g., GPS tracking and tagging, video surveillance, etc.). In line with this, the paper concludes that the research community has a moral obligation to study modern technological developments (e.g., the Internet of Things (IoT), machine learning, edge computing) that can help reducing the crime worldwide. In line with this, all kinds of modern hardware and software technologies can help to further reduce the crime.

Holt (2013) supports a similar view, noting that developments in technology have a direct impact on how the criminal justice system operates at the most basic levels. A wide range of technologies are used to support the justice system, including telephony, database management software, computers, cars, and weapons. The adoption and implementation of technology also directly shapes the policies and practices of the justice system. According to the researcher, computers and cellular technology have increased the ability to process data, share information, and communicate within and between agencies, so technology plays a key role in the justice system, although most researchers focus on the implementation and impact of technology in law enforcement.

According to Hollywood et al. (2016), the introduction of new technologies can have both unintended consequences and large, sometimes unforeseen, benefits. According to the researcher, technological development often outpaces the corresponding development of legislation, regulations, policies, culture, and knowledge of effective use. In addition, many technologies are young, and the cost may remain prohibitive, including the need for security, privacy, and civil rights protection.

Ninaquispe Soto et al. (2021) analysed the scientific literature on technological tools used to prevent the crime to identify the use of technology in crime prevention. The researchers analysed 41 publications in scientific journals indexed in the Scopus, Proquest, Dialnet, Redalyc, and Alicia databases over the past ten years. This made it possible to identify eight technological tools used in criminal proceedings. According to scientists, the most commonly used technological tools are artificial intelligence and information technology.

According to Gavritsky et al. (2020), it is important at the present stage to put into practice theoretical proposals for improving the provisions of national legislation, which would lead to strengthening the forms of investigation of criminal cases involving the widespread use of modern information technologies, which would legally protect the procedural procedure for the seizure and preservation of criminal evidence. Based on the results of the study, the researcher concludes that there is a need for a radical modernisation of criminal proceedings in the direction of improving both the procedural procedure for obtaining and preserving evidence obtained through electronic technological processes and the deployment of an electronic form of investigation of crimes in criminal cases. proceedings. At the same time, the article emphasises the need to assess the risks associated with the leakage of confidential information, and the transition to an electronic form of investigation will entail widespread use of electronic storage devices during investigative actions, which will greatly facilitate their implementation, thereby ensuring the completeness and reliability of evidence, and also reduce the risks of possible evidence forgery.

As noted by Caldwell et al. (2020), who conducted a scientific analysis to identify possible applications of artificial intelligence (AI) and related technologies in crime, the potential of information technology in criminal justice includes the ability to (1) catalogue potential criminal and terrorist threats arising from the increasing adoption and power of AI, and (2) categorise these threats in terms of expected victim harm, criminal gain, criminal reach and difficulty of defeat. The researchers also identified and ranked eighteen such possible categories. Five of the six highest-ranked categories had a broad societal impact, such as those involving fake content created by artificial intelligence or that could be operated at scale through AI automation; the sixth was the misuse of driverless car technology for a terrorist attack.

As Manning (1992) notes, the police have long hoped that technology would alleviate their most vexing problems, and the most important recent innovations in technology have been in computers and related software. According to the scholar, the police are information-dependent and rely on the public as their main source of information; how the police receive, process, encode, decode, and use information is crucial to their functions understanding. According to innovation, there are at least three types of police information (primary, secondary, and tertiary), intelligence (prospective, retrospective, and applied), and operational strategies (preventive, prospective, and reactive), each of which interacts with technology in a complex way. These processes are largely driven by police work, especially the role of the patrol officer, and the professional culture of the police, and technology itself is embedded in the social organisation; it shapes and is shaped by organisations.

As noted by Simmler et al. (2021), advanced technologies are not only transforming the public sector in general but are also increasingly changing the criminal justice system: smart applications are designed to predict crimes, automate court processes, and predict recidivism. According to scholars, this use of intelligent technologies to optimise the work of police, criminal justice, and law enforcement agencies ultimately serves to create “mart criminal justice”. However, the use of technology as a basic prerequisite, and its effectiveness as a normative criterion for any smart initiative in the public sector, should take into account the specifics of the criminal justice system. Accordingly, these criteria can be expanded with requirements for legality, equality, and transparency.

Conser and Carsone (2016) explored the progress and development of selected technologies used for criminal investigations, with a focus on technologies related to communications, smartphone applications, patrol aids, crime scene analysis, surveillance, evidence processing, and crime lab equipment; primarily for their investigative potential. Today's investigators can obtain valuable information from social media, mobile phones, video images from body-worn cameras and other mobile devices, three-dimensional laser scanning of crime scenes, real-time crime analysis, DNA sensors, and licence plate readers.

The inconsistency of the introduction of consumer innovations with the current level of criminal procedure minimises the effect of the principle of criminal procedure - this is the conclusion reached by Bertovsky et al. (2021) when analysing the use of the problems of introducing innovations in criminal proceedings, particularly, the development of rules aimed at improving the mechanism for exercising rights during investigative actions using modern technical means. The authors conclude that it is advisable to implement in practice the creation of official websites of pre-trial investigation bodies, further development of remote investigative actions using video conferencing systems in order to comply with the guarantees of the rights of participants in criminal proceedings; recording of investigative actions, elimination of the institute of witnesses, and creation of a single database based on the blockchain principle.

Law enforcement agencies are increasingly using big data analytics in their daily operations. In addition, police departments are using new surveillance technologies during patrols and investigations: a distinction is made between targeted surveillance, which involves following persons and places of suspicion, and network surveillance, which involves collecting data without suspicious details (Brayne, 2018).

Modern criminal justice, in the context of the rapid development of information technology, cannot remain unchanged. In anticipation of the establishment of legal platforms incorporating artificial intelligence, there is a need to introduce a regulation that restricts the involvement of machine thinking as a technological aide in the decision-making process of law enforcement officials (Dikarev & Vasyukov, 2020).

Therefore, following the mentioned points, the main directions for the development of information technologies in criminal proceedings need to be defined as follows:

- The priority of scientific research in the field of information theory of evidence;
- The transition to electronic document management, including the implementation of electronic criminal cases;
- The modernization of investigative and judicial actions, including the use of remote means and methods;
- The utilisation of mathematical methods and algorithms in supporting the decision-making process;
- The introduction of robotics into the criminal process.

Research Problem

The rapid development of society's informatisation affects the state and judicial institutions. Particularly, criminal proceedings in general and forensic examination in particular are complex systems. The latter, for example, is a combination of heterogeneous elements, including: regulatory framework, status and functions of forensic entities, scientific principles, methods and techniques of expert research, a system of technical means that cannot develop and exist without the use of technical means, a special place among which is now occupied by information technology.

In general, the use of digital technologies significantly improves the reliability and quality of evidence and facilitates the work of investigators to a certain extent. However, the transition to digital criminal justice also faces certain challenges. In the scientific literature, the issue of the legal definition of the criminal procedure form with information elements has been studied fragmentarily. To a greater extent, the scientific literature on the information elements of the criminal procedure form is devoted to individual investigative actions, such as seizure, copying, transfer of electronically stored information and its media, as well as its use as a means of proof in court.

Research Focus

The issue of utilising information technology in criminal proceedings remains inadequately comprehended for the Republic of Azerbaijan. Significant socio-political upheavals of the 90s. XX century in the country, as well as the fact that the current level of development of information technology is ahead of the legislator's response to changes and trends in this area, delay the process of consistent and gradual integration of information technology into the criminal process.

The focus of the study was to analyse the possibilities and prospects of introducing new technologies into the criminal justice system of the Republic of Azerbaijan. The study also focused on the analysis of generalised arguments for both positive and negative positions regarding the transition of criminal procedure to electronic format.

Research Aim and Research Questions

The process of digitalisation of criminal justice in the Republic of Azerbaijan can significantly accelerate and improve the work of law enforcement agencies, providing them with quick access to information, its automatic analysis and use in making relevant decisions. This can significantly reduce the time spent on investigating crimes, as well as increase the efficiency of law enforcement agencies themselves.

The purpose of the study was to examine the features and properties of the criminal procedure form of information technologies in criminal proceedings, and also their types which may be used in such proceedings. In accordance with this goal, the task of the study was to examine the issue of changing the criminal procedure in connection with the transition of society to the digital format of life. Another task of the study was to analyse the opinions of scholars on the possibility of digitalisation of criminal procedure.

Literature Review

Laufs and Borrion (2022) investigate innovative technologies used in criminal justice in the United Kingdom. The researchers note that digital technology now plays a crucial role in police activities and security management, and police apps, drones, and body-worn cameras can improve the situation in the fight against the crime. However, the implementation of such technologies is challenging, as mentioned by the researcher, and depends on the interest of senior management and users. The study examines the obstacles encountered by practitioners during the procurement, deployment, and use of crime prevention and detection technologies. This issue is explored through a series of expert interviews conducted with practitioners in London from August 2019 to March 2020.

Amelung and Machado's (2021) scientific work addresses the management of expectations in the innovation of forensic DNA phenotyping (FDP) in Germany. FDP is used to predict external characteristics of individuals, such as eye colour, hair colour, and skin colour, as well as biological age and biogeographical origin. In 2019, FDP technologies were regulated under the name "enhanced DNA analysis." The researchers also note that caution should be exercised in approaching innovations, as forensic geneticists manage expectations through forms of distributed anticipatory governance, delineating their obligations and distributing responsibility within the criminal justice system.

Simmler et al. (2022) highlight that in the digital era, the use of advanced technologies has become a new paradigm in the work of the police, criminal justice, and the prison system. Algorithms promise to predict criminal behaviour, identify potentially dangerous individuals, and support crime investigations. In this context, algorithm-based programs are often deployed, laying the foundation for "smart criminal justice." The study, based on 32 interviews with criminal justice and police officials, explores the reasons and extent to which such a smart criminal justice system has already been created in Switzerland, as well as the perceived benefits by users. Researchers note that the Swiss criminal justice system is already significantly shaped by algorithms, driven by political expectations and efficiency requirements.

Research Methodology

The study employed quantitative research methods based on a systematic analysis of relevant academic literature on the issue of using digital technologies in criminal procedure and a comparative legal assessment of the legislative framework of the Republic of Azerbaijan.

The search strategy in the selected databases, Scopus and Web of Science was limited to publications from 2015 to 2023. Relevant sources were chosen using the following keywords: "e-justice," "innovative technologies," "digitalisation of justice," "criminal justice," and "the Republic of Azerbaijan."

In the first stage, 537 publications were identified, 63 of which were excluded because they were not in English. Duplicate scientific papers and those not related to legal topics were also removed. At this stage, another 231 papers were excluded.

In the second stage, a more thorough filtering of the most relevant and reliable publications was conducted. The content analysis of abstracts excluded an additional 113 works that did not match the research topic. The content analysis of the remaining papers allowed for selecting the most reliable and frequently cited sources, totalling 17.

This study analysed the provisions of the following legal acts: the Criminal Code of the Republic of Azerbaijan (1999), the Criminal Procedure Code of the Republic of Azerbaijan (2000), and the Law of the Republic of Azerbaijan "On electronic signature and electronic document" (2004).

Research Results

Information technologies are now regularly used by individuals in almost any conceivable form of activity, legal or illegal (Simonato, 2014). At the present stage, courts in the Republic of Azerbaijan are actively using the following information technologies: the use of video conferencing in court hearings (conference calls), audio and video recording on electronic media, electronic form of court orders, notifications of participants in the process, filing motions, applications, and complaints in electronic form, as well as other procedural actions related to the use of electronic and information resources.

At present, the criminal justice system faces new challenges as a result of the advancements in science, technology, and changes in socio-economic standards of society (Srivastava et al., 2022). In the realm of information technology, there are currently six areas that show great promise for the development of the criminal justice system.

1. Recording of procedural and investigative actions and their electronic storage.

Thus, in modern judicial proceedings, it is customary to record data and store information obtained in the course of procedural and investigative actions in the form of paper protocols. An electronic resource is characterised as a resource that requires computer access or any electronic element that transmits a collection of information, be it text, e-books, e-journals, e-newspapers, e-theses, a collection of images, other multimedia elements and graphic, digital, as a commercially available title that has been distributed with the expectation of advertising (Jotangia, 2020). Electronic or digital resources in criminal proceedings are perceived as auxiliary or advisory. At the same time, it is believed that the transfer of data to electronic media will optimise the work of participants in the criminal process, facilitate interaction between them and improve the quality of tasks.

There is no doubt that digital technologies are driving continuous innovation in most if not all, sectors of the economy and society (Bogers et al., 2021). However, the introduction of digital technologies in the justice sector raises the need to change the regulation of investigative actions, to develop a number of measures to confirm the authenticity of electronically recorded information and to protect it. Human privacy behaviour can combine ideas from social and behavioural sciences: it refers to people's uncertainty about the consequences of privacy-related behaviour and their own preferences regarding these consequences; the contextual dependence of people's privacy concerns or lack thereof; and the extent to which privacy concerns are manipulated by commercial and state interests, including in the administration of justice (Acquisti et al., 2015).

Accordingly, it is also necessary to develop an algorithm and regulations for entering and studying information, as there is a need to keep it unchanged, accessible, and inviolable. The Basic Principles of Criminal Procedure, as guidelines that can be applied throughout criminal proceedings, define the clear nature and structure of the procedural order (Kaija, 2019). Therefore, it is necessary to train and involve in the process of criminal procedure such specialists who will participate in investigative and judicial actions, including copying, depositing, reviewing, and seizing electronic information in accordance with it.

2. The use in criminal proceedings of the technology of certifying a procedural document by any of the participants in the criminal process with an electronic signature instead of a regular, traditional signature.

The introduction of this technology into criminal proceedings will allow any participant to be remotely present during the courtroom or investigation. This is relevant when there is insufficient space in the courtroom, the participants are geographically remote, or it is impossible or prohibited by law to be physically present with other parties to the case under investigation. These operations will be performed most efficiently with the help of special information resources (Guthrie et al., 1991). Courts

must ensure that the process is completely functional and implemented by broadcasting the proceedings in real-time and equipping the premises with audio and video playback devices.

The Law of the Republic of Azerbaijan “On Electronic Signature and Electronic Document” provides that information in electronic form accompanied by a simple electronic signature or an unqualified electronic signature is recognised as an electronic document that has the same legal force as a paper document signed with a handwritten signature in cases established by laws, regulations adopted in accordance with them or an agreement between participants in electronic interaction (Law of the Republic of Azerbaijan, 2004).

The introduction of the technology of certification of a procedural document by any participant in the criminal proceedings instead of his/her usual signature into the judicial process allows for the performance of procedural actions and their confirmation online, which in turn provides ample opportunities for remote protection of the rights and legitimate interests of participants. The use of electronic signatures as a form of identification is becoming increasingly common, but at the current stage, they lack the dynamic functions that online signatures have (Kazmierczyk & Turner, 2021). In order to implement electronic signatures, it is also necessary to form a criminal case electronically at all stages of pre-trial and trial proceedings, as well as to inform the participants in the criminal process (investigator, coroner, expert, prosecutor, judge) in advance about the materials of the signed document.

3. Further improvement of the Electronic Criminal File project and implementation of its updated version in all regions of the Republic of Azerbaijan.

This technology allows the victim to be provided with information on the progress of the criminal case online via the Internet from the moment the application is filed electronically. However, this process should be accompanied by certain additional measures. First of all, it is about remote “presence” at all stages of the proceedings via video conference, as well as recording what is happening electronically with the possibility of access to the data by all interested parties.

In addition, the issue of introducing the electronic form of a criminal case into the practice of investigative bodies requires detailed technical, procedural, and legislative elaboration, modernisation of criminal proceedings, and reassessment of the traditional (written) concept of criminal procedural evidence in view of its transition to a “digital format”. All evidence obtained during the initiation and investigation of a criminal case will have to be presented in electronic form.

4. Introduction of electronic passports of criminal cases in all departments of the General Prosecutor's Office of Azerbaijan, which will allow storing data from scanned documents and copies of decisions in criminal cases and inspection materials in an electronic database.

The implementation of such a project would primarily allow for monitoring the work of the investigator, and participants in criminal proceedings with the relevant procedural status (victim, accused, civil plaintiff) would have access to an electronic version of the criminal case file. Thus, the main page may contain general information about the criminal case, information about the officials responsible for the case, information about the body in charge of the case, the timing of the proceedings, as well as relevant references to the provisions of the Criminal Code of the Republic of Azerbaijan (1999) and the Criminal Procedure Code of the Republic of Azerbaijan (2000).

The electronic criminal case file may contain certain sections (headings) for participants in the criminal proceedings, depending on their procedural status, which contain procedural documents and criminal case materials intended for familiarisation. In accordance with the requirements of the Criminal Procedure Law, procedural documents are placed in scanned form with all the necessary details of the participants in the investigative action.

The criminal case file, which is available to officials responsible for the proceedings in the case, as well as exercising control and supervision (head of the investigating body, prosecutor, detective, investigator, court), should be placed in a separate section.

5. Formation of materials of criminal relations in electronic form.

The implementation of this process concerns the application of measures to restore a lost criminal case and the calculation of the terms of inquiry, preliminary investigation, and detention during the restoration of a criminal case. In accordance with the provisions of the Criminal Procedure Code of the Republic of Azerbaijan (2000), the restoration of a lost criminal case or its materials is carried out by a resolution of the head of the investigating body, the head of the inquiry body, and in case of loss of a criminal case or materials during court proceedings - by a court decision, which is sent to the head of the investigating body or the head of the inquiry body for execution. If electronic data is recorded, the recovery process can be greatly shortened, preventing the release of the accused due to loss of data on the criminal case.

Thus, with the widespread implementation of the presented procedure for conducting criminal procedural actions, paper carriers will lose their significance and will allow moving towards an active full transition to the digital economy. However, it is worth noting that the legal and ethical issues faced by society due to the use of artificial intelligence, including in the administration of justice, include privacy and surveillance, bias or discrimination, and they potentially pose a philosophical challenge to human judgement (Naik et al., 2022).

6. The use of an electronic judge's assistant to assess the factual data available in a criminal case, as well as to impose a scientifically justified and proportionate punishment for the committed unlawful act.

This technology involves the use of mathematical methods and algorithms in conducting a trial and passing a sentence. In this case, the following tools may be used

- a point system for assessing the severity of the action;
- the scaling of damages caused in the course of the offence and crime;
- the building a model of attitudes towards the victim and the accused based on mathematical formulas calculated in accordance with the answers to specific questions.

In general, information technology can refer to crime scene detection techniques used in the event of a crime, the criminal investigation also includes issues of electronic security and the use of electronic devices such as computers, mobile phones, and other electronic devices. The criminal justice information system should take into account all factors and positions from the side of the regulated acts, not from the fact of the offence (Kalenteva & Bolgova, 2020). At the moment, this technology has a large number of opponents, as each criminal case is individual and requires detailed consideration and study of factors that may not have been included in the computer technology.

It should be noted that the electronic judge assistant programme cannot be used as a tool to replace a judge in a court proceeding. Therefore, as a court proceeding, it requires taking into account the legislative framework with amendments considered on an individual basis, or rather, the specific situation belonging to a particular amendment of the law.

In the Republic of Azerbaijan, the majority of the technologies mentioned above are either not utilized or only partially utilised. This is primarily due to the fact that information technology is developed to the extent that it is possible only to research any methodology, but not to apply it in practice.

Another problem is the fact that the implementation of the above technologies involves a number of complex measures, namely:

- changes in the judicial system;
- implementation of new measures to collect, analyse, process, and store information;
- introduction of additional equipment;
- professional development of relevant specialists;
- development of new regulations and algorithms.

At the present stage, the Criminal Procedure Code of the Republic of Azerbaijan (2000) provides for a regulated procedure for conducting an “electronic criminal case”, which is, first of all, an innovation in the field of criminal justice, as well as a reflection of the advanced trends that exist in other countries of the world. Electronic evidence is used in most European countries, although its acquisition, retrieval, analysis, and presentation before a judge are carried out in different ways by each member state (Insa, 2007).

Thus, many countries have long introduced a full-fledged digital justice, giving preference to new advanced technologies in criminal proceedings, including electronic criminal proceedings (Akhmetov et al., 2018). For example, the United Kingdom was the first country in history to hold a fully virtual trial, in which the judge, plaintiff, and defendant's representative communicated with each other through a special “closed” network developed by the Ministry of Justice of the United Kingdom. The experience of the United Kingdom is also interesting in terms of the current e-justice system, the procedures of which are clearly spelled out in the regulatory legislation, and the stages of the process are displayed on the official website of the relevant court.

Kazakhstan introduced the electronic registration of all applications and reports of crimes in 2011–2012, and since 2015, the Unified Register of Pre-trial Investigations has been operating in this country (Akhmetov et al., 2018). In Saudi Arabia, the use of e-criminal technology has reduced the time required to investigate crimes by 80-85%, with most cases being completed within a few days, Saudi courts can use digital software and tools in evidence procedures, but at the same time, the country is actively fighting against the growing number of cybercrimes that affect individuals and can cause financial costs (Alzubaidi, 2021). In 2011, as part of its law enforcement reform, Georgia successfully introduced an electronic criminal case file format, similar to the one used in the Republic of Azerbaijan, as part of the government's strengthening of executive power, control over the security sector, dismissal of corrupt police, and fight against organised crime.

In China, only after the amendment of the criminal procedure law in 2012 electronic data was classified as an independent type of evidence, and although the Chinese authorities have made great efforts to integrate new technologies into electronic data and formed a basic framework for regulating electronic data, there are still some shortcomings in the current regulations: vulnerable rights of crime suspects, lack of a special investigation department, unclear provisions in relevant regulations, and inadequate legal remedies (Yang & Feng, 2021).

The use of blockchain technology in criminal proceedings is also seen as a promising area of digitalisation of justice. It can be applied to criminal proceedings and should provide for the following: any criminal case can be presented as a set of procedural and other documents containing criminally relevant information. Documents included in the case file shall be transformed into digital format. Each document in the digital version is a kind of block containing a mark about the date and time of the document's introduction.

Security in the blockchain technology should be ensured through a decentralised server that affixes timestamps and peer-to-peer network connections. The result is a database that is managed autonomously, without a single centre. This makes blockchains very convenient for recording events and data transactions, managing identities, and confirming the authenticity of the source of information.

The access to this information is granted only to those to whom one of these users provides his/her private key. For example, an expert, the head of a forensic expert institution, the court, in case of need for control, the prosecutor, to perform the supervisory function, a lawyer who has the right to get acquainted with the minutes of court hearings and investigative actions conducted with the participation of the principal.

At the same time, all these participants should have different levels of access to these files. One of the participants in the process can only view the list of documents available in the criminal case file, while the other will be able to get acquainted with the case file and download data if necessary.

Thus, a large number of advantages are achieved through blockchain technology when used in criminal proceedings. First, the use of its tools will increase the publicity and transparency of the process. Secondly, the investigation period will be reduced, issues of judicial control and prosecutorial supervision will be resolved promptly, and the quality of the investigation itself will improve.

Other digital technologies, in addition to blockchain technology, that will help optimising the judiciary's operations are the following:

- the large amounts of data (cloud environments);
- neurotechnologies and artificial intelligence;
- quantum technologies ensuring cybersecurity and secure information exchange;
- robotics and sensor components;
- a prompt use of various databases, records, online procedural actions (wireless communication technologies);
- virtual and augmented reality technologies (presentation of evidence in court, modelling of phenomena and events under study in court proceedings), etc.

However, it is clear that the improvement of the judicial system will require a lot of intellectual, material, financial, and time costs before innovative proposals are implemented in the practical work of courts and are applicable to law enforcement and other state bodies.

The use of digital technologies is changing everyday life, industrial relations, the structure of the economy, and education, and creating new demands on communications, computing power, information systems, and services. The crime fighters use information technology to control crime and increase the effectiveness of their policing efforts to serve the public, which contributes to more efficient policing (Nuth, 2008).

Forensic expert activity is no exception, since with the development of digital technologies, experts need to improve their level of specialised knowledge and learn new technologies. In general, digital technology continues to evolve, its tools and aspects have many dimensions in modern life, where its use is becoming more necessary not only in trade and industry but also in the criminal justice system (Faqir, 2013).

The areas of the digital economy that can be used in expert activities and additionally in criminal proceedings include the following.

1. The normative regulation, as legal regulation of relations arising from the development of the digital economy should ensure a favourable legal regime for the emergence and development of modern technologies and economic activities related to their use.

Laws should govern the relationships that emerge in the digital economy, and mechanisms should be established to enhance legal regulation for the progression of the digital economy.

2. The area of digital economy development “Human Resources and Education”, which is necessary for the existence of a mechanism for independent certification (assessment) of competences within the education system and the labour market.

The system of additional education should work in favour of training competent specialists, including in the field of criminal justice.

3. Developing research competencies and technological skills.

A specialist who learns research methods and techniques gains experience in expert work, develops an individual style of intellectual activity, develops logical and creative abilities, and improves his or her own level of education and development.

4. Information security, which should ensure a stable unified system and security of the information and telecommunications infrastructure of the Republic of Azerbaijan at all levels of the information space, as well as technical, organisational, and legal protection of individuals, businesses, and state interests in their interaction in the digital economy.

To conduct a forensic examination, a lot of materials and data need to be compared and analysed, and in this case, Big Data (methods of analysing large amounts of data) will effectively help experts speeding up and improve the quality of their work and obtain reliable results. Special tools can convert document images into digital files to make data searches faster and, most importantly, more efficient. These tools can also remove duplicate information and allow multiple experts to work in parallel.

In addition, a significant advantage of using this technology is the ability to work with documents remotely, and thus the prospect of international cooperation between investigators, lawyers, and regulators who can simultaneously examine digital evidence on a common platform. However, the legitimacy of electronic evidence and the conditions for its verification, the degree of authenticity of electronic evidence found during the investigation, as well as the method of obtaining electronic evidence that can be presented in court are also necessary (Moussa, 2021).

The invention of modern technological systems has led courts around the world to implement electronic systems to manage these records, and records management has gained popularity because a systematic, efficient, and organised records management system is crucial to guaranteeing impartial decisions through verifiable records by the courts (Mosweu & Mosweu, 2019). In addition, with the development of artificial intelligence and machine learning capabilities, experts can use data analytics techniques to identify potential anomalies or even a “hot shot” effect in a large amount of electronic information. Big Data can help to cope with the “dependence” on manual tracking of electronic and handwritten documents, which makes it impossible to conduct large-scale forensic examinations.

The main goal of the big data analysis method is to help an expert work with a large amount of information, to provide an opportunity to instantly obtain data, calculate a number of necessary indicators, and process the available data. The perfection of the information system determines the speed and functionality that speeds up the expert's work. The widespread use of additional data generated by the industrial Internet of Things will help to make calculations in forensic examinations more efficiently and minimise the number of computational and analytical errors. The proliferation of big data analytics in criminal justice suggests that some positive frameworks and perceptions legitimise it and portray it as a panacea for effective crime control (Lavorgna & Ugwudike, 2021).

Forensic science is the application of various scientific methods and techniques for the purposes of justice (Williams, 2022). Fundamentally new approaches to forensics in the digital economy and legal proceedings include the analysis of data and indicators using self-organising neural networks. The neural network approach is a universal way to build a model for solving problems. Based on the established algorithm, the neural network builds a relationship between the vector of input and output data through automatic adaptive parameter adjustment (training). The tasks of the expert are to

formulate a task for the system, select the indicators necessary for analysis, describe the subject area, and select a subset that includes the essential features for solving the problem. Neural algorithms can also help to predict criminal behaviour, identify potentially dangerous individuals, and support crime investigations (Simmler et al., 2022).

Some of the technologies listed in the Neurotechnology and Artificial Intelligence area (i.e., text recognition technologies, face recognition technologies, speech recognition and synthesis technologies, gesture recognition technologies, biometrics, geoinformation technologies, and navigation) can be used by experts in various types of examinations, including those required by criminal proceedings. Digital technologies are now playing a crucial role in policing and security management, and police apps, drones, and body-worn cameras can significantly increase their impact (Laufs & Borrion, 2022).

Today's computer capacities make it possible to analyse a significant amount of information and process it in a short period of time. As for the future prospects of using databases, namely those that only provide access to information, in this case, they relate to expanding the amount of information, grouping it, and processing it to present it in the most convenient form for the expert. Information systems whose functionality also includes the calculation of a number of indicators and other computational algorithms are more promising for future use.

The mathematical and economic apparatus is quite broad, which allows for the introduction of new algorithms that allow for more efficient performance of the tasks assigned to the expert. There is no doubt that the development of information technology in the field of forensic science, as well as in all other areas, will remain relevant.

Currently, the priority property of various systems is unification, which will simplify and speed up the processes in the activities covered by the system. Therefore, it is quite logical to expect the development of information systems in forensic science to unify and standardise all processes in the future. At the same time, it is important to note that this development will be difficult due to the heterogeneity of forensic activities. The questions and situations that an expert may face are extremely variable, which makes it difficult to choose a single work algorithm.

Thus, the importance and even inevitability of information technology in forensic science is undeniable. When working with a significant amount of documentation, an expert is forced to use systems that allow for prompt access to information and rapid data processing. It is undeniable that this system needs to fulfil certain criteria and focus solely on the tasks encountered by the expert in their profession.

In addition, modern criminal investigations using computer technology call into question the right to a fair trial and the scientific reliability of digital evidence. Currently, there are three categories of unresolved threats to the fairness and presumption of innocence in investigations (1) inappropriate and inconsistent use of technology; (2) old procedural safeguards that are not adapted to modern digital evidence processes and services; (3) and the lack of reliability checks in the practice of digital forensics (Stoykova, 2021). For example, despite the relevance of the use of information technology in the work of an expert, the competence and knowledge of the expert himself is a determining factor in the successful delivery of an opinion. The availability of information technology alone will not provide answers to the questions posed to the expert. The expert always has the last word because it is the expert who, based on his or her professional experience and competence, gives an opinion on the issues raised by the court.

The purpose of computerisation of the criminal investigation process is to provide the investigator with high-quality forensic information in the shortest possible time and to enable prompt updating of this information during the investigation. This goal is served by software systems designed to prepare, conduct, and analyse the results of investigative actions. The development of information technology, informatisation of various fields of activity, creation of electronic data banks of state-owned enterprises

and private companies, qualitative changes in the media, on the one hand, and, on the other hand, the development of computer intelligence technologies (allowing for covert analysis of large amounts of data and information presented in electronic form), the development of analytical intelligence technologies (allowing for the synthesis of new knowledge from disparate facts), the introduction of multimedia technologies into operational practice (which

Discussion

The digitalisation of criminal proceedings contributes to its efficiency and transparency. In addition, the use of digital technologies in the investigation and consideration of court cases reduces the time spent on processing and analysing a large amount of information and reduces the number of errors and distortions in the process of collecting and analysing evidence. This conclusion is confirmed by Krytska (2021), who emphasises the regulated possibility of conducting remote procedural actions in criminal proceedings, the functioning of an automated court and document management system, the introduction of an electronic criminal case system, and the application of criminal proceedings measures through digital media. A similar position is taken by Khan and Mia (2023), who note that the potential benefits of technology in criminal justice include increased efficiency and accuracy, enhanced public safety, and reduced costs. The argumentation in favour of these statements is also contained in the scientific work of Razmetaeva and Razmetaev (2021), who emphasise that the use of algorithms can improve procedural fairness, provided that a careful and balanced approach to other elements of justice in the justice system is maintained.

Digital technologies can help simplifying and speed up communication between litigants, for example by allowing judges to receive real-time information about the proceedings or by enabling secure remote participation of parties in court hearings. This statement is in line with the findings of Zhang (2021), who notes that even the conservative US Supreme Court has begun to try to use teleconferencing to hold court hearings remotely, for both health and security reasons.

Somewhat opposite conclusions about the prospects for the widespread adoption of digital technologies are drawn in the research paper by Završnik (2020). The author emphasises the fact that with the advent of big data analytics, machine learning, and artificial intelligence systems, crime risk assessment and the functioning of criminal justice systems are becoming increasingly technologically complex. Although the author does not agree that these technologies can solve most of the problems of criminal justice (for example, by reducing the backlog of cases), as there are risks of increasing social divisions and threats to fundamental freedoms, he nevertheless agrees that the introduction of new technologies will have positive consequences.

The specificity of the use of computer technologies in the process of detecting and investigating crimes is due to the fact that their implementation is possible at any stage of criminal proceedings - from obtaining information and registering it to the stage of trial using videoconferencing systems, when participants may be located in different geographical locations, but conduct a direct audio-visual dialogue with participants in the courtroom. This view is supported by Stoykova (2021), who notes that digitalisation is changing the methods, techniques, and scope of criminal investigations, but despite the drive towards automation, digital forensics (DF) still faces problems with limited resources, over-reliance on tools and subjective opinions.

Brown (2022) came to the opposite conclusion about the effectiveness of digitalisation of forensics. He notes that digital forensics is the scientific and legal process of investigating computer/cybercrime and digital media or objects for evidence collection. This new and rapidly developing field encompasses computer forensics, network forensics, mobile forensics, cloud forensics, and Internet of Things forensics. For this reason, digital evidence is widely disseminated whenever there is a need for criminal prosecution. Digital evidence is increasingly being presented and admitted in courts without a scientific basis for digital forensic methodology or tools. While classical investigations

are subject to strict limitations and fair trial guarantees, digital investigations still lack quality assurance and accountability.

Conclusions and Implications

Thus, the following conclusions can be drawn from the study:

- 1) Scholars hold varying viewpoints regarding the digitalisation of criminal procedure, leading to ongoing debates and research on this matter. The majority of scholars concur that digital technologies can effectively aid modern criminal procedures as long as their usage is adequately secure, dependable, and transparent.
- 2) The main arguments of the scientific community in favour of the inevitable digitalisation of criminal justice are:
 - faster and more efficient preliminary investigation. Digital technologies can significantly speed up the processes of collecting, storing, and analysing information;
 - helping to improve the quality of investigative work. Digitalisation allows for new and more accurate data analysis methods capable to identify the links between different facts and reveal hidden patterns;
 - systematisation and ordering of information. Digital technologies provide the ability to organise and structure large amounts of information more efficiently, which can speed up investigations and save time and resources.

Suggestions for Future Research

The progressive and evolving field of information technology is now essential for the formation of public institutions. Every day, human activity has become more and more dependent on computer devices, and many social processes can no longer function without the information environment. The use of technological solutions to meet communication needs has naturally led to the need to provide social relations with the necessary mechanisms. One of the factors influencing their proper development is the regulatory framework for the use of information technology in the development of digital infrastructure, as well as the introduction of information and telecommunications tools in public administration and the justice system.

The mechanisms established in the Criminal Procedure Code of the Republic of Azerbaijan (2000) in order to establish the circumstances formed in the information space are now used by investigators everywhere, and the significance of evidence with an electronic digital equivalent is beyond doubt among both legal scholars and practitioners. In turn, the issues of determining the evidentiary nature of information stored in computer devices for the purpose of performing criminal justice tasks are of significant importance and require a certain rethinking of the system of investigative actions, the effectiveness of which depends on how the investigator complies with the provisions of law relating to the procedural form of the relevant action, and how scientific and methodological recommendations in this area are used.

Meanwhile, the study of the law enforcement activities shows the development of certain trends of unreasonable complication of the procedure for obtaining computer information, which cannot but affect the quality and timing of the preliminary investigation and the reliability of the substantiation of decisions. In certain cases, the construction of the rules that enshrine the investigator's powers to obtain and use computer information in the course of investigative actions is not systematic, and certain provisions contradict each other.

Given the need to use electronic document management in the criminal procedure of the Republic of Azerbaijan in its various forms (conducting investigative proceedings in electronic form; printing procedural documents on a computer), the objective reflection of the current trend, which entails

incorporating information technology into social interactions, can be observed within the realm of criminal procedure.

Both officials and “non-professional” participants in criminal proceedings have an understanding of the functioning and possess skills in the use of information technology and technical means. However, their actual use is not reflected in the Criminal Procedure Code of the Republic of Azerbaijan (2000). Furthermore, alongside this trend, there is a significant advancement in scientific progress, accompanied by the emergence of novel information technologies, which often do not find timely legal reflection in the said legal act. This demonstrates the relevance of the topic of this study, which determines the need for scientific development of the criminal procedure form of information technology in the future.

Acknowledgements

None.

Conflict of Interest

None.

Funding

The Authors received no funding for this research.

References

- Acquisti, A., Brandimarte, L., & Loewenstein, G. (2015). Privacy and human behavior in the age of information. *Science*, 347(6221), 509–514. <https://doi.org/10.1126/science.aaa1465>
- Akhmetov, A. T., Bekisheva, S. D., Syrbu, A. V., & Kainazarova, D. B. (2018). Retrospective review of information technologies in the Criminal Code of Kazakhstan. *Journal of Advanced Research in Law and Economics*, 9(5), 1545–1550. [https://doi.org/10.14505/jarle.v9.5\(35\).05](https://doi.org/10.14505/jarle.v9.5(35).05)
- Alzubaidi, A. (2021). Measuring the level of cyber-security awareness for cybercrime in Saudi Arabia. *Heliyon*, 7(1), Article E06016. <https://doi.org/10.1016/j.heliyon.2021.e06016>
- Amelung, N., & Machado, H. (2021). Governing expectations of Forensic Innovations in society: The case of FDP in Germany. *New Genetics and Society*, 40(4), 498–519. <https://doi.org/10.1080/14636778.2020.1868987>
- Bertovsky, L. V., Ryzhkova, I. A., & Ryzhkov, S. A. (2021). Innovative technologies and principles of criminal proceeding when conducting investigative actions. *Revista Amazonia Investiga*, 10(48), 18–25. <https://doi.org/10.34069/ai/2021.48.12.2>
- Bogers, M. L., Garud, R., Thomas, L. D., Tuertscher, P., & Yoo, Y. (2021). Digital innovation: Transforming research and practice. *Innovation*, 24(1), 4–12. <https://doi.org/10.1080/14479338.2021.2005465>
- Brown, E. K. (2022). Digital forensic and distributed evidence. *Advances in Multidisciplinary and Scientific Research Journal Publication*, 1(1), 357–362. <https://doi.org/10.22624/aims/crp-bk3-p57>
- Brayne, S. (2018). The Criminal Law and law enforcement implications of Big Data. *Annual Review of Law and Social Science*, 14(1), 293–308. <https://doi.org/10.1146/annurev-lawsocsci-101317-030839>
- Caldwell, M., Andrews, J. T., Tanay, T., & Griffin, L. D. (2020). AI-enabled future crime. *Crime Science*, 9(1), Article 14. <https://doi.org/10.1186/s40163-020-00123-8>

- Conser, J. A., & Carsone, L. P. (2016). Technology that aids the investigative process. In A. Bain (Ed.), *Law enforcement and technology* (pp. 79–96). London: Palgrave Pivot. https://doi.org/10.1057/978-1-137-57915-7_6
- Criminal Code of the Republic of Azerbaijan, No. 787-IQ. (1999). https://continent-online.com/Document/?doc_id=30420353
- Criminal Procedure Code of the Republic of Azerbaijan, No. 907-IQ. (2000). https://continent-online.com/Document/?doc_id=30420280
- Dikarev, I. S., & Vasyukov, V. F. (2020). Perspectives of implementing “smart” digital technologies in criminal justice. In E. G. Popkova & B. S. Sergi (Eds.), *“Smart technologies” for society, state and economy. ISC 2020. Lecture notes in networks and systems, Volume 155* (pp. 1306–1312). Cham: Springer. https://doi.org/10.1007/978-3-030-59126-7_143
- Gavritsky, A. V., Demidchenko, Yu. V., Palieva, O. N., Paliev, V. B., Poltavtseva, L. I., & Tsoi, B. A. (2020). Information technologies in criminal proceedings of Russia: Controversial issues of proof. *International Journal of Economics and Business Administration*, 8(4), 598–612. <https://doi.org/10.35808/ijeba/611>
- Guthrie, J. T., Bennett, S., & Weber, S. (1991). Processing procedural documents: A cognitive model for following written directions. *Educational Psychology Review*, 3(3), 249–265. <https://doi.org/10.1007/bf01320078>
- Hollywood, J., Woods, D., Lauand, A., Goodison, S., Wilson, T., & Jackson, B. (2016). *Using future broadband communications technologies to strengthen law enforcement* (Report No. RR-1462-NIJ). RAND Corporation. <https://doi.org/10.7249/rr1462>
- Holt, T. (2013). *Technology and the criminal justice system*. Oxford Bibliographies Online Datasets. <https://doi.org/10.1093/obo/9780195396607-0173>
- Insa, F. (2007). The admissibility of electronic evidence in court (A.E.E.C.): Fighting against high-tech crime — results of a European study. *Journal of Digital Forensic Practice*, 1(4), 285–289. <https://doi.org/10.1080/15567280701418049>
- Jotangia, N. K. (2020). Electronic resources: Their importance, characteristics, types, issues and challenges and comparison with print resources — an analysis. *NOLEGEIN-Journal of Advertising and Brand Management*, 3(1), 1–9. <https://doi.org/10.37591/njabm.vi0.450>
- Kaija, S. (2019). Mandatory nature of criminal proceedings in the Republic of Latvia: Current issues and controversies. *SHS Web of Conferences*, 68, Article 01014. <https://doi.org/10.1051/shsconf/20196801014>
- Kalenteva, T., & Bolgova, V. (2020). Electronic format of criminal cases as a leading trend in modern criminal proceedings. *Proceedings of the 6th International Conference on Social, Economic, and Academic Leadership (ICSEAL-6-2019)*. <https://doi.org/10.2991/assehr.k.200526.067>
- Kanjo, E., Ortega Anderez, D., Anwar, A., Al Shami, A., & William, J. (2021). *CrowdTracing: Overcrowding clustering and detection system for social distancing*. Authorea. <https://doi.org/10.36227/techrxiv.14709762.v1>
- Kazmierczyk, Z., & Turner, I. J. (2021). Self-identification of electronically scanned signatures (ESS) and digitally constructed signatures (DCS). *Forensic Sciences Research*, 7(2), 261–264. <https://doi.org/10.1080/20961790.2021.1923167>

- Khan, D., & Mia, L. (2023). *The impact of technology on the criminal justice system*. ResearchGate. https://www.researchgate.net/publication/372751132_The_impact_of_technology_on_the_criminal_justice_system
- Krytska, I. O. (2021). Digitization of the criminal process: Yesterday, today, tomorrow. In *Legal science and education in Ukraine and EU countries: A paradigm shift* (pp. 237–257). Riga, Latvia: “Baltija Publishing”. <https://doi.org/10.30525/978-9934-26-091-9-8>
- Laufs, J., & Borrión, H. (2022). *Technological innovation in policing and crime prevention: Practitioner perspectives from London*. CrimRxiv. <https://doi.org/10.21428/cb6ab371.4cdca447>
- Lavorgna, A., & Ugwudike, P. (2021). The datafication revolution in criminal justice: An empirical exploration of frames portraying data-driven technologies for crime prevention and control. *Big Data & Society*, 8(2). <https://doi.org/10.1177/20539517211049670>
- Law of the Azerbaijan Republic "On electronic signature and electronic document", No. 602-IIQ. (2004).. https://online.zakon.kz/Document/?doc_id=30614910
- Maiorova, L. (2022). Improving electronic evidence legal regulation in criminal proceedings. *SHS Web of Conferences*, 134, Article 00074. <https://doi.org/10.1051/shsconf/202213400074>
- Manning, P. K. (1992). Information technologies and the police. *Crime and Justice*, 15, 349–398. <https://doi.org/10.1086/449197>
- Mosweu, T. L., & Mosweu, O. (2019). Electronic court records management systems: A review of literature in selected African countries. *Mousaion: South African Journal of Information Studies*, 36(4). <https://doi.org/10.25159/2663-659x/4196>
- Moussa, A. F. (2021). Electronic evidence and its authenticity in forensic evidence. *Egyptian Journal of Forensic Sciences*, 11(1). <https://doi.org/10.1186/s41935-021-00234-6>
- Naik, N., Hameed, B. M., Shetty, D. K., Swain, D., Shah, M., Paul, R. ... Somani, B. K. (2022). Legal and ethical consideration in artificial intelligence in Healthcare: Who takes responsibility?. *Frontiers in Surgery*, 9, Article 862322. <https://doi.org/10.3389/fsurg.2022.862322>
- Ninaquispe Soto, M. E., Riega-Viru, Y., & Oruna Lara, J. C. (2021). Technology and crime prevention: A systematic review of literature. In *2021 fifth world conference on smart trends in systems security and sustainability (WorldS4)* (pp. 275–283). IEEE. <https://doi.org/10.1109/worlds451998.2021.9514035>
- Nuth, M. S. (2008). Taking advantage of new technologies: For and against crime. *Computer Law & Security Review*, 24(5), 437–446. <https://doi.org/10.1016/j.clsr.2008.07.003>
- Razmetaeva, Y., & Razmetaev, S. (2021). Justice in the digital age: Technological Solutions, hidden threats and enticing opportunities. *Access to Justice in Eastern Europe*, 4(2), 104–117. <https://doi.org/10.33327/ajee-18-4.2-a000061>
- Faqir, R. (2013). The use of technology of Global Positioning System (GPS) in criminal investigation & right to privacy under the Constitution and criminal legislations in Jordan: Legal analysis study. *Revue Internationale de Droit Pénal*, 84(3), 433–462. <https://doi.org/10.3917/ridp.843.0433>

- Simmler, M., Brunner, S., Canova, G., & Schedler, K. (2022). Smart criminal justice: Exploring the use of algorithms in the Swiss criminal justice system. *Artificial Intelligence and Law*, 31(2), 213–237. <https://doi.org/10.1007/s10506-022-09310-1>
- Simmler, M., Canova, G., & Schedler, K. (2021). Smart criminal justice: Phenomena and normative requirements. *International Review of Administrative Sciences*, 89(2), 415–432. <https://doi.org/10.1177/00208523211039740>
- Simonato, M. (2014). Defence rights and the use of information technology in criminal procedure. *Revue Internationale de Droit Pénal*, Vol. 85(1), 261–310. <https://doi.org/10.3917/ridp.851.0261>
- Srivastava, A., Harshey, A., Das, T., Kumar, A., Yadav, M. M., & Shrivastava, P. (2022). Impact of DNA evidence in criminal justice system: Indian Legislative perspectives. *Egyptian Journal of Forensic Sciences*, 12(1), Article 51. <https://doi.org/10.1186/s41935-022-00309-y>
- Stoykova, R. (2021). Digital evidence: Unaddressed threats to fairness and the presumption of innocence. *Computer Law & Security Review*, 42, Article 105575. <https://doi.org/10.1016/j.clsr.2021.105575>
- Williams, G. J. (2022). Crime scene management. In A. Barbaro, & A. Mishra (Eds.), *Manual of Crime Scene Investigation* (pp. 1–14). CRC Press. <https://doi.org/10.4324/9781003129554-1>
- Yang, F., & Feng, J. (2021). Rules of electronic data in criminal cases in China. *International Journal of Law, Crime and Justice*, 64, Article 100453. <https://doi.org/10.1016/j.ijlcrj.2020.100453>
- Završnik, A. (2020). Criminal justice, artificial intelligence systems, and human rights. *ERA Forum*, 20(4), 567–583. <https://doi.org/10.1007/s12027-020-00602-0>
- Zazulin, A. I. (2020). Functions of digital information and technologies in criminal proceedings. *Siberian Law Review*, 17(1), 75–82. <https://doi.org/10.19073/2658-7602-2020-17-1-75-82>
- Zhang, X. (2021). Remote court hearing as a judicial response to the COVID-19 outbreak: An impact assessment and suggestions for improvement. *Journal of Global Health*, 11, Article 03051. <https://doi.org/10.7189/jogh.11.03051>