

CRIMINAL INVESTIGATION METHODS USED IN CRIMINAL PROCESS IN THE CRIMINAL PROSECUTION PHASE

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Abstract:

The criminal prosecution phase constitutes an essential component of the criminal process, having as its primary objective the identification of criminal acts, the individualization of the perpetrators and the establishment of criminal liability within the limits provided by law.² In achieving these goals, forensic investigation methods play a fundamental role, as they facilitate the collection, preservation and interpretation of evidence in a scientific, systematic and objective manner.³ This article aims to investigate, from a theoretical-legal and applied perspective, the main forensic methods used during criminal investigation – from traditional tools, such as on-site research, hearing procedural participants or performing technical expertise, to modern methods based on technological advances, such as digital forensics, genetic analysis or automated facial recognition.⁴ The paper analyzes the evidentiary value of these methods, the criteria for admissibility in court, as well as the legal and ethical vulnerabilities they may entail, especially in relation to the protection of the fundamental rights of the suspect and the victim⁵. At the same time, the current challenges generated by the digitalization of the judicial system, the deficit of specialized training of personnel involved in investigations, as well as emerging trends regarding the automation of the criminal investigative process are discussed. The conclusions highlight the imperative need for harmonization between the efficiency of the criminal investigation and compliance with the principles of legality, procedural loyalty and judicial ethics.⁶

Keywords: criminal prosecution; forensic methods; evidence; criminal investigation; digital forensics; expertise; fundamental rights; fair trial

1. INTRODUCTION

The criminal prosecution phase constitutes an essential component of the criminal process, having as its primary objective the identification of criminal acts, the individualization of the perpetrators and the establishment of criminal liability within the limits provided by law.⁷ In achieving these goals, forensic investigation methods play a fundamental role, as they facilitate the collection, preservation and interpretation of evidence in a scientific, systematic and objective manner.⁸

This article aims to investigate, from a theoretical-legal and applied perspective, the main forensic methods used during the criminal investigation – from traditional tools, such as on-site investigation, hearing of procedural participants or performing technical

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² A. Boroï, *Drept procesual penal. Partea generală*, Ed. C.H. Beck, București, 2020, p. 193.

³ D. Banciu, A. Boroï, *Tratat de criminalistică*, Ed. Universul Juridic, București, 2022, pp. 75–76.

⁴ T. Pop, *Metode de investigare în criminalistică. Fundamente teoretice și aplicații practice*, Ed. Universitară, Cluj-Napoca, 2017, pp. 114–128.

⁵ V. Gheorghe, *Probleme în procesul penal. Teorie și jurisprudență*, Ed. Hamangiu, București, 2019, pp. 142–148.

⁶ L. Ristea, M. Dobrinoiu, „Criminalistică și tehnologie: utilizarea biometriei în procesul penal”, *Revista de Criminologie, Criminalistică și Penologie*, nr. 2/2020, pp. 90–91.

⁷ A. Boroï, *Drept procesual penal. Partea generală*, Ed. C.H. Beck, București, 2020, p. 193.

⁸ D. Banciu, A. Boroï, *Tratat de criminalistică*, Ed. Universul Juridic, București, 2022, pp. 75–76.

expertise, to modern methods based on technological advances, such as digital forensics, genetic analysis or automated facial recognition.⁹

The paper analyzes the probative value of these methods, the criteria for admissibility in court, as well as the legal and ethical vulnerabilities they may entail, especially in relation to the protection of the fundamental rights of the suspect and the victim.¹⁰ At the same time, the current challenges generated by the digitalization of the judicial system, the deficit of specialized training of personnel involved in investigations, as well as emerging trends regarding the automation of the criminal investigative process are discussed.

The constant evolution of forms of crime, especially in the digital environment, requires a continuous adaptation and diversification of the forensic methods used in criminal investigations. From classic techniques, such as on-site research or ballistics expertise, to modern methods such as digital forensics, facial recognition or DNA analysis, all these procedures aim to obtain valid, admissible and convincing evidence. At the same time, the use of these methods must comply with the requirements of legality, proportionality and respect for the fundamental rights of the persons involved.

In the context in which technology is constantly redefining the boundaries of criminal investigation, a critical reflection is required on the way in which forensic methods contribute to an efficient, fair and adapted criminal justice to new social and criminal realities.

The conclusions highlight the imperative need for harmonization between the efficiency of criminal investigation and compliance with the principles of legality, procedural loyalty and judicial ethics.¹¹

2. THEORETICAL – LEGAL FRAMEWORK OF CRIMINAL PROSECUTION

The criminal investigation phase constitutes one of the most important components of the criminal process, representing the initial stage in which the judicial bodies are invested with specific powers of investigation, collection of evidence and identification of the persons responsible for committing a criminal act.¹² From a legal perspective, this phase is regulated by the Code of Criminal Procedure, which establishes a set of principles and procedural guarantees intended to ensure the conduct of an efficient, fair and respectful investigation with respect for fundamental human rights.¹³

According to art. 285 of the Code of Criminal Procedure, the criminal investigation is conducted, mainly, by the criminal investigation bodies, under the supervision of the prosecutor, its purpose being to collect the data and information necessary to decide to prosecute or, as the case may be, to dismiss the case.¹⁴ The activity carried out in this phase is governed by fundamental principles such as legality, respect for fundamental rights and

⁹ T. Pop, *Metode de investigare în criminalistică. Fundamente teoretice și aplicații practice*, Ed. Universitară, Cluj-Napoca, 2017, pp. 114–128.

¹⁰ V. Gheorghe, *Probele în procesul penal. Teorie și jurisprudență*, Ed. Hamangiu, București, 2019, pp. 142–148.

¹¹ L. Ristea, M. Dobrinou, „Criminalistică și tehnologie: utilizarea biometriei în procesul penal”, *Revista de Criminologie, Criminalistică și Penologie*, nr. 2/2020, pp. 90–91.

¹² A. Boroi, *Drept procesual penal. Partea generală*, Ed. C.H. Beck, București, 2020, p. 177.

¹³ V. Cioclei, *Drept penal. Partea generală*, Ed. Universul Juridic, București, 2018, pp. 45–47.

¹⁴ Codul de procedură penală al României, art. 285.

freedoms, the independence of the prosecutor, the confidentiality of the procedures and loyalty in the administration of evidence.¹⁵

Judicial bodies benefit from a wide range of procedural means and scientific methods, used for the purpose of obtaining and verifying evidence: from hearing the parties and conducting expert assessments, to applying coercive procedural measures, all within the limits of the law.¹⁶ The legal framework also provides for a series of essential procedural guarantees, such as the presumption of innocence, the right to defense, legal assistance and the possibility of challenging restrictive measures through judicial review.

Beyond the normative dimension, the theoretical and legal framework of criminal prosecution must also be analyzed from a functional perspective, given that the efficiency of investigative activity depends on the cooperation between the institutions involved, on the appropriate use of technical and scientific resources, as well as on the capacity of the judicial system to adapt to current challenges, including those generated by cross-border or digital crime.¹⁷

Consequently, the criminal prosecution phase reflects a sensitive balance between the state's need for efficiency in combating crime and its obligation to protect the fundamental rights of citizens, a balance that must be maintained by faithfully applying legal provisions and by the responsible use of available forensic methods.¹⁸

3. CLASSIFICATION AND DESCRIPTION OF FORENSIC INVESTIGATION METHODS

Criminal prosecution activity is essentially based on the application of rigorous forensic investigation methods, designed to ensure the identification, collection and valorization of evidence necessary to establish the judicial truth.¹⁹ These methods can be classified according to their technical-scientific nature and the degree of innovation, thus delimiting between classical methods, established together with the development of modern forensics, and modern methods, influenced by recent advances in technology and digitalization.²⁰

3.1. Classical methods of forensic investigation

Classical methods constitute the traditional foundation of forensic science, being constantly used in most criminal investigations. Among the most common are:

1. On-site investigation, which involves a detailed examination of the crime scene to identify material traces, relevant objects and enabling conditions. Methods such as photography, forensic sketching and narrative description are used to fully document the scene.²¹

¹⁵ V. Gheorghe, *Problele în procesul penal. Teorie și jurisprudență*, Ed. Hamangiu, București, 2019, p. 121.

¹⁶ D. Banciu, A. Boroi, *Tratat de criminalistică*, Ed. Universul Juridic, București, 2022, pp. 82–87.

¹⁷ L. Ristea, M. Dobrinou, „Criminalistică și tehnologie: utilizarea biometriei în procesul penal”, *Revista de Criminologie, Criminalistică și Penologie*, nr. 2/2020, pp. 88–91.

¹⁸ T. Pop, *Metode de investigare în criminalistică*, Ed. Universitară, Cluj-Napoca, 2017, pp. 49–51.

¹⁹ D. Banciu, A. Boroi, *Tratat de criminalistică*, Ed. Universul Juridic, București, 2022, pp. 101–104.

²⁰ D. Banciu, A. Boroi, *Tratat de criminalistică*, Ed. Universul Juridic, București, 2022, pp. 101–104.

²¹ T. Pop, *Metode de investigare în criminalistică*, Ed. Universitară, Cluj-Napoca, 2017, pp. 75–78.

2. Removal of traces and objects, an essential activity for the preservation of material evidence, which involves the collection of fingerprints, biological samples or fragments relevant to the case, in compliance with chain of custody procedures.²²

3. Interviewing suspects, witnesses and the injured person, a basic evidentiary technique through which investigators obtain data on the course of the crime, its motive and possible causal links. The principle of non-determination of statements by coercion or suggestion must be respected.²³

4. Reconstruction of the act, a method of verifying the veracity of statements and the feasibility of the criminal scenario, is frequently used in complex cases that require reconfirmation of investigative hypotheses.²⁴

5. Forensic expertise, such as trace, ballistic, graphoscopic or dactyloscopic, provides a scientific basis for establishing causality or identifying the perpetrator, being carried out by authorized specialists in specialized laboratories.²⁵

3.2. Modern and technological methods of forensic investigation

Technological advances and the diversification of crimes have led to a reassessment of investigative strategies, favoring the integration of modern methods, indispensable in contemporary investigations:

1. Digital forensics involves the analysis of information systems and the processing of genetic evidence, with high accuracy in determining the identity of the persons involved.²⁶

2. DNA analysis, used for the biological identification of the perpetrator, requires compliance with strict methodological standards for the collection and processing of genetic samples, with high accuracy in determining the identity of the persons involved.²⁷

3. Facial recognition and biometrics allow visual identification by correlating images with specialized databases, being successfully used in establishing the presence of suspects at the scene of the crime.²⁸

4. Computer systems for analyzing judicial data, equipped with algorithms capable of correlating files, identifying behavioral patterns or hidden connections, provide strategic support to investigators in making operational decisions.²⁹

These modern methods bring undeniable benefits in terms of speed, accuracy and automation of analysis processes, but they also involve challenges related to legality, personal data protection and the need for specialized technical expertise for their responsible application.³⁰

²² V. Gheorghe, *Problele în procesul penal. Teorie și jurisprudență*, Ed. Hamangiu, București, 2019, p. 153.

²³ A. Boroi, *Drept procesual penal. Partea generală*, Ed. C.H. Beck, București, 2020, p. 205.

²⁴ D. Banciu, A. Boroi, op. cit., pp. 122–123.

²⁵ V. Răduleț, „Evidența criminalistică și expertiza tehnică”, *Revista Dreptul*, nr. 4/2021, pp. 134–135.

²⁶ G. Cojocaru, „Criminalistica digitală – între inovație și vulnerabilitate”, *Revista Dreptul*, nr. 6/2021, pp. 122–128.

²⁷ T. Pop, op. cit., pp. 145–148.

²⁸ M. Dobrinoiu, „Utilizarea tehnologiilor biometrice în investigarea penală”, *Revista Română de Drept Penal al Afacerilor*, nr. 3/2022, pp. 57–59.

²⁹ L. Ristea, op. cit., pp. 95–96.

³⁰ V. Cioclei, *Drept penal. Partea generală*, Ed. Universul Juridic, București, 2018, p. 267.

4. THE PROBATIVE VALUE OF FORENSIC METHODS

The probative value of forensic methods in the criminal investigation phase is conditioned by their ability to generate relevant, convincing and admissible evidence before the court.³¹ According to the criminal procedure doctrine, evidence is defined as any means permitted by law that contributes to establishing the existence of a crime, identifying the perpetrator and establishing the circumstances relevant to the case.³² Thus, forensic investigation methods have not only a technical-scientific role, but also an essential legal function, serving to legally substantiate criminal prosecution acts and, subsequently, judicial solutions.

In order for the results obtained by applying these methods to acquire probative value, they must cumulatively comply with the conditions of legality, loyalty and relevance.³³ Legality requires that the procedures be carried out in accordance with the provisions of the Code of Criminal Procedure regarding the authorization, performance and documentation of investigative activities. Loyalty prohibits the use of fraudulent, abusive methods or methods that compromise the procedural rights of the parties. Relevance requires a direct link between the evidence obtained and the subject matter of the case, ensuring its relevance for the resolution of the criminal dispute.

Evidence such as technical-scientific expertise, forensic findings, audio-video recordings, biological or digital evidence may be used in the trial only if they are administered under the conditions provided for by law and do not affect the rights of the persons involved.³⁴ The case law of the European Court of Human Rights has consistently stated that the use of evidence obtained by scientific means is not, in itself, incompatible with the requirements of a fair trial. However, the admissibility of this evidence is subject to strict compliance with the procedural guarantees provided for in Article 6 of the European Convention on Human Rights.³⁵

Modern methods, such as computer or biometric methods, also require scientific validation and the relevant regulatory framework. For example, in the case of automated facial recognition or DNA analysis, it is essential that the methods used are certified by competent institutions and that the expert has the professional competence necessary to interpret the results.³⁶ Failure to meet these requirements may compromise the probative value of the technical-scientific result.

An additional important aspect is the risk of error and the possibility of intentional manipulation of evidence. In this context, it is necessary to respect the principles of adversarial proceedings and equality of arms, offering the parties the opportunity to challenge and examine alternative results obtained through forensic methods.³⁷ Only by

³¹ T. Pop, *Metode de investigare în criminalistică*, Ed. Universitară, Cluj-Napoca, 2017, p. 157

³² A. Boroi, *Drept procesual penal. Partea generală*, Ed. C.H. Beck, București, 2020, p. 213.

³³ V. Gheorghe, *Probele în procesul penal. Teorie și jurisprudență*, Ed. Hamangiu, București, 2019, pp. 168–172.

³⁴ D. Banciu, A. Boroi, *Tratat de criminalistică*, Ed. Universul Juridic, București, 2022, pp. 145–148.

³⁵ Curtea Europeană a Drepturilor Omului, *Guide on Article 6 of the European Convention on Human Rights – Right to a fair trial (criminal limb)*, Strasbourg, 2022.

³⁶ M. Dobrinioiu, „Validarea tehnologiilor biometrice în ancheta penală”, *Revista Română de Drept Penal al Afacerilor*, nr. 3/2022, pp. 61–63.

³⁷ L. Ristea, M. Dobrinioiu, „Utilizarea tehnologiilor în activitatea de urmărire penală”, *Revista de Criminologie, Criminalistică și Penologie*, nr. 2/2020, pp. 94–96.

guaranteeing these procedural guarantees can the fair and effective nature of the criminal procedure be ensured.

In conclusion, the evidentiary value of forensic methods does not depend exclusively on their technological efficiency, but, above all, on methodological rigor and legal compliance. Evidence obtained with sophisticated scientific means, but through illegal or abusive means, is susceptible to exclusion from the process, thus nullifying the usefulness of the criminal investigation.³⁸

5. CHALLENGES AND PROSPECTS

The application of forensic investigation methods in the criminal prosecution phase generates a series of significant challenges, which aim not only at the efficiency of the investigation, but also at compliance with legal norms and ethical principles of the criminal process.³⁹ These challenges derive from the increasing complexity of criminal acts, the diversification of criminal methods, especially in cyberspace, as well as the difficulty of advanced communication analysis software, biometric algorithms or digital surveillance platforms, often exceeding the speed of reaction of legal regulations, which can lead to legal uncertainty and uneven application of criminal procedure rules.⁴⁰

The extensive application of forensic methods based on the processing of personal data – such as fingerprints, DNA profiles, facial recognition or online browsing history – generates significant risks in terms of the protection of privacy. The lack of clear and uniform standards for the storage, access and use of these data can encourage abuse, compromise the validity of evidence in court and undermine the rigorous legal qualification of the facts.⁴¹

A practical problem in the management of these methods is the insufficient level of training of investigators in the use of modern technical and scientific tools. Without continuous training and interdisciplinary collaboration with experts in IT, bioinformatics and applied forensics, the risk of misinterpretations and poor application of the methods is high.⁴²

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At the transnational level, more and more criminal investigations require international cooperation, especially in cases of organised crime, human trafficking, terrorism or cybercrime. Bodies such as Europol, Interpol or the European Judicial Network facilitate the exchange of information and good practices, but the effectiveness of collaboration depends on the harmonisation of national legislation and mutual trust between authorities.⁴⁴

³⁸ V. Cioclei, *Drept penal. Partea generală*, Ed. Universul Juridic, București, 2018, p. 271.

³⁹ D. Banciu, A. Boroi, *Tratat de criminalistică*, Ed. Universul Juridic, București, 2022, pp. 154–157.

⁴⁰ V. Gheorghe, *Problele în procesul penal*, Ed. Hamangiu, București, 2019, p. 178.

⁴¹ G. Cojocaru, „Criminalistica digitală – între inovație și vulnerabilitate”, *Revista Dreptul*, nr. 6/2021, pp. 123–127.

⁴² M. Dobrinioiu, „Datele biometrice și limitele probatorii”, *Revista Română de Drept Penal al Afacerilor*, nr. 4/2022, pp. 55–57.

⁴³ A. Boroi, *Drept procesual penal. Partea generală*, Ed. C.H. Beck, București, 2020, pp. 231–232.

⁴⁴ L. Ristea, M. Dobrinioiu, „Instrumente de cooperare internațională în investigarea penală”, *Revista de Criminologie, Criminalistică și Penologie*, nr. 1/2021, pp. 84–86.