



THE FORENSIC ESSENCE AND SCIENTIFIC PARADIGMS OF INVESTIGATING TRANSNATIONAL DRUG TRAFFICKING

Shomirzaev Sakhodulla Khasanboyevich

Associate Professor of the Department of Preliminary Investigation and Inquiry at the Law Enforcement Academy of the Republic of Uzbekistan, Doctor of Philosophy in Law (PhD), Docent

Article history:	Abstract:
Received: 11 th June 2026 Accepted: 10 th July 2026	This article examines the essence and specific characteristics of transnational drug trafficking, provides a forensic characterization based on its global and technological dimensions, and outlines its interconnected elements. It also describes a number of key conceptual approaches and paradigms currently employed in modern scholarship regarding the methodology for investigating crimes associated with transnational drug trafficking.
Keywords: narcotics, smuggling, criminal organization, global network, Darknet, crypto-assets, cyberspace, transit corridors, drug trade, conceptual approaches, paradigm.	

Among global challenges, the illicit trafficking of narcotic drugs exhibits a distinct expansionary trend, posing a severe threat to any state and society. Furthermore, the perpetration of drug smuggling through modern methods is reshaping transnational drug trafficking into new dimensions.

"As humanity entered the 21st century, the rapid processes of globalization, which influence various spheres of social life, have generally unlocked new opportunities. Concurrently, these shifts encompass a distinctly negative dimension: they contribute to modern threats—such as organized crime, international terrorism, and illicit drug trafficking—assuming a transnational character and evolving into 'borderless problems'.¹

According to the "World Drug Report 2026" released by the United Nations Office on Drugs and Crime (UNODC), drug traffickers are exploiting technologies and global instability to introduce novel drugs, experiment with different illicit trade routes and methods, and aggressively push into new markets.²

"Transnational drug trafficking is a highly organized, globally networked, and technologically advanced transnational criminal activity that fundamentally differs from the mere sale or smuggling of narcotic drugs. The forensic essence of transnational drug trafficking lies in a system of criminal acts

perpetrated by syndicates—stable transnational criminal enterprises—across the territories of at least two or more states. These acts involve the illicit manufacture, transit, storage, and distribution of narcotic drugs, psychotropic substances, or their precursors, executed through the utilization of digital technologies, covert financial channels, and advanced methods of operational secrecy.

From a forensic perspective, the critical and distinctive characteristics of the concept of transnational drug trafficking include the following:

- First, transnational drug trafficking operates as a global networked structure capable of ensuring the remote distribution of roles within the criminal enterprise. Unlike traditional criminal groups, in transnational drug trafficking, the manufacturers of the substance (e.g., laboratories), transit coordinators, financial flow managers (via hawala or crypto-assets), and distributors may not even know one another. The command centers are frequently situated in a different state. Transnational drug crime represents a specific manifestation of transnational organized criminal activity. Currently, there is not a single country that remains entirely immune to it.³

- Second, it rapidly and deeply integrates into technological transformations, as vividly evidenced by the utilization of the Darknet and cyberspace. Modern

¹ Д.Мусаев. Глобальные тенденции в сфере наркотрафика. Research and Development. ISSN 3030-3281. Volume 2, Issue 12 (2025), 91-6.

²

https://www.unodc.org/unodc/ru/press/releases/2026/June/unodc-world-drug-report-2026_-global-drug-markets-transforming-rapidly-as-technology--novel-drug-types-and-instability-present-traffickers-with-new-opportunities.html

³ П.В. Тепляшин, Е.А. Фёдорова. Транснациональная наркопреступность: понятие, признаки, детерминанты и отдельные направления противодействия // Криминология: вчера, сегодня, завтра. 2017. №3 (46)



drug trafficking is no longer confined to concealing illicit substances from customs control at border checkpoints; it is also facilitated through international courier services and postal shipments. Currently, traffickers efficiently exploit Darknet marketplaces as well as hidden segments of instant messaging applications such as Telegram, Wickr, and others.

- Third, the system features sophisticated financial secrecy, linking even digital traces through complex trajectories. For the purpose of money laundering—legitimizing criminally obtained proceeds—traffickers extensively utilize not only traditional banking institutions but also crypto-transactions, decentralized finance systems known as DeFi, and shell companies spanning multiple jurisdictions. This significantly complicates the detection of financial trails during investigative processes.

Fourth, as infrastructure and cross-border logistics advance, drug syndicates execute their smuggling operations by masquerading under legitimate international freight projects, transit corridors, and supply chains. In doing so, organized criminal groups exploit corrupt networks as well as systemic loopholes in border and customs controls.

Most significantly, transnational drug trafficking, characterized by the features outlined above, is substantially funded, with both its capacity and ultimate objective centered entirely on wealth accumulation. This is precisely why the President of the Republic of Uzbekistan, Shavkat Mirziyoyev, in his address to the participants of the international forum on "Combating Transnational Drug Threats to Ensure Public Health and Security" held on April 20, 2026, emphasized: *"Drug trafficking cannot be defeated with weapons, but by cutting off its funds. If we choke off its financial arteries, this evil will disintegrate on its own."*⁴

From a forensic perspective, solving and investigating these crimes cannot be confined solely to the actions of a single state's law enforcement agencies; rather, it demands a comprehensive approach that integrates international cooperation, operational-investigative activities, and advancements in digital forensics.

Given that transnational drug trafficking possesses a uniquely global and technological nature, its forensic characterization is elucidated through the following system of interrelated elements:

1. Methods of Commission and Concealment, and Their Transit Routes

This element serves as the core that dictates all other components comprising transnational drug

trafficking. The smuggling of narcotic drugs is executed through both traditional-covert and modern-digital methods.

- Traditional-covert methods manifest in the concealment of drugs within specially equipped hidden spaces of motor, air, or rail transport, including deliberately constructed secret compartments, structural voids, or beneath legitimate cargo. Additionally, transporting substances across borders by concealing them on the human body, strapping them to body parts, or ingesting them constitutes one of these methods.

- Modern-digital methods involve sending narcotic drugs through international courier services and postal channels, concealed inside high-tech equipment or household items. In these types of methods, the utilization of Darknet platforms and digital ordering systems is currently surging. The interdependence of these methods lies in the fact that they are used to identify transit corridors—namely, the direct transport routes—as well as the auxiliary tools deployed. It must be acknowledged that the more digitized a method is, the more digital the nature of the traces becomes.

2. The System of Material and Digital Traces

The aggregate of traces left after a crime is committed serves as the primary source of evidence during the initial stage of an investigation. Among them, physical-material traces are crucial; in this category of crimes, drug samples, packaging materials, tools used for concealment, and impressions—including fingerprints, customs seals, and transport stamps—hold distinct significance. Furthermore, IP addresses, VPN and proxy server logs, cryptocurrency transaction hashes, Darknet logins and accounts, and correspondences stored on social media servers constitute digital and cyberspace traces. Financial transfers and transactions within the bank accounts of shell companies serve as financial traces. The method of commission—for instance, digital ordering and postal shipping—generates a vast volume of digital and financial traces alongside material ones. This requires the investigator to possess specialized knowledge not just in general forensics, but specifically in digital forensics.

3. Distinct Organizational Structure and Distribution of Roles Within Criminal Groups

Crimes associated with transnational drug trafficking are inherently not committed by a single

⁴ <https://president.uz/uz/lists/view/9118>



individual; they represent the activities of organized groups with a complex hierarchy.

- At the apex of these groups are the organizers and financiers, who plan the activities of the criminal enterprise and fund laboratories or raw materials.

- Next, logistics personnel chart transit routes and devise schemes to bypass customs control or cross unmonitored state borders.

- Perpetrators and couriers handle the physical transport of narcotic drugs and the processing of postal shipments.

- IT specialists who maintain Darknet sites, along with individuals responsible for laundering or cashing out cryptocurrencies, fulfill the roles of technical and financial facilitators.

The strict remote distribution of roles and the fact that group members do not know one another significantly complicate the process of detecting and proving these crimes.

4. Forensic Characteristics of the Subject of the Crime

The types of narcotic drugs, psychotropic substances, and precursors that constitute the subject of the crime are evolving over time. Alongside traditional narcotics such as opium, heroin, and cannabis, the share of synthetic drugs produced in laboratory conditions and New Psychoactive Substances (NPS) has increased sharply. The physicochemical nature of the subject dictates its detection methods, concealment techniques, and even the geography of smuggling.

5. Time, Place, and Circumstances of the Crime

Since the smuggling process encompasses multiple jurisdictions, the concept of "place" assumes a global character, potentially including the site of manufacture, transit states, and the final consumption destination. Corrupt environments and gaps in the control systems of law enforcement agencies shape the operational circumstances under which the crime is committed.

In contemporary science, a number of key conceptual approaches and paradigms are being applied to the methodology of investigating crimes related to transnational drug trafficking. Traditional approaches are proving inadequate in the face of today's global and digital threats. Consequently, a necessity has arisen to construct a new scientific methodology by integrating modern conceptual approaches. Based on conceptual reports from the UN and international organizations, scientific schools within forensic science and criminal procedure, and scholarly works from foreign research and academic databases,

several paradigms—representing a system of new fundamental theoretical-methodological views, principles, and values—can be outlined:

- **The Systemic-Structural Paradigm:** According to this approach, transnational drug trafficking is studied not merely as an isolated crime, but as a globally structured system comprised of interconnected elements. In this context, the manufacturing, logistics, financing, and distribution networks of drug trafficking are considered to function like a single organism rather than in isolation. The investigation process advances the concept of dismantling the entire system rather than apprehending a single perpetrator.

- **The Digital Transformation Paradigm:** This signifies a transition from the traditional classical forensics paradigm to the modern digital era. As the crime scene has shifted from physical borders into cyberspace, it implies that investigative planning must also shift toward a "digital footprint and cyber-activity" paradigm, alongside the collection of written and physical evidence.

Transnational organized crime operates not as a strictly centralized pyramid, but as a self-organizing dynamic network. This can be understood through the Synergetic and Network Approach. Organized criminal groups are capable of rapidly altering their structures and transit corridors. Consequently, investigative strategies must not remain static; instead, they should be grounded in a synergetic approach that operationally tracks and forecasts networked crimes.

In today's globalized world, it is widely acknowledged that a single state's law enforcement agency cannot halt transnational drug trafficking on its own. The integration paradigm entails consolidating the databases of customs, border, and preliminary investigative authorities, along with international organizations such as Interpol, Europol, and relevant UN structures, into a unified digital ecosystem. This paradigm is referred to as the concept of interagency and Cross-Border Integration.

Another contemporary approach exists, the application of which has become commonplace across numerous fields: the Risk-Based Approach. This represents a modern paradigm grounded in analysis and forecasting. Accordingly, instead of being confined to post-facto crime investigation, it manages risks by preemptively detecting anomalies within logistics chains and financial flows.



Based on the aforementioned points, the following scientific and theoretical conclusions can be drawn:

Specifically, investigative planning and the formulation of prosecution strategies regarding transnational drug trafficking must be developed on the basis of new approaches. Under current conditions of globalization and digitization, transnational drug trafficking does not manifest merely as traditional smuggling perpetrated within state border zones; rather, it operates as a highly networked, remotely controlled transnational criminal system powered by digital technologies such as the Darknet, crypto-assets, and encrypted instant messengers. This necessitates a thorough revision of existing, obsolete investigative approaches and the implementation of new conceptual frameworks.

The forensic characterization of transnational drug smuggling comprises a system of inextricably linked elements: modern methods of commission and cross-border transport (either bypassing or concealing substances from customs control), an aggregate of digital and material traces, a non-hierarchical networked structure of organized criminal groups, and a system of novel synthetic substances (NPS). Each of these elements serves as a primary source of intelligence in organizing investigative activities.

It must be acknowledged that systemic and cybernetic frameworks are vital in this direction. In combating transnational drug trafficking, rather than limiting efforts to identifying isolated perpetrators, it is highly appropriate to apply a methodology that studies criminal processes as an integrated network based on systemic-structural, synergetic, and cyber-forensic approaches. Ultimately, these theoretical principles and scientific approaches constitute the scholarly foundation for uncovering and dismantling this category of crimes.

illegal trafficking of Amphetamine." *SSP Modern Law and Practice* 3.3 (2023): 1-14.

REFERENCES

1. Morelato, Marie, et al. "Forensic intelligence framework—Part I: Induction of a transversal model by comparing illicit drugs and false identity documents monitoring." *Forensic science international* 236 (2014): 181-190.
2. Esseiva, Pierre, et al. "Forensic drug intelligence: an important tool in law enforcement." *Forensic science international* 167.2-3 (2007): 247-254.
3. Shapovalov, Valentyn. "Interdisciplinary legal, forensic and pharmaceutical, forensic and chemical, forensic and narcological, forensic and toxicological, criminal and legal study of the