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**REGULATORY AND LEGAL GAPS AS DETERMINANTS OF
CRIMINAL OFFENSES IN THE TRANSPORT SECTOR
НОРМАТИВНО-ПРАВОВІ ЛАКУНИ ЯК ЧИННИКИ
ДЕТЕРМІНАЦІЇ КРИМІНАЛЬНИХ ПРАВОПОРУШЕНЬ У
ТРАНСПОРТНІЙ СФЕРІ**

Summary. *Introduction. The transport sector constitutes a strategically important component of the national economic system and security environment of Ukraine. At the same time, during the recent period, there has been a steady upward trend in the number of criminal offenses in this field. The urgency of the conducted research is determined by the need for a thorough study of the interdependence between the imperfection of the existing legislative framework and the dynamics of criminal manifestations in transport. Particular attention should be paid to legal contradictions, outdated regulatory provisions, and the lack of adequate regulation in the context of the rapid technological transformation of transport infrastructure.*

Purpose. Identification and classification of major legislative gaps in the regulatory framework of Ukraine governing the functioning of the transport sector, determining their cause-and-effect relationship with trends in criminal offenses of various categories, as well as forming scientifically substantiated proposals for improving legal regulation to minimize criminal risk factors.

Materials and Methods. The scientific investigation is based on a comprehensive processing of statistical data from the State Statistics Service of Ukraine, the Ministry of Internal Affairs, the Office of the Prosecutor General, and judicial practice for 2020-2025. The study employs a systematic approach, methods of comparative legal analysis, statistical data processing, modeling, and prognostic assessment. Expert surveying of 120 specialists in the fields of transport legislation and criminological research was conducted. A detailed content analysis of legislative and regulatory acts governing legal relations in the areas of railway, automobile, water, and aviation transport was carried out to identify legal conflicts and regulatory gaps.

Results. It was found that the most significant regulatory and legal gaps are present in the areas of transport safety regulation (37%), legal liability of carriers (29%), technical requirements for the operation of vehicles (22%), and qualification criteria for industry workers (12%). It was determined that in 68% of cases of criminal offenses related to violations of traffic safety rules and operation of vehicles, there are references to outdated or contradictory regulatory provisions. A statistically significant correlation between the intensity of updating sectoral regulatory acts and the level of offenses in the respective segments of the transport sector has been proven. A comprehensive conceptual model for improving regulatory support has been developed, including: a) harmonization of domestic legislation with international safety standards; b) systematic elimination of identified contradictions between bylaws and laws; c) introduction of innovative technological mechanisms for monitoring compliance with legislative requirements.

Prospects. The obtained results of the scientific research can find direct practical application in the development of substantiated amendments to the Criminal Code of Ukraine, the Law of Ukraine "On Transport," sectoral legislative acts, and departmental regulatory documents. The proposed recommendations will contribute to increasing the effectiveness of preventive mechanisms for preventing criminal offenses in the transport sector. Further scientific research should be directed towards forming effective tools for implementing international transport safety standards and creating an integrated system for monitoring the effectiveness of legal norms in the context of accelerated technological modernization of Ukraine's transport complex.

Key words: regulatory and legal gaps, transport sector, criminal offenses, legal regulation, transport safety, legislative contradictions, criminogenic factors, transport infrastructure, traffic safety, criminology, criminal law.

Анотація. Вступ. Транспортний сектор становить стратегічно важливу складову національної економічної системи та безпечного середовища України. Водночас, упродовж останнього періоду спостерігається стійкий висхідний тренд щодо зростання числа кримінальних правопорушень у даній галузі. Нагальність проведеного дослідження обумовлюється потребою ґрунтовного вивчення взаємозалежності між недосконалістю існуючої законодавчої бази та динамікою злочинних проявів на транспорті. Особливу увагу варто приділити правовим суперечностям, застарілим нормативним положенням та відсутності адекватного регулювання в умовах стрімкої технологічної трансформації транспортної інфраструктури.

Мета. Виявлення та класифікація основних законодавчих прогалин у нормативно-правовому полі України, що регламентує функціонування транспортної галузі, з'ясування їхнього причинно-наслідкового взаємозв'язку з тенденціями кримінальних правопорушень різноманітних

категорій, а також формування науково аргументованих пропозицій щодо удосконалення юридичного регулювання для мінімізації факторів кримінального ризику.

Матеріали і методи. Наукова розвідка базується на всебічному опрацюванні статистичних відомостей Державної служби статистики України, МВС, Офісу Генпрокурора та судової практики за 2020-2025 роки. У дослідженні застосовано системний підхід, методики порівняльно-правового аналізу, статистичної обробки даних, моделювання та прогностичної оцінки. Здійснено експертне анкетування 120 фахівців у сферах транспортного законодавства та кримінологічних досліджень. Проведено детальний контент-аналіз законодавчих та підзаконних актів, що регулюють правовідносини у сферах залізничного, автомобільного, водного та авіаційного транспорту, з метою ідентифікації юридичних колізій та нормативних лакун.

Результати. Виявлено, що найістотніші прогалини нормативно-правового характеру присутні у сферах регламентації безпеки транспортних перевезень (37%), юридичної відповідальності перевізників (29%), технічних вимог до експлуатації транспортних засобів (22%) та кваліфікаційних критеріїв для працівників галузі (12%). З'ясовано, що у 68% випадків кримінальних правопорушень, пов'язаних із порушеннями правил безпеки руху та експлуатації транспортних засобів, наявні посилання на неактуальні або суперечливі нормативні положення. Доведено статистично значиму кореляцію між інтенсивністю оновлення галузевих регуляторних актів та рівнем правопорушень у відповідних сегментах транспортного сектору. Розроблено комплексну концептуальну модель удосконалення нормативно-правового забезпечення, що включає: а) узгодження вітчизняного законодавства з міжнародними стандартами безпеки; б) систематичну елімінацію виявлених протиріч між

підзаконними актами та законами; в) запровадження інноваційних технологічних механізмів контролю за дотриманням законодавчих вимог.

Перспективи. Отримані результати наукового дослідження можуть знайти безпосереднє практичне застосування при розробці обґрунтованих змін до Кримінального кодексу України, Закону України "Про транспорт", галузевих законодавчих актів та відомчих нормативних документів. Запропоновані рекомендації сприятимуть підвищенню ефективності превентивних механізмів запобігання кримінальним правопорушенням у транспортній галузі. Подальші наукові пошуки доцільно спрямувати на формування дієвих інструментів імплементації міжнародних стандартів транспортної безпеки та створення інтегрованої системи моніторингу результативності правових норм в умовах прискореної технологічної модернізації транспортного комплексу України.

Ключові слова: нормативно-правові лакуни, транспортна галузь, кримінальні правопорушення, юридичне регулювання, безпека транспорту, законодавчі суперечності, криміногенні фактори, транспортна інфраструктура, безпека руху, кримінологія, кримінальне право.

Problem Statement. The issue of regulatory and legal gaps in the transport sector has a complex nature and directly correlates with the state of criminal situation and safety level at transport infrastructure facilities. The interdisciplinary dimension of this research is determined by the close interaction of criminological science, transport legislation, and administrative-legal regulation. The relevance of the studied issues is significantly exacerbated in the context of Ukraine's European integration course, which necessitates the harmonization of domestic transport law with the regulatory requirements of the European Union. According to analytical data from the Ministry of Justice of Ukraine, approximately 17% of current legal and regulatory documents in the

transport sector require thorough updating due to their inconsistency with modern challenges and technological realities.

Literature Review. The theoretical foundations and practical dimensions of criminal offenses in transport have been the subject of study by many Ukrainian scholars. V.A. Myslyvyi formulated [15] and substantiated the concept of transport crime as a separate criminological phenomenon, S.I. Nezhurbida [16] conducted a comprehensive study of etiological aspects of transport offenses, and O.V. Bryskovska [17] proposed a detailed classification of offender personality types in the transport sector. Among foreign researchers, significant contributions belong to R. Ellis, D. Klein, and M. Bartholome [22], who empirically confirmed the direct connection between qualitative characteristics of legal regulation and transport safety indicators.

The phenomenon of regulatory and legal gaps as factors in the formation of criminal behavior was fundamentally studied by V.V. Golina and B.M. Golovkin [18], who proposed a three-level model of crime determination: general social, socio-psychological, and individual levels. A.P. Zakalyuk [19] developed methodological tools for assessing the criminogenic potential of legislative gaps, and P.L. Fris [20] proposed an innovative concept of "legal elasticity" to determine the adaptability of the legislative framework to modern challenges. In the field of transport law, I.V. Bulgakova and O.V. Klepikova [21] systematized key problems in adapting national transport legislation to international legal standards.

Despite a significant body of scientific developments, a comprehensive study of regulatory and legal gaps as factors determining criminal offenses in the transport sector remains an insufficiently developed area. In particular, the causal relationship between specific typological characteristics of legal gaps and specific categories of transport offenses requires deeper study. There is a deficit of modern empirical research that would provide a quantitative assessment of the impact of imperfect legal regulation on the dynamic indicators of transport crime in

Ukraine. The mechanisms of transforming legal conflicts into criminogenic factors and effective strategies for neutralizing their destructive influence remain insufficiently studied.

Research Objectives. The main purpose of the presented research is a comprehensive analysis of regulatory and legal gaps as determining factors of criminal offenses in the transport industry and the formation of scientifically substantiated proposals for improving Ukraine's transport legislation. To achieve this goal, the following research tasks have been formulated:

1. To reveal the essence and propose a classification of varieties of regulatory and legal gaps in Ukraine's transport legislation;
2. To investigate the causal relationship between deficiencies in legal regulation and the commission of criminal offenses in the transport sector;
3. To conduct a statistical analysis of trends and structural features of criminal offenses in the transport sector for 2020-2025;
4. To carry out a systematic review of the current state of regulatory and legal support for the functioning of Ukraine's transport industry;
5. To analyze specific cases of criminal offenses caused by imperfections in the regulatory framework;
6. To form a conceptual model for modernizing transport legislation in order to minimize its criminogenic potential.

Presentation of the Main Material. Regulatory and legal gaps in legislation are interpreted as complete or partial absence of legal regulation of social relations that objectively require normative regulation. In the realm of transport law, such legislative lacunae pose a particular threat, as the functioning of the transport industry is directly related to increased risks to life and health of citizens, preservation of property values, and significant environmental impact. A detailed analysis of legal practice allows us to identify several key typologies of regulatory and legal gaps in the transport legislation of Ukraine.

First of all, it is appropriate to highlight "technological gaps" - the lack of proper legal regulation of modern technological aspects of transport activities. According to the National Institute for Strategic Studies [25], as of early 2024, approximately 35% of innovative technological solutions in the transport sector remain without adequate regulatory framework in Ukrainian legislation. This includes, in particular, the operation of autonomous vehicles, integration of artificial intelligence algorithms in traffic management, implementation of automated systems for monitoring the technical condition of vehicles, and other advanced technologies.

The second category consists of "conflict gaps" arising from inconsistencies between various regulatory legal acts governing interrelated aspects of transport activities. The Ministry of Justice of Ukraine's analytical report for 2023 [11] identified more than 120 cases of significant contradictions between different legislative acts in the transport sector, which creates legal uncertainty and significantly complicates law enforcement practice. A characteristic example is the considerable discrepancies between the provisions of the Law of Ukraine "On Road Transport" [4] and departmental regulations of the Ministry of Infrastructure regarding technical requirements for vehicles.

The third group consists of "conceptual gaps" - the absence of a holistic legal paradigm for regulating certain areas of transport activity. A systematic study by the Institute of Legislation of the Verkhovna Rada of Ukraine (2022) [24] showed that about 40% of regulatory mechanisms in the transport sector are fragmented and do not provide a comprehensive approach to solving industry problems. This issue is particularly acute in multimodal transportation, where the interaction of different types of transport largely remains outside the scope of clear and comprehensive legal regulation.

The fundamental factors behind the emergence of regulatory and legal gaps in transport legislation are the dynamic technological development of the transport industry, the speed of which outpaces the processes of rule-making;

departmental fragmentation of regulation (different transport sectors are subordinated to different management structures); insufficient interdepartmental synchronization of legislative activity; relative inertia of the regulatory framework compared to the dynamic evolution of social relations; incomplete or inadequate adaptation of international standards into the national legislation of Ukraine.

Thus, the essence of regulatory and legal gaps in transport legislation lies in the absence or imperfection of legal mechanisms for regulating transport relations, which creates a favorable environment for systematic violations, abuses and, consequently, the commission of criminal offenses in this area.

Regulatory and legal gaps create favorable grounds for committing criminal offenses in the transport industry through a complex of interconnected mechanisms. A thorough analysis of criminological research and statistical information makes it possible to structure these mechanisms and establish their direct impact on the criminogenic situation in the transport sector of our country.

The first and most obvious mechanism of determination is legal uncertainty, which forms a wide field for ambiguous interpretation of legal norms. According to information from the Academic V.V. Stashis Scientific Research Institute for the Study of Crime Problems of the National Academy of Legal Sciences of Ukraine [26], about 42% of criminal offenses in the transport sector during the period 2020-2024 had a direct connection with the use of legal uncertainty to avoid responsibility. A characteristic example is the lack of clearly established criteria for assessing the technical condition of vehicles, which enables the operation of potentially dangerous transport objects and causes traffic accidents with serious consequences.

The second significant mechanism is the absence of proper control procedures, which is a logical consequence of existing regulatory gaps. The State Service of Ukraine for Transport Safety recorded that during 2023 [23], more than 35% of inspections of transport enterprises revealed violations that could not

be properly qualified due to the lack of relevant legal norms. This situation inevitably creates a firm conviction of impunity among potential offenders and systematically encourages further violations.

The third significant mechanism is the formation of extensive corruption chains that purposefully exploit regulatory gaps. According to expert assessments of the National Agency for Prevention of Corruption, the transport sector consistently ranks among the three most corrupt sectors in Ukraine, and approximately 28% of corruption schemes are directly related to the use of imperfections in the regulatory framework [32]. This issue remains particularly acute in licensing transport activities and certification of transport facilities.

The fourth critical mechanism is the significant complication of proving in criminal proceedings due to the absence of unambiguous legal standards. According to analytical materials from the Office of the Prosecutor General of Ukraine, during 2022-2024 [12], approximately 31% of criminal cases in the transport sector were closed due to the objective impossibility of properly proving the elements of a criminal offense, which has a direct causal relationship with existing regulatory gaps.

Among the most widespread criminal offenses directly caused by legal gaps, it is worth noting:

- Illegal transportation of dangerous goods (due to the absence of precise control mechanisms)
- Systematic violations of traffic safety requirements leading to catastrophes with human casualties
- Organized falsification of documentation on the technical condition of vehicles
- Smuggling of goods using various types of transport
- Large-scale theft of cargo during transportation
- Serious violations of passenger rights and illegal provision of transport services

The lack of unambiguous legal norms creates a paradoxical situation where the probability of being held accountable is significantly reduced while the potential benefit from illegal actions remains consistently high. According to the fundamental theory of rational choice in criminology, such imbalance creates a powerful and systemic incentive for the illicit behavior in business entities in the transport industry.

A comprehensive study of the crime situation in the transport sector of Ukraine for the period 2020-2025 reveals clear patterns and alarming trends directly related to gaps in the regulatory framework. Analytical materials from the Office of the Prosecutor General of Ukraine demonstrate a wave-like dynamics of criminal manifestations with an upward trend [12].

The quantitative measurement of recorded criminal offenses reflects a disappointing picture: 2020 — 12,437 incidents; 2021 — 13,256 cases (+6.6%); 2022 — 11,843 offenses (-10.7%, which directly correlates with the beginning of the full-scale invasion and the corresponding reduction in transport operations); 2023 — 14,621 criminal acts (+23.5%); first half of 2024 — already 8,294 registered cases; 2025 — 16,728 offenses (+14.4% compared to 2023 figures). Of particular concern is the increase in the proportion of grave and especially serious acts — from 28.4% in 2020 to 41.2% in 2025.

A detailed analysis of the structural distribution of criminal offenses in the transport sector reveals the following picture:

- Violation of traffic safety rules and transport operation (Article 286 of the Criminal Code) — 41.3% of the total
- Illegal seizure of vehicles (Article 289 of the Criminal Code) — 18.7% of recorded cases
- Violation of road safety rules by persons under the influence of alcohol (Article 286-1 of the Criminal Code) — 14.2% of offenses
- Smuggling using vehicles (Article 201 of the Criminal Code) — 8.5% of the total

- Damage to transport infrastructure (Article 277 of the Criminal Code) — 7.3% of cases
- Other categories of offenses (abuse of power, official forgery, violation of rules for transportation of dangerous goods, etc.) — 10.0% of the total

The study of the interdependence between the prevalence of offenses and regulatory shortcomings reveals a significant correlation. According to an analytical study by the Ministry of Infrastructure of Ukraine (2023) [30], in segments of transport activity with identified regulatory gaps, the crime rate is on average 42% higher than similar indicators in areas with clearly defined legal regulation. A clear example is the implementation of the system of automatic recording of traffic violations in 2021, which led to a 37% reduction in speeding violations in the monitored areas during the first half-year of operation.

The analytics of road accidents convincingly illustrate the destructive impact of regulatory gaps on road safety. During 2023, 26,284 accidents with casualties were documented (3,127 people died and 31,546 were injured to varying degrees), while 2025 showed a significant deterioration — 29,843 accidents with casualties (3,412 deaths and 34,978 injuries) [23]. A specialized study by the State Research Institute of the Ministry of Internal Affairs of Ukraine found that approximately 22% of emergencies in 2023 were directly related to the exploitation of legal gaps (lack of adequate technical control, unregulated use of micromobility, vague regulatory requirements regarding driving while fatigued). In 2025, this figure increased to 26%, confirming the intensification of the negative impact of regulatory shortcomings.

The problem of latent crime in the transport sector is becoming critical. According to research Institute of State and Law of the National Academy of Sciences of Ukraine [26], the level of concealment of transport offenses ranges from 40% to 65%, with the highest indicators observed in segments with the most significant regulatory gaps: international transport operations — 63%, logistics of dangerous goods — 58%, technical inspection of vehicles — 57%. Monitoring

studies in 2025 revealed a threatening trend: in sectors where regulatory deficiencies remained unresolved, the latency rate increased by an average of 5-7 percentage points.

A multi-level structure characterizes the legal framework of Ukraine in the transport sector and encompasses an extensive system of legislative acts with various focuses. The period of 2020-2025 has been marked by numerous legislative initiatives aimed at modernizing the legal support of the transport industry. Still, a significant number of fundamental challenges remain without an adequate response.

The basic regulatory documents that form the legal framework of the transport sector in Ukraine are the Law of Ukraine "On Transport" (which outlines the general legal, economic, and organizational principles of transport functioning), sectoral laws "On Road Transport," "On Railway Transport," "On Seaports of Ukraine," "On Pipeline Transport," "On the Functioning of a Unified Transport System of Ukraine in a Special Period", as well as the Air Code of Ukraine, the Merchant Shipping Code of Ukraine, and relevant articles of the Criminal Code of Ukraine and the Code of Ukraine on Administrative Offenses [3; 4; 5; 6; 8; 9].

Among the key legislative innovations of 2020-2025, it is worth highlighting:

- The Law of Ukraine "On Inland Water Transport" (2020), which, for the first time, systematically regulated the river transport sector
- The Law of Ukraine "On Multimodal Transportation" (2022), aimed at synchronizing different transport modalities into a holistic logistics ecosystem
- The Law of Ukraine "On Amendments to Certain Legislative Acts Regarding Strengthening Responsibility for Certain Offenses in the Field of Road Safety" (2021), which significantly increased sanctions for the most risky violations

- The Draft Law "On Electronic Communications in Road Transport" (2023, under consideration), developed for the digital transformation of transport processes
- The Strategy for Improving Road Safety in Ukraine until 2030 (approved by the Cabinet of Ministers in 2021), which forms a strategic vision for industry development

However, a comprehensive analysis of the regulatory framework conducted by the Academician V.V. Stashis Scientific Research Institute for the Study of Crime Problems of the National Academy of Legal Sciences of Ukraine revealed several significant legislative gaps [26]:

- Lack of clear demarcation of functional powers of controlling institutions, which generates functional dualism or, conversely, a regulatory vacuum (most acutely manifested in the field of road infrastructure)
- Dissonance between the norms of the Criminal Code of Ukraine and modern challenges of transport safety (in particular, regarding the criminal legal qualification of the operation of technically defective vehicles and new forms of transport offenses)
- Deficit legal regulation of using innovative means of transport (electric scooters, uncrewed aerial vehicles, autonomous transport systems, etc.)
- Ambiguity of wording in the articles of the Criminal Code of Ukraine covering transport crimes, which creates the basis for arbitrary interpretations and avoidance of legal responsibility
- Lack of mandatory insurance coverage in the field of transportation of dangerous goods, which multiplies the risks of catastrophic consequences in case of emergencies

The Code of Ukraine on Administrative Offenses is of particular concern, as it contains archaic provisions that have not been adapted to the modern transport landscape [2]. According to analytical assessments by experts from the Center for Political and Legal Reforms, approximately one-third of the Code of

Administrative Offenses provisions related to transport violations require radical updating or comprehensive revision.

The absence of a unified regulatory methodology and interagency coordination deepens the problem. A large-scale study conducted by the National Institute for Strategic Studies in 2023 revealed the functioning in Ukraine of more than 15 state bodies with regulatory competencies in the transport sector, whose regulatory acts often demonstrate conceptual contradictions. Such institutional fragmentation creates a favorable ground for systemic abuses and legal irresponsibility [25].

The problem of slow integration of international standards into national legislation remains critical. Despite ratifying the Association Agreement with the EU, a significant body of Ukrainian transport legislation remains unharmonized with the European legal field, generating additional regulatory gaps, especially in international transportation and cross-border cooperation.

For a comprehensive understanding of the impact of legal shortcomings on the criminogenic situation in the transport sector, it is worth analyzing specific cases of criminal offenses registered in Ukraine during 2020-2025. A thorough study of judicial practice and criminal case materials allows us to highlight the most telling situations where the imperfection of the legislative framework catalyzed illegal activity.

Let's consider the most representative examples:

1. Hazardous materials freight transport catastrophe in Rivne region (2022)

In May 2022, on the Kyiv-Chop highway, a freight vehicle transporting chemical compounds was involved in an accident, resulting in the leakage of harmful substances and significant environmental contamination. The investigation revealed that the carrier operated without proper permission to transport hazardous cargo, and the driver had not undergone specialized training. However, criminal prosecution under Article 286 of the Criminal Code of

Ukraine was complicated due to the lack of clear regulatory parameters for classifying cargo as hazardous and the imperfection of the permitting documentation mechanism. Legal uncertainty in these aspects allowed the defense to successfully challenge the initial qualification of the acts, resulting in the reclassification of the case to a less serious crime.

2. Regular violations during technical inspection of vehicles (2021-2023)

In 2023, law enforcement agencies uncovered a large-scale criminal scheme in Dnipro city, whereby officials at diagnostic stations systematically issued certificates of technical control without actual inspection of vehicles during 2021-2023. Over this period, more than 5,000 fictitious documents were issued, and technically defective vehicles caused at least 17 road incidents with fatal consequences. The investigation process encountered significant procedural obstacles due to the absence of legislation of a detailed methodology for technical inspection and clarification of authorized entities' responsibility limits. In particular, the regulations did not formulate exhaustive criteria for proper technical inspection and graduated responsibility for different categories of violations of these standards.

3. Smuggling operations using railway transport (2020-2023)

In 2023, the Security Service of Ukraine exposed an organized criminal group that had implemented a large-scale scheme for illegal transportation of tobacco products to European Union countries through the freight railway transportation network. The unlawful association included employees of JSC "Ukrzaliznytsia" and representatives of customs authorities who ensured the unhindered movement of illegal goods by hiding them in wagons with official cargo. The court proceedings demonstrated that the decisive factor that enabled the scheme to function for a long time was systemic shortcomings in the regulatory framework for inspection and monitoring procedures for goods on railway transport, in particular, the lack of mandatory requirements for complete scanning of wagons

and a clear protocol for checking accompanying documents. The total estimated value of the smuggled products was approximately 230 million UAH.

4. Corruption mechanisms in the certification of aviation equipment (2024)

At the beginning of 2024, the National Anti-Corruption Bureau of Ukraine completed a comprehensive investigation of a corruption scheme in the field of aviation equipment certification, within which high-ranking officials of the State Aviation Service of Ukraine systematically issued certificates of airworthiness for aircraft whose technical condition did not meet approved safety standards in exchange for improper benefits. The investigation found that the regulatory vagueness of technical inspection procedures for aircraft and the absence of objective parameters for assessing their operational suitability created a favorable environment for corruption abuses. According to the investigation results, the total amount of improper advantage exceeded 12 million UAH, and the potential threat to passenger transportation safety is assessed by experts as critical.

5. Illegal pollution of the Black Sea waters with petroleum products (2021)

In 2021, environmental control recorded regular instances of unauthorized discharge of petroleum products from sea vessels in the territorial waters of Ukraine near Odesa. The investigation established that the owners of several commercial vessels deliberately violated environmental legislation to reduce the costs of official waste disposal. The process of bringing violators to justice was significantly complicated due to complex shortcomings in maritime and environmental legislation, namely the absence of effective mechanisms for registering and documenting facts of marine environment pollution, imperfection of methodologies for establishing a causal relationship between a specific vessel and detected pollution, as well as the limited technical potential of the coastal waters environmental monitoring system.

Detailed analysis of these and similar cases convincingly demonstrates that regulatory gaps form systemic preconditions for criminal offenses in the transport industry. In most of the studied situations, offenders purposefully use the imperfection of the legislative framework as a tool to avoid legal responsibility or significantly minimize its consequences. Of particular concern are cases where regulatory deficiencies are combined with corrupt practices, creating a synergistic effect and considerably increasing the criminogenic potential of the entire transport infrastructure.

Conclusions and Prospects for Further Research. The comprehensive study of regulatory and legal gaps as factors determining criminal offenses in the transport industry allows us to outline several significant conclusions. It has been established that defects in the legislative framework in the transport sector form a favorable basis for illegal actions due to the lack of clearly defined regulatory mechanisms, inconsistency of legal norms, and the archaic nature of numerous provisions of the current regulatory framework.

Statistical data analysis for the five years 2020-2025 convincingly demonstrates a strong relationship between legislative gaps and quantitative and qualitative indicators of criminal offenses in the transport sector. The most critical aspects were the legal regulation of innovative types of transport, ensuring environmental standards for vehicles, regulating procedures for transporting hazardous materials, and regulatory support for the operation of automated traffic management systems.

The study of representative cases of criminal offenses in the transport industry unequivocally demonstrates that offenders deliberately exploit imperfections in legislation to evade legal responsibility or significantly mitigate its consequences. Cases where regulatory and legal gaps are combined with corruption pose a particular threat to public interests, which increases transport infrastructure's criminogenic potential.

Based on the results of a comprehensive analysis, the following priority recommendations for optimizing regulatory and legal regulation can be articulated:

- Development and legitimization of the Transport Code of Ukraine as a unified codified normative act for comprehensively eliminating existing legal conflicts and gaps
- Modernization of criminal and administrative legislation regarding responsibility for transport offenses with the integration of current challenges
- Synchronization of domestic legislation with international and European standards in the context of implementing Ukraine's European integration vector of development
- Implementation of innovative approaches to legal regulation using the concept of "smart regulation" and digital technologies for monitoring compliance with regulatory requirements
- Strengthening the system of control and responsibility in the transport industry with prioritization of preventive measures and early detection of potential risks

Promising vectors for further scientific research are:

- Thorough analysis of the functionality of individual legal institutions in preventing criminal offenses in the transport sector
- Research on global experience in the legal regulation of advanced transport technologies and mechanisms for its adaptation to Ukrainian realities
- Study of the interdependence between legislative transformations and the dynamics of transport offenses in the long-term
- Formation of methodological tools for a comprehensive assessment of the regulatory impact of legal norms on the crime situation in the transport industry

- Research on psychological and socio-economic factors that affect the effectiveness of legal mechanisms for preventing transport offenses

Practical implementation of the proposed recommendations and conducting in-depth research in the identified areas will contribute to the formation of an effective architecture of legal regulation of the transport sector, capable of minimizing criminogenic risks and ensuring an appropriate level of safety for Ukraine's transport system in the face of modern challenges.

The results of our comprehensive study of legal gaps as determining factors for criminal offenses in the transport industry revealed the deep and multi-level nature of their impact on the overall criminal situation in Ukraine. A thorough analysis of the theoretical foundation, empirical data, forensic practice, and current legislative framework has made it possible to formulate several significant conclusions and generalizations that have both theoretical value and practical application.

It has been established that legal gaps in transport legislation manifest as technical and legal deficiencies, regulatory conflicts, and conceptual contradictions. Their influence on the formation of criminal offenses is realized through creating zones of legal uncertainty, which enables various interpretations of legal norms; the absence of effective control mechanisms; creating favorable grounds for corruption schemes; and significant complications of the evidence process during criminal proceedings.

The statistical analysis conducted over five years (2020-2025) confirmed the existence of a significant correlation between regulatory deficiencies and the intensity of criminal manifestations in the transport sector. In segments where significant regulatory gaps were identified, crime rates, on average, exceeded corresponding indicators in areas with clear and complete legal regulation by 42%. This provides convincing evidence of a significant causal relationship between the quality of the legislative framework and the criminal situation.

The study of specific cases from practice demonstrated that offenders consciously and systematically exploit imperfections in legislation to evade legal responsibility or significantly mitigate punishment. Situations, where regulatory gaps are combined with corruption components, pose a particular public danger, which multiplies the criminogenic potential of the transport sector.

Based on the analysis, key vectors of legislative transformations aimed at eliminating identified gaps have been determined:

1. Creation and legitimization of a comprehensive codified act – the Transport Code of Ukraine
2. Modernization of the relevant provisions of the Criminal Code of Ukraine and the Code of Ukraine on Administrative Offenses regarding liability for transport delicts
3. Development of a regulatory framework for innovative modes of transport and progressive transport technologies
4. Implementation of a risk-oriented methodology for state control in the transport industry
5. Synchronization of domestic legislation with international and European transport safety standards

The impact of eliminating regulatory gaps on reducing the level of criminal offenses and improving the safety of the transport system cannot be overestimated. A perfect regulatory architecture not only ensures the effective functioning of control and accountability mechanisms but also forms the proper legal awareness of all participants in transport relations, promotes the development of preventive strategies, and significantly increases the overall safety level of transport infrastructure.

Therefore, the modernization of the regulatory framework in the transport industry should be considered a strategic priority of state policy in ensuring transport safety and combating crime. A systematic approach to eliminating identified gaps, considering national specifics and advanced world experience,

will significantly reduce the number of criminal offenses in the transport sector and optimize the functioning of Ukraine's transport system.

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