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THE EVOLUTION OF INTERNATIONAL TRANSPORT LAW: ARTIFICIAL INTELLIGENCE, MULTIMODAL TRANSPORTATION, AND ISSUES OF NATIONAL IMPLEMENTATION

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Abstract: This article is devoted to a deep scientific and theoretical analysis of the global integration of transport law, multimodal transportation, and digital transformation processes based on the European Union's experience in forming a single transport space. The study highlights the EU's directive and precedent (CJEU) governance models, the jurisdiction of digital platforms (Uber), and mechanisms for resolving collision problems in trans-regional transport corridors. The author scientifically substantiates the need to legitimize AI-driven autonomous vehicles and protect human rights under conditions of predictive labor monitoring. In conclusion, conceptual proposals are developed for the immediate implementation of these advanced international standards and flexible (incorporative) approaches into the national transport legislation of the Republic of Uzbekistan.

Keywords: transport law, European Union, trans-regional corridors, multimodal transportation, digital transformation, artificial intelligence, autonomous vehicles, predictive labor monitoring, Uzbekistan.

Introduction

The formation of a single transport area within the European Union constitutes one of the most complex, yet profoundly successful, legal phenomena of regional economic integration. Initially conceptualized within the Treaty of Rome (1957) as a mechanism to ensure the free movement of goods, services, capital, and persons, transport policy has progressively evolved into an autonomous and comprehensive branch of law. A defining characteristic of the European Union is that the regulation of transport relations is not confined to conventional interstate agreements; rather, it effectuates rigorous legal integration through directives and regulations that possess binding legal force and supremacy over national legislation [1].

It is submitted that the success of the European Union lies precisely in its ability to strike an optimal balance between the unification and approximation of legal norms. Whereas regulations lay down provisions endowed with direct effect, directives afford Member States the requisite discretion to select the national legal mechanisms for attaining the prescribed objectives.

The jurisprudence and case law of the Court of Justice of the European Union (CJEU) serve as the driving force behind the formation of the regional transport area. Notably, judicial decisions have played an unprecedented role in the liberalization of air transport and the dismantling of national monopolies. In his research, M. Bartlik conducts an in-depth analysis of the impact of EU law on the regulation of international air carriage, scientifically substantiating that judicial review and the competences of EU institutions constitute the primary mechanisms for overcoming national protectionism and establishing a unified competitive environment[2].

Indeed, absent such jurisprudence, the relinquishment by European states of policies artificially shielding their national flag carriers and the practical implementation of the "Single European Sky" concept would have remained unattainable[3].

Another critical trajectory involves the advent of digital transport services and their collision with traditional regulatory regimes. With the proliferation of digital platforms such as Uber, European transport law has encountered novel legal conflicts. As observed by the French scholar M. Bénéjat-

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Guerlin, the landmark ruling of the CJEU regarding Uber qualified such platforms not merely as intermediaries or "information society services," but rather as activities inherently linked to the transport sector, thereby subjecting them to stringent national and regional regulatory frameworks[4]. Irrespective of the advancement of digital technologies, they must not serve as instruments to circumvent human safety and the fundamental rights of passengers; consequently, it is submitted that this CJEU ruling has established a pivotal precedent within global transport law.

The legal integration of the European Union within the transport sector has transcended its internal borders, evolving into a potent instrument of foreign policy and geoeconomic influence. As elucidated in the research of N. F. Kislitsyna, the EU extends international legal cooperation in the transport sector to neighboring regions via initiatives such as the Eastern Partnership and the Euro-Mediterranean Partnership, thereby systematically amplifying the extraterritorial reach of European standards[5]. Through such mechanisms, the European Union effectively elevates its internal norms into global standards that assert binding force upon third states.

Methods

Consequently, the single transport area of the European Union and its legal integration processes serve as a unique methodological laboratory for legal scholars and jurists worldwide. It is submitted that the efficacious utilization of this advanced paradigm is imperative for the development of novel transregional transport corridors and the harmonization of national legislation between the Republic of Uzbekistan and the states of Central Asia.

In the context of the contemporary global economy, transregional transport corridors manifest not merely as aggregations of geographical routes and infrastructural facilities, but rather as complex legal phenomena that consolidate disparate national jurisdictions, customs territories, and economic areas. The intensification of transnational trade relations imposes upon transport systems the mandate of seamless freight delivery across continents, predicated on the "door-to-door" principle. Establishing the foundational legal framework for such global logistics chains necessitates multi-level integration and the robust harmonization of regulatory norms. Drawing upon the scholarly contributions of A. A. Kasymova, contemporary transregional transport corridors are progressively evolving into a fundamental constituent of global infrastructure. Their development, therefore, dictates the necessity of establishing a mechanism for the coordination of unified international agreements, the unification of transport standards, and the enhancement of transparency in the application of law[6].

Results

The legal nature of multimodal (mixed) carriage constitutes one of the most contentious issues within the ambit of international transport law. The utilization of disparate modes of conveyance—such as road, rail, and maritime transport—within a single carriage operation engenders significant fragmentation concerning matters of liability and legal regulation. As observed by scholars Yu.V.Mishalchenko and D.V.Semenov, multimodal transportation represents the highest form of international integration, encompassing the consolidation of diverse transport modes into a unified transport-technological system [7]. In practice, however, each transport mode is governed by its own autonomous conventions—for instance, the CMR Convention for road transport, SMGS or COTIF for rail carriage, and the Hague-Visby Rules for maritime carriage—thereby generating legal impediments that preclude the establishment of a uniform liability regime.

The conflict of jurisdictions and the apportionment of liability along transregional corridors represent the most delicate aspects of the application of law. For instance, in a freight operation originating in Uzbekistan via road carriage, subsequently transferred to rail transport, and ultimately loaded onto maritime transport at the Port of Gdańsk, localizing the exact stage where the damage occurred is occasionally impossible. As noted by the English scholar Y.Baatz, the Rotterdam Rules,

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while endeavoring to explicitly demarcate the obligations between maritime performing parties and the carrier, are equally applicable to contractual, tortious, and other causes of action [8]. It is submitted that, although these Rules are instrumental in limiting the liability of performing parties, they frequently conflict with the mandatory provisions (peremptory norms) of the CMR Convention regulating intra-European inland carriage.

The role and influence of regional integration organizations in the legal structuring of transregional corridors constitute another pivotal trajectory of international transport law. In his comparative legal analysis, Professor V.S.Belykh highly evaluates the European Union's experience in establishing a single transport area, scientifically substantiating that this model may serve as the optimal paradigm for the unification of transport legislation within other integration frameworks [9]. Consequently, the enhancement of the legal regime governing transregional transport corridors linking Central Asia and Europe, particularly the Baltic ports route, constitutes a strategic priority for Uzbekistan. Achieving this objective requires more than the mere piecemeal adaptation of national transport legislation to international conventions. It necessitates the enactment of a comprehensive national legislative act on multimodal carriage, the statutory legitimization of artificial intelligence-based intelligent management systems in transit procedures, and the elevation of labor guarantees for transport sector personnel to the level of European standards.

One of the most intricate, multifaceted, and rapidly evolving domains of contemporary transport law is the digital transformation of transport systems and the implementation of intelligent transport systems (ITS). At present, global logistics and passenger conveyance systems rely not solely upon mechanical conveyances and traditional infrastructure, but rather upon Big Data, cloud technologies, blockchain, and, fundamentally, artificial intelligence algorithms. A legal analysis of the experience of foreign jurisdictions in this sphere reveals that the primary focus is directed toward the regulatory recognition of technical innovations and the statutory mitigation of the novel socio-economic risks they precipitate. This ongoing process necessitates a fundamental reappraisal of the traditional dogmas of transport law and the formulation of a next-generation regulatory framework on a global scale.

The deployment of artificial intelligence-driven autonomous (driverless) vehicles on public networks has presented global jurisprudence with an exceedingly complex conflict-of-law challenge regarding the determination of the subject of liability. In her dissertation research, relying on the perspectives of European Union and United States scholars (e.g., L. Lutz, J. Kingston), M.A. Bazhina has scientifically substantiated the necessity of incorporating novel concepts, such as "autonomous vehicle" and "artificial intelligence liability," into the conceptual apparatus of transport law [10]. However, it is submitted that the traditional presumption of fault is inapplicable to traffic accidents involving autonomous vehicles. In this context, we posit that the doctrine of strict liability—which imputes liability not to the carrier, but rather to the software developer or system operator—must be codified at the level of international conventions.

The process of digitalizing transport systems exerts a direct and profound impact not only on technical facilities and logistics chains but also on the human factor operating within the sector, specifically concerning the enhancement of occupational health and safety frameworks. Advanced practices from foreign jurisdictions demonstrate that artificial intelligence is extensively utilized not solely for vehicle navigation, but also for predictive occupational monitoring to oversee the physiological condition of drivers, pilots, and locomotive engineers. These systems employ neural networks to analyze an employee's fatigue level, cognitive attention, heart rate, and health fluctuations in real-time, thereby averting prospective accidents. However, from a jurisprudential standpoint, such an innovative approach strictly necessitates the safeguarding of employees' privacy (personal inviolability) and the protection of their labor rights against algorithmic discrimination. It is submitted

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that, although AI-driven predictive occupational monitoring serves as an unparalleled instrument for enhancing transport safety, national and international legislation must enact rigorous peremptory constraints. These mandatory limitations are imperative to ensure that such systems do not subject employees to artificial exploitation or infringe upon their socio-labor guarantees.

Discussion

The implementation of Intelligent Transport Systems (ITS) necessitates not only technological preparedness on the part of the State but also a robust institutional and legal framework. Relying upon the European experience, Ukrainian scholars S. I. Gritsenko and I. A. Vinichenko observe that the successful deployment of traffic management, parking enforcement, and security systems dictates the adoption of strategic initiatives at the state level, coupled with a precise delineation of the competences among transport, telecommunications, and internal affairs authorities [11]. Advancing this premise within the scholarly discourse, it is posited that while ITS infrastructure ought to be developed on the basis of public-private partnerships (PPP), retaining exclusive regulatory oversight over citizens' geospatial movement data harvested by such systems solely within the purview of competent state authorities remains the paramount criterion of security.

Doctrinal approaches regarding the codification of artificial intelligence and digital technologies within the realm of transport law exhibit notable divergence. Certain legal scholars advocate for the promulgation of a novel, specialized "Digital Transport Code" encompassing all innovation-driven legal relations, whereas others favor the method of incorporation—specifically, the integration of relevant amendments into existing conventions and statutory acts. Our analysis demonstrates that the rate of technological obsolescence significantly outpaces the legislative process. Consequently, rather than enacting rigid and cumbersome codes, the most optimal and rational methodological approach—analogous to the regulatory paradigm of the European Union—is the adoption of framework directives, relegating the regulation of technical specifications to flexible secondary legislation (delegated administrative acts).

Concurrently, the digital transformation of transport systems and the integration of artificial intelligence impose urgent regulatory mandates upon the transport legislation of the Republic of Uzbekistan. Predicated on an analysis of the regulatory achievements and deficiencies of foreign jurisdictions in this domain, it is submitted that the immediate implementation of statutory norms within the national transport legislation is imperative. Such implementation must be expressly directed toward recognizing the legal validity of electronic transport documents, licensing the operations of digital transport aggregators and platforms, establishing regulatory sandboxes (testing environments) for autonomous vehicles, and granting statutory recognition to predictive monitoring systems within the occupational health and safety frameworks for transport sector personnel.

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