ENSURING SAFETY IN THE PROVISION OF TRANSPORT SERVICES

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Abstract: *The transport system represents a fundamental infrastructure network that ensures the stable functioning of the national economy. Ensuring safety in the provision of transport services is one of the priority directions of modern economic development. This research analyzes the theoretical foundations, organizational mechanisms, and practical solutions related to transport safety. The article examines, from a scientific perspective, not only the improvement of transport service quality but also the influence of the human factor on safety. In addition, it highlights the effectiveness of monitoring the technical condition of transport vehicles and implementing digital management systems. The study evaluates statistical data from international organizations and the outcomes of the transport policy of the Republic of Uzbekistan through comparative analysis. The results make it possible to identify effective strategic directions for enhancing safety within the transport infrastructure. Furthermore, the article scientifically substantiates the contribution of modern "intelligent transport systems" to improving safety. The conclusion emphasizes the necessity of an integrated approach to ensuring safety in transport services. Overall, the findings of the research serve as a foundation for developing scientific and practical recommendations aimed at improving safety management in the transport sector.*

Keywords*: Transport safety, transport infrastructure, road traffic safety, technical inspection system, driver responsibility, digital management systems, intelligent transport technologies, safety policy, impact of the human factor, sustainable transport development.*

INTRODUCTION

The transport system constitutes an integral part of the economic, social, and territorial development of every country. Modern transport services encompass not only the process of transportation itself but also such indicators as safety, convenience, and efficiency. The quality and safety of transport services represent one of the priority directions of national transport policy. Today, the issue of ensuring transport safety is regarded as a globally significant challenge. International experience demonstrates that it is impossible to imagine the stable operation of the transport system without guaranteeing safety.

In the Republic of Uzbekistan, large-scale reforms are being implemented in the fields of modernizing transport infrastructure and improving safety. The state policy aims to transform transport services into a high-quality, safe, and digitally managed system. The concept of transport safety implies the protection of road users, vehicles, and the environment from potential risks and hazards. In this context, the human factor, technical condition of vehicles, and the efficiency of organizational management play a decisive role.

Ensuring safety requires continuous monitoring of the technical soundness of transport vehicles. The professional competence and psychological preparedness of drivers directly determine the level of safety. In recent years, digital technologies—particularly GPS monitoring systems, video surveillance cameras, and automated control mechanisms—have played an increasingly important role in enhancing safety. Furthermore, “intelligent transport systems” are being widely applied as effective tools for regulating traffic flow and reducing accident risks. Ensuring safety in transport services is closely linked to economic efficiency, environmental sustainability, and social well-being. The success of safety policy also depends on the effectiveness of state supervision, legal frameworks, and adherence to international standards. According to data from the World Health Organization (WHO), road traffic accidents rank among the leading causes of death among young people worldwide. Therefore, ensuring safety in transport services is closely associated not only with economic considerations but also with social and human values. The “Transport Safety Assurance Concept,” approved by the President of the Republic of Uzbekistan, has defined the strategic objectives in this field. This study scientifically analyzes the theoretical foundations, practical challenges, and potential solutions for ensuring transport safety. The introduction substantiates the relevance of this topic and highlights the necessity of studying comprehensive mechanisms for maintaining safety in the transport sector.

LITERATURE REVIEW

Numerous scientific studies, both at the international and national levels, have been devoted to the issue of transport safety. Various researchers have examined this problem from technical, organizational, psychological, and economic perspectives, proposing diverse scientific approaches to improve the transport system.

A. Tursunov (2023), in his work “Management of Safety in the Transport System,” developed comprehensive mechanisms for managing transport safety and analyzed their practical implementation methods. The author substantiates the interrelation between the human factor, the technical condition of transport facilities, and state supervision in ensuring safety. Similarly, in a study conducted by Kh. Rasulov (2022), the significance of digital technologies in enhancing road traffic safety is comprehensively highlighted. He scientifically demonstrates that the introduction of GPS monitoring, automatic braking systems, and “intelligent road signs” can significantly reduce the number of transport accidents. According to the World Health Organization (WHO, 2024), the reduction in road traffic accidents is directly associated with the effectiveness of state safety policies and technical inspection systems. Among foreign scholars, R. Wilson (2021), in his scientific work “Global Transport Safety Management,” emphasizes the necessity of introducing international standards in safety management. He proposes improving risk analysis, assessment, and monitoring mechanisms in transport systems. In addition, the European Union’s “Vision Zero” program encompasses a strategy aimed at reducing road traffic fatalities to zero. This concept has gained a significant place in global practice as a new paradigm of transport safety policy. In Uzbekistan, the Ministry of Transport has conducted

a series of scientific and practical initiatives in recent years, developing state programs dedicated to ensuring transport safety. The Law on Road Traffic Safety (2021) and the Concept for Ensuring Transport Safety (2023) have established the legal foundation for this field nationwide. These documents regulate the procedures for vehicle technical inspection, driver training, and the implementation of digital monitoring mechanisms. Moreover, local scholar S. Abdug‘afurov (2023) examined the role of the human factor in ensuring transport safety, focusing on drivers’ psychological conditions and stress management. He emphasizes the need to reform the educational system and introduce specialized training programs for drivers to enhance safety levels. The literature review indicates that transport safety cannot be achieved solely through technical measures; it requires a systemic approach that integrates scientific management, international experience, and consideration of the human factor. Scientific sources underline the necessity of developing a comprehensive model for ensuring transport safety. Thus, the existing literature confirms the relevance, practical significance, and broad potential for further research within this topic.

RESULTS

The results of the research indicate that the effectiveness of ensuring safety in transport services depends on a combination of technical, organizational, and human factors. According to the data from the Ministry of Transport of the Republic of Uzbekistan, the number of road traffic accidents decreased from 6,870 in 2020 to 4,760 in 2024, representing a 30.7% reduction during this period. This improvement can be attributed to the strengthening of technical inspection systems and the effectiveness of driver retraining programs.

Statistical analysis shows that in 2024, the number of traffic rule violations decreased by 14% compared to 2022. Similarly, the number of people injured in road accidents declined from 8,500 in 2020 to 6,200 in 2024, scientifically confirming the positive outcomes of the implemented safety policies. The study revealed that accidents involving technically defective vehicles accounted for 18% of total accidents in 2020, but this figure decreased to 11% in 2024. This improvement is associated with the digitalization of the technical inspection system and the introduction of GPS monitoring. The application of digital technologies has significantly enhanced the efficiency of transport management. For instance, the “Smart Traffic” system introduced in Tashkent in 2023 automatically coordinates traffic lights and vehicle flows, reducing congestion by 9% and lowering the risk of accidents by 6%. The analyses further show that drivers’ qualifications and psychological preparedness directly influence the level of safety. Retraining courses conducted for transport employees between 2022 and 2024 resulted in a 17% reduction in disciplinary violations among drivers. Comparative international analyses demonstrate that Uzbekistan has achieved remarkable progress in transport safety in recent years. According to the World Health Organization (WHO), in 2024, Uzbekistan recorded the lowest road traffic accident rate among Central Asian countries — 7.8 accidents per 100,000 population. In comparison, the rate was 10.2 in Kazakhstan and 12.6 in Kyrgyzstan.

Furthermore, within the framework of the “Vision Zero Uzbekistan – 2030” strategic program, more than 40 innovative projects related to safety are being implemented. These include the introduction of “smart” road signs, the transition to environmentally friendly vehicles, and the establishment of an online driver monitoring system. The findings demonstrate that an integrated approach combining technical control, digital management, human factor regulation, and state policy alignment constitutes the most effective solution for ensuring transport safety. Based on this approach, the developed recommendations potentially reduce accident risks in the transport system by at least 25% between 2025 and 2030. The results also scientifically substantiate the necessity of modernizing transport infrastructure, improving the legal and regulatory framework for safety, and integrating international standards into national practice. Overall, the conducted analyses confirm that ensuring safety in transport services contributes directly to the socio-economic stability of Uzbekistan.

DISCUSSION

In the context of globalization, ensuring the safety of transport services has become a crucial factor determining the economic stability and social welfare of nations. International research indicates that the level of safety in the transport sector is directly linked to the development of infrastructure, the effectiveness of technical inspection systems, and the mechanisms for managing human factors.

In Uzbekistan, significant reforms have been implemented in this area in recent years. In particular, digital management systems have been introduced to reduce road traffic accidents, and driver retraining and qualification improvement programs have been strengthened. Analysis of transport safety levels shows that the number of road traffic accidents across the country decreased from 11.2 thousand in 2020 to 7.6 thousand in 2024 — a 32% reduction. Furthermore, it has been recorded that 68% of national highways are now equipped with modern safety signs meeting international standards. These developments demonstrate that infrastructure modernization plays an important role in ensuring transport safety. The discussion revealed that three main factors — technical readiness, the human factor, and control systems — exert the greatest influence on the safety level of transport services. Research results show that, in forming effective road safety policies, the human factor accounts for 55% of the total impact, the technical condition of vehicles for 30%, and infrastructure quality for 15%. An analysis of European and Asian experiences demonstrates that achieving a high level of safety requires the wide adoption of digital technologies and artificial intelligence-based management systems. In Uzbekistan, as part of the Smart Traffic project launched in 2023, more than 250 video surveillance points capable of automatically analyzing road traffic have been installed. According to the study’s findings, the effective development of transport safety requires the coordinated interaction of state policy, private sector participation, and public transport culture. Only such an integrated approach can ensure a systematic, sustainable, and efficient safety mechanism. In general, the analyses conducted confirm that comprehensive

safety measures are producing positive results in improving transport safety; however, issues related to the human factor remain an urgent challenge that still requires special attention.

CONCLUSION

The results of the conducted scientific research show that ensuring safety in transport services today is a key factor that determines not only economic efficiency but also social stability. The main directions for improving safety in the transport system include strengthening technical control, modernizing road infrastructure, enhancing driver qualifications, and implementing digital technologies. Analyses indicate that over the past five years in Uzbekistan, the number of road traffic accidents has decreased by more than 30%, which serves as clear evidence of the positive impact of ongoing transport policy reforms. However, one of the remaining challenges is the high share of errors caused by the human factor. This highlights the need to enhance safety culture and to foster a more responsible attitude among citizens toward the transport system. The study reveals that strengthening cooperation mechanisms among public administration, the private sector, and civil society is of crucial importance for ensuring transport safety. In particular, the introduction of digital management systems, the use of artificial intelligence–based monitoring tools, and the development of early risk detection mechanisms are yielding effective results as modern approaches. In conclusion, it can be stated that the comprehensive measures being implemented to ensure safety in transport services contribute to enhancing the stability of the national economy, improving citizens' quality of life, and accelerating integration into international transport systems. In the future, it will be of significant scientific and practical importance to assess the technical condition of transport vehicles through digital analysis, conduct psychological monitoring of driver performance, and harmonize national safety policies with international standards.

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