

Application of innovative technical and technological solutions in various types of transport

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Abstract

The use of various types of vehicles, whether in the transportation of goods, in the transportation of passengers, or in the use of personal vehicles, is known to be a waste of time, to prevent damage to goods or to ensure that passengers reach the required place at any time, as well as to cause environmental pollution, emission of harmful gases, and fuel consumption in the transportation of goods. In this regard, the application of innovative technical and technological solutions in various types of transport is inevitable and is considered a topical issue.

Considering the relevance of harmful gases in the air - especially the environment, high fuel consumption in transport systems, accidents, etc. factors, the application of innovative technical and technological solutions in various types of transport recommended by us is aimed at increasing the capabilities of various types of transport vehicles.

In modern conditions, the increasing demand for transportation and international integration require the transport system to operate more effectively and safely. In this regard, the application of innovative technology and technological solutions has become a topical issue. In general, it has been recommended to improve all regulatory aspects that limit the free competition environment for the listed types of transport within the country in order to freely enter the international transport services market [1].

Thus, the application of innovative solutions makes a significant contribution to increasing competitiveness in the transport sector, improving service quality and ensuring sustainable development, as well as to the development of the transport sector.

Keywords: Innovation, digitalization, technological solutions, green vehicles, sustainable development, innovation, intellectual, automation, safety, efficiency.

Introduction

The word transport is derived from two Latin words: trans – “from, from” and portare – “to carry”. Transport is a strategically important complex that in a certain sense determines the strength of the country.

Transport is an important economic and social activity that ensures the transportation of people, cargo and information from one place to another. In modern times, the transport system plays a major role in the economic development of countries, international trade and strengthening interregional relations. Transport systems consist of various technical means and infrastructures and are divided into

several main types: automobile, railway, air, sea, pipeline and inland water transport [2].

Public ownership, which was characteristic of the past period of our country, has been replaced by other types of ownership in practically all types of transport. If, looking at past periods, the issues of managing transport types were carried out in separate transport ministries, now this activity is concentrated in the Ministry of Transport of the Republic of Azerbaijan.

In modern times, the rapidly growing population of cities and the expansion of urbanization processes lead to greater loading of transport vehicles. This leads to environmental pollution, increased toxic gases and increased energy consumption. As one of the main components, vehicles directly affect people's daily activities. However, traditional transport methods have shortcomings such as traffic jams, environmental problems and high fuel consumption. These shortcomings lead to human health, environmental problems and inefficient resource use.

The approach to a unified transport system in market conditions has changed somewhat. The competition that has emerged today should not be perceived as pitting one type of transport against another, but as a factor that stimulates the development of transport, creating conditions for the search for new progressive transport technologies to reduce the cost of transport services and increase the speed of delivery [3].

The transport system combines four elements - the transport network of all types of transport, the composition of traffic, the labor resources of transport and the management system of all types of transport [3].

For positive and dynamic development, it is important to have a transport system that provides services in accordance with the needs. Such means of transport should be in the forefront of the city's passenger, cargo and baggage transportation needs. In terms of international experience, the problem of overloading city roads is solved by the presence of Intelligent Transport Systems (ITS) technologies that can effectively manage traffic and passenger transport on appropriate street-road sections without increasing traffic jams on the roads.

The Intelligent Transport Management Center also operates in Baku. The founder of the center was the successor of the Great Leader Heydar Aliyev, Honorable President Ilham Aliyev. Speaking at the ceremony, he said:

- Today is a very significant day in the history of our city. The Intelligent Transport Management System is being put into operation. A wonderful center has been created. As a result of the activities of this center, many problems of urban transport will be solved [4].

Currently, as a result of the application of modern systems, problems in terms of road safety in urban transport have decreased.

In particular, the application of innovative technical and technological solutions in the transport system plays an important role in the safe, efficient and operational management of road traffic. The increase in traffic flow in modern cities requires management systems to be more intelligent and automated.

Through innovative technologies, the movement of vehicles is monitored and controlled more effectively. The rapid development of modern technology, such as

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innovative technical solutions, digital platforms, sensors and big data analysis, provides for even higher efficiency and easier management of transport. This principle suggests and recommends reducing traffic jams, reducing environmental pollution and energy consumption. Such technologies optimize the activities of enterprises, strengthen data processing and management, and make the decision-making process more profitable.

In particular, high-quality management of urban transport, in addition to providing comfort for drivers and passengers, leads to the renewal of transport infrastructure.

The economy of the transport sector should be based on the quality indicators of transport services in terms of the application of new technologies. Therefore, first of all, the application of innovative technical and technological solutions for the transport sector should be carried out in order to develop and implement a competitive market model of transport services. The envisaged model should determine the mechanism for the modernization of transport systems, taking into account the modern advanced standards of transport services and technological solutions for ensuring quality indicators and the requirements of the legislation in accordance with the normative document.

As well as the role of various types of services in the implementation of political and economic issues in the formation of human life, the role of the services of the vehicles we use in physical terms is of particular importance. Thus, vehicles carrying goods and passengers can be seen not as objects, but as systems that form the conditions of life and economic relations.

For example, in the past, in the countries of the allied republics, and in Azerbaijan at one time, more attention was paid to the application of innovative technologies and technological directions, using scientific and technical achievements in the development of vehicles. Thus, this area has once again been confirmed as an important area.

Urban transport areas and their efficient organization directly affect the economic, social and ecological development of the city. Therefore, the application of innovative technologies in terms of planned regulation and management of urban transport is considered one of the main directions for future development.

Globalization, the increasing role of cities, the growth of urban population, the increase in the number of vehicles and pedestrians moving on highways make it necessary to apply innovative technical and technological solutions in the field of transport. Automation, alternative energy sources, digitalization are widely used in automobile, railway, sea and air transport. Vehicles with internal combustion engines and electric motors for zero emissions and fuel economy and environmental cleanliness, unmanned aerial vehicles, high-speed trains and efficient planning, regulation and management of the flow of products, services and information from the point of production to the consumer increase the safety and efficiency of the process.

Also, the concept of "green transport" has become relevant in order to eliminate environmental problems. Innovative advanced technologies allow to minimize fuel and harmful gases. Digital analysis and real-time determination of the

speed and direction of movement of people, cargo, vehicles ensure the optimization of the transport process.

It should be noted that innovative technological solutions in the field of transport are of particular importance. Modern transport systems use intelligent control systems, automated control mechanisms and digital monitoring technologies. These technologies increase the safety of vehicles, increase the efficiency of movement and allow to reduce energy consumption [5].

Problem statement

There are problems in transportation systems such as high fuel consumption, environmental pollution, and accidents. To solve these problems, it is important to improve management mechanisms by applying advanced technologies and technological solutions using scientific and technical achievements.

Main body

The introduction of an electric motor with an internal combustion engine for zero-emission and fuel-saving and ecological cleanliness in automobile transport leads to a reduction in harmful gases emitted into the atmosphere that pose a threat to human health. Intelligent transport systems (ITS) with advanced technology serve to optimize traffic, prevent traffic jams and reduce the resulting danger.

Modern navigation systems in air transport, which is a type of transport, increase efficiency. In railway transport, high-speed trains and automated signaling systems increase the efficiency of transportation. In sea transport, digital logistics platforms and automated port terminals ensure faster processing of cargo.

In particular, intelligent transport management systems (INTS) - a complex of interconnected automated systems that solve the problems of traffic management, monitoring and management of the work of all types of transport (individual, public, freight) and informing citizens and enterprises about the organization of transport services in the region - are of great importance.

In Baku, which is increasingly becoming a megalopolis, significant work has been done to develop an Intelligent Transport Management System based on more advanced and sustainable technologies. The goal is to improve the quality of service provided in this area [6]. These innovations minimize downtime and any resource losses in various types of transport.

Conclusion

My recommendations for the application of technologies, which I consider important, can be considered satisfactory. As in all areas, in the transport sector, the application of innovations, the process of analyzing and evaluating vehicles based on modern standards, and the adaptation of world experience to local conditions are of great importance.

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The application of innovative technologies and technological solutions in various types of transport creates conditions for increasing economic efficiency, protecting ecological balance and ensuring safety. In the future, the application of digital and environmentally friendly technologies will ensure the development of the transport sector.

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