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INTELLIGENT TRANSPORT SYSTEMS IN THE RUSSIAN FEDERATION: FEATURES OF ORGANIZATION AND MANAGEMENT

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Abstract

Currently, in such large Metropolitan areas as Moscow, there is a rapid development of the economy, techno parks are opened, housing is built, etc.to replace the abandoned industrial zones come modern areas with housing, offices and innovative production. All this requires the development of modern transport links, new roads and convenient interchanges, the availability of comfortable urban transport. The implementation of the new state program for the development of Moscow's transport system, adopted in 2011, prevented the onset of transport collapse. Outdated cloverleaf interchanges are changed to modern ones with directional overpasses that increase the speed of traffic flow. Instead of rings cross highways "opening" the city are created, doubles of the busiest roads are constructed; between the neighboring areas, new ligaments are created. Special attention is paid to the development of public transport. Department of transport and development of road transport infrastructure of Moscow and its subordinate institution the state institution "Center for traffic management". At the moment, the Department of transport and road infrastructure development of the city Moscow is engaged in the development of new and revision of existing projects for the development of road transport infrastructure in Moscow, carries out comprehensive control of citywide transport, the work of the subway, the functioning of taxi services and car sharing, control of Parking within the city of Moscow, private and public carriers, etc. in Addition to control and development, its most important function is transport management.

Keywords: Transport system, public transport, management, state, infrastructure, «Center for traffic management».

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1. Introduction

The transport complex of large cities is formed by many passenger and freight vehicles, their management personnel and road information and communication infrastructure (Lakhno, 2016). Intelligent transport systems use innovative developments in traffic management; provide greater safety and awareness of road users about the current traffic situation compared to other systems. In addition, these systems include information and communication technologies in the field of motor transport, infrastructure, vehicles, transport systems, as well as road traffic regulation. Can include various models, technologies and systems, for example, traffic light control systems, cargo traffic regulation, recognition of vehicle registration numbers, bridge systems, and weather information. These systems analyze huge flows of information related to the road network.

The development of intelligent transport systems mainly takes place in the Central part of the Russian Federation. For example, in Moscow, this system allows you to distribute traffic flows to avoid traffic congestion, optimize the flow of public transport, and timely inform drivers about the traffic situation. On Federal highways, such systems are mainly used on toll sections. They increase safety and reduce maintenance costs. Russia is significantly inferior to foreign countries with a high level of motorization on the main indicators of efficiency in the field of road safety (Mayorov & Dunaeva, 2015).

Today, the introduction of intelligent transport systems in the Russian Federation is one of the most effective areas. In the Russian Federation, the most developed regions for the introduction of intelligent transport systems and automated systems are the cities of Moscow and St. Petersburg.

2. Problem Statement

Now, Moscow is the largest transport hub in the Russian Federation. The area of the city of Moscow is 2561 sq. km. public transport in the city of Moscow makes more than 14 million trips per day and more than 5 billion trips per year. The population density in the city exceeds similar indicators of the largest megacities of the world. The average travel time for Muscovites to the workplace is 67 minutes, and about 20% of Moscow residents spend more than three hours on the road from home to work and back, which adversely affects the efficiency of labor and congestion of the transport system. The reasons for this situation lies in the following problems:

- insufficient development of land-based public transport, low density of the route network, lack of advantages for the movement of public transport in the traffic flow;
- weak system of chord links between the radial roads;
- absence of duplicating directions of the main radial highways, their insufficient capacity and discrepancy of parameters of highways on border of the city of Moscow and the Moscow region to planning parameters;
- insufficient level of technical condition of artificial structures and roadway on a significant length of highways of Federal and regional importance;
- lack of interchanges at different levels at intersections of the road network, including Railways and rivers;
- lack of effective traffic management system;

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- insufficient interaction of carriers serving bus routes, lack of a coordinated transportation management system that uses modern means of global positioning;

- incomplete adaptation of the transport infrastructure of the city to the needs of low-mobility groups;

- unsatisfactory condition of roads (Frolova & Kabanova, 2017).

- insufficiently effective work of carriers of various forms of ownership on transport service of passengers.

In the absence of proper measures to address these problems, by 2025, there could be almost a doubling of congestion in the transport system, and the proportion of people spending 75 minutes on public transport from home to work could rise to 30%.

3. Research Questions

A large city is a concentration of industry, cars, energy-producing enterprises that pollute the air, soil, surface and groundwater, destroy the ecosystem and make human habitation in such conditions very difficult (Kozyrev, Kabanova, Vetrova, & Medvedeva, 2019). Because of the above, it is necessary to develop public transport management and intelligent transport systems with the participation of the Department of transport and "Center for traffic management" in the following areas:

- creation of a reliable system for assessing the effectiveness of state transport development programs based on the needs of people who constantly use the road network and public transport in Moscow;

- maintaining the priority of using public transport over personal;

- empowering employees of "Center for traffic management" with mobile roadside assistance teams with the authority to design an accident, by creating an appropriate regulatory framework, which will further improve the road situation;

- budget savings, attraction of public funds, non-profit organizations to assist in the implementation of state programs for the development of transport in Moscow;

- the creation of a separate state program to improve the movement of disabled citizens, the installation of elevators at each underground pedestrian crossing, so it will allow these citizens to move better, they will be able to effectively visit important objects for them, whether it is a job, a hospital or a shop.

4. Purpose of the Study

Because of the identified problems, to propose measures aimed at overcoming the imperfections of the current legislation in terms of the division of powers between the traffic police and "Center for traffic management". To increase control over compliance with the introduction of new technologies that improve the mobility of people with limited mobility. Identify possible tools to increase financial resources for the maintenance and development of intelligent transport systems.

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5. Research Methods

The research of the organization of transport support is devoted to the works of such scientists as Kapustina, and Lymareva (2016), Merenkov (2016), Lin (2018), Kryukova et al., (2016), Pittman and Eve Day (2015), Razumova and Levina (2019), Morkovin and Sushkov (2018), Vučković et al., (2018), Wang, Xue, Zhao, and Wang (2018), Cigu, Agheorghiesei, Gavrilută (Vatamanu), and Toader (2019), Bayane and Yanjun (2017). Despite the large volume of theoretical materials on the management of intelligent transport systems, it should be noted that the problem of transport organization in Moscow is insufficiently studied.

In writing this work, various methods of scientific knowledge were used: generalization of General information contained in scientific articles on the introduction of intelligent transport systems, as well as the study of existing data on public administration in the field of transport, data analysis and the use of the extrapolation method when considering large amounts of data, practical analysis of the object of study by examining documents, observation. The empirical basis for this work was information and statistical data on the activities of "Center for traffic management".

6. Findings

Comparing the data on the results of the transport complex of Moscow and the expenditure of budget funds for these purposes, we can identify the following priorities in the development of "Center for traffic management", namely:

- effective spending of budget funds with a clear statement of objectives and the development of state programs leads to an improvement in the situation on the entire road network of the city of Moscow, and also allows you to get additional funds to the city budget;

- creation of mobile crews of the help on roads of "Center for traffic management" positively affects improvement of a road situation, it is necessary to add also to these crews and patrols opportunity to make out road accidents, to carry out measures for their prevention that should positively affect improvement of a road situation, and also to unload traffic police officers, but for this purpose development of new regulatory base is required;

- use of new information technologies, Informatization of road users, also affects in a positive way;

- priority of public transport, creation of new mobile means of transportation, helps to unload the road network of the city of Moscow;

- creation of a common Parking network with resident Parking spaces, helps to unload road traffic.

At the same time, it is necessary to amend the following legal acts:

1. Make amendments to the administrative code regarding fixing of powers on delivery of administrative penalties and registration of road traffic accidents for executive authorities of subjects of the Russian Federation connected with the organization of traffic safety;

2. To make changes to the state Accessible environment program approved by the government of the Russian Federation of March 29, 2019 N 363, about to equip all underground pedestrian crossings with elevators in all subjects of the Russian Federation, for creation of conditions of availability of visit of socially significant objects (The Accessible Environment…, 2019).

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3. Approval of a separate state program of the city of Moscow to improve the movement of disabled citizens.

7. Conclusion

Thus, it is possible to identify the main proposals for the development of transport management in the city of Moscow:

- ensuring the advantage of public transport in the implementation of passenger transport;
- ensuring the volume of passenger and freight traffic in accordance with the forecast needs;
- optimization and coordination of cargo transportation on the basis of integrated development of the transport and logistics system operating in the territory of the city of Moscow;
- optimization and development of roads in the city of Moscow;
- development of transport and road infrastructure by attracting extra-budgetary funding sources;
- use of modern traffic management systems;
- improving the quality of services provided by the transport system on the basis of effective interaction of urban, suburban and intercity transport systems;
- improvement of organizational and management activities in the field of transport;
- introduction of innovative technologies, intelligent transport systems;
- creation of a system of information support of the transport system in the city of Moscow, including monitoring and management of transport, integrating information resources into a single information space;
- reduction of negative environmental effects on the environment from the implementation of transport activities in the city of Moscow.

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