THE IMPORTANT ROLE OF INTELLECTUAL TRANSPORT SYSTEMS IN INCREASING THE ECONOMIC EFFICIENCY OF PUBLIC TRANSPORT SERVICES

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ABSTRACT

This article provides the accounts regarding the introduction of modern technologies of intelligent transport systems in urban public transport and its impact on the level of public transport services and efficiency of urban public transport in Tashkent.

Keywords: Public transport, intelligent transportation systems, traffic flow, meters, traffic lights, passenger, cost-effectiveness, economy.

Nowadays the development of the transport system, which is one of the most important sectors of the Uzbek economy, improving the quality of services in this area and the introduction of intelligent transport systems in the organization of public transport are recognized as priorities. In recent years, the growing population of cities in the country has led to a spontaneous increase in demand for public transport. Further development of this sector will improve the living standards of the urban population, prevent congestion in urban areas, as well as reduce the amount of environmental toxic gases emitted into the environment from vehicles. Improving public transport services is closely linked to the use of modern technologies.

Creating a convenient, safe, fast and reliable public transport service for passengers is one of the most pressing issues in all megacities. Even in our cities, where the population is growing rapidly, the construction of sustainable public transport is becoming a very important issue today. In order for the general population to prefer public transport to their own, and to use its services, public transport must be attractive in all respects, in terms of time, economy and convenience.

The efficiency of public transport depends on the safe and rapid flow of involuntary traffic. Intelligent transport technologies play an important role in organizing such traffic flow.

Figure 1. The advantage of using PT.

Public transport must be skilfully carried out by passengers on their way to their destinations together in a short time and safely. As shown in the table above, 38 passengers can travel from one end of the city to the other in 15 minutes on a single bus. Or 48 passengers can get there in 48 minutes by congestion in 48 private cars and by releasing more waste into the environment. (Figure 1) A bus can carry more passengers than a car from a simple comparison, as can be seen, this means that buses can meet the growing travel needs.

The growing demand for public transport indicates the need for more efficient use of existing infrastructure through the introduction of modern technologies, and planning should be based on working together with all parties. Currently, the Tashkent city JT has to operate at a loss of 30%.

For example, the population and the number of vehicles are growing in the capital. In the last 10 years, the number of cars in the city has doubled from 250,000 to 510,000. Accordingly, the transport infrastructure is being developed. New roads, bridges, subways are being built. However, the streets of the capital are overcrowded, and there are shortcomings in traffic regulation. Traffic congestion is increasing year by year. The flow of traffic and passengers through the geoinformation system was studied. There are more than 500 major intersections in Tashkent, 200 of which have low speeds. Due to the lack of parking spaces, cars are crowded in the first row of the road, impeding traffic. There is also a lack of information signs for drivers. Convenience for pedestrian and bicycle traffic is low. Based on such a comprehensive analysis, a preliminary draft master plan for the improvement of road infrastructure and public transport in Tashkent has been developed. In particular, it was calculated that the traffic order of 24 major intersections in the capital can be optimized using modern mechanisms, which

can reduce the average number of stops by 71% and time by 48%, congestion by 64%, and fuel consumption by 34%.

Today, in the example of public transport in Tashkent, the interval of buses on 79 routes is delayed by up to 30 minutes during rush hours. As a result, people prefer to use other means of transportation. today, only 33 percent of the city's public transport is used by passengers. In the capitals of developed countries, the figure is 60-70 percent. In 2019, about 3 million passengers a day will be served by public transport in the country, including buses, subways, trams, trolleybuses, more than 1.1 billion passengers a year, and 9 months of bus service. 808 million passengers, 56 million in the metro, 3.2 million in trams, and 525,000 in trolleybuses were transported for 872 billion soums. The population of the capital is 2.7 million.   [2] The number of cars in the Sahara increased to 510,000. As of May 2021, the total length of the Tashkent Metro is 59.5 km, the number of roads is 4 and the number of stations is 43. The subway carries 330,000 passengers a day on Mondays and Fridays and 150,000 on Saturdays and Sundays. 2 154 bus stops. Today, 33 percent of the city's public transport is passenger. The city has 139 routes. The city has more than 1,500 buses on more than 150 bus routes serving the population. According to this, 894,000 people today travel by public transport.

According to a survey conducted in May 2021 to study public opinion on the development of public transport in Tashkent, the number of passengers waiting at public transport stations was taken concerning their waiting times. [3] So, we calculate the total time lost below: (Diagram 1)

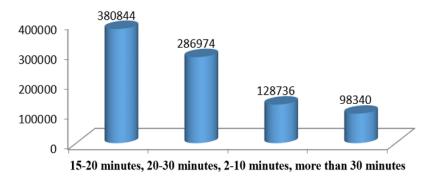### the number of passengers wasting time at stations

Diagram 1. Percentage of passengers losing different times at stations.

According to the survey, the share of passengers using public transport every day was 82.8%. Therefore, in the calculation, we calculate the total number of passengers who lost time waiting for

the PT at the stations and the total time lost in economic terms in terms of economic value: (Table 3.1)

Table 1. Loss in one day in Tashkent city PT.

Losing time interval	Passengers wasting time at stations	The average number of minutes per person	Lost time hours	Lost time at UZS	Lost time in USD
15-20	380844	17	119208	1.98 billion	186 262 $
20-30	286974	25	119568	1.99 billion	186 $ 825
5-10	128736	7	15024	249.8 mln	$ 23,475
> 30	98340	30	49170	817.5 mln	$ 76,828
TOTAL:	894 000		302970	4.007 billion	$ 473,390

* The average salary in Uzbekistan is estimated at 2.66 million. 1 USD = 10640 sums. 1 hour = 16625 sums.

In Tashkent, the average time lost by passengers using the PT service to wait at stations is 302,970 hours, which is 34 years. If we calculate the time lost per day as a result of waiting for public transport following the average hourly wage of passengers, this result shows that 4 billion 7 million sums and in this USD 473 390 are lost inefficiently.

The first step in the introduction of intelligent transport systems is to prevent congestion at intersections with the help of traffic flow detectors and smart traffic lights. Regulation of traffic flow using modern technical means, in turn, will improve the range of public transport. In addition, displaying the movement of the train at public transport stations on smart boards will save time spent by passengers waiting. Tashkent city public transport of passengers using the service time of one minute a day to save cost 247 712 500 sums saves.

In conclusion, the implementation of traffic lights and meters following the flow of traffic is important in the effective organization of public transport in the city. The development of public transport infrastructure in Tashkent will not only improve the urban transport system, but also the country's economy. At the same time, the introduction of modern technologies, which have improved the quality of public transport, will have a significant impact on the number of visitors to our country.

To create a convenient, safe, fast and reliable public transport service for passengers, it is necessary, first of all, to make full use of the potential of JT through the effective organization of public transport in Tashkent. For city dwellers to use public transport rather than their vehicles, public

transport must be attractive in all respects, in terms of time, economy and convenience. It is expedient to use the roads of developed megacities with high experience in the organization of a sustainable public transport system as a model for the development of public transport in Tashkent. According to the experience of foreign countries, the reconstruction of the material and technical base of public transport, increasing the scientific potential of the field, and the development of public transport infrastructure in Tashkent using modern technologies will not only improve the urban transport system but also improve living standards.

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