



## IMPROVING THE USE OF MARKETING TOOLS TO ENHANCE THE ATTRACTIVENESS OF PUBLIC TRANSPORT

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### ABSTRACT

*The article elaborates suggestions and recommendations on improving the use of marketing tools in increasing the attractiveness of urban passenger transport.*

**Introduction.** The experience of developed countries in the world shows that the development of public transport of the country, especially at the urban scale, serves to solve not only economic, but also social and environmental problems. Although 7.3 million people are officially employed in public transport in the world, 30-40% of the population is employed informally with transport services. According to research by the C40 organization, by 2030, 40 to 80 percent of city traffic should be done on foot, by bicycle, or by public transport. It makes it possible to reduce global warming to 1.5 degrees. This, in turn, requires improving the quality of public transport service, improving its culture, adapting it to today's times and conditions, in other words, increasing its attractiveness.

As a result of the acceleration of the urbanization process in our republic, the increase of megalopolis cities, including traffic congestion in Tashkent, the need to protect the environment, and the growth of the population, the demand and need for public transport is increasing year by year. In the development strategy of New Uzbekistan for 2022-2026, the direction "Building a people-loving state through further development of human dignity and free civil society" is defined, and at the same time, the 36th goal of the strategy is "Improving the public transport system and developing its infrastructure in the city of Tashkent and its regions." the issue is raised.

The article aims to find a solution to the problems of increasing the attractiveness of public transport, using marketing tools in its implementation, ensuring the priority of public transport in the city. The President of the Republic of Uzbekistan told the officials of the sector "fundamental reform of public transport, development of public transport in the districts and cities of our country, meeting the needs of the regions, organization of transport

infrastructure, scientific approach to transport logistics issues, in particular, study of foreign experience, training and attracting modern personnel to the sector set tasks."

**Materials and methods.** In many studies of foreign scientists, scientific conclusions have been formed on the use of marketing tools in the market of transport services. In particular, F. Kotler, K.L.-Keller, Dj. Egan, N.K. Malhotra, Dj. Barnett, S. Moriarty, E. Dichtl, H. Hershgen, K. Lovelock, J. Landrevy, J. Levy, D. Lindon, J.J. It was studied in the scientific works of Lamben and other foreign scientists.

The issues of using marketing concepts and strategies for the development of the market of passenger transport services from the scientists of the CIS countries are widely discussed in the researches of V.G. Galaburda, N.V. Karelin, A.Yu. Klinskova, S.M. Korenkova, D.A. Marinov, D. Kh. Nesterenko, A. R. Rakhmatulina, S. D. Fayzulloyeva, A. I. Sibulsky, N. V. Yakunina and others. stated.

The research works of local economists A.Sh.Bekmurodov, M.R.Boltaboyev, M.A.Ikramov, M.N.Irisbekova, M.B.Kalonov, N.M.Nabiyeva, Sh.J.Ergashkhodjayeva are aimed at creating the scientific and theoretical foundations of the service market development strategy and the use of innovative methods. Also, the marketing problems of the development of the transport system are reflected in the scientific works of B.I. found Despite the scientific research carried out by the scientists of our republic, issues related to the organization of urban public transport, the effective use of marketing tools to increase its attractiveness, and the consideration of the development features of the passenger transport service have not been systematically studied. It is this situation that serves as a basis for choosing the topic of this dissertation, defining its goals and objectives.

Scientific abstraction, logical and comparative analysis, expert assessment, statistical grouping, correlation-regression analysis, observation, survey and experimental methods were used in the research process.

**Results.** The demand for city transport services is increasing sharply due to the increase in the number of the population and a new stage in economic development. Because, in addition to the above, incomes of the population and their level of mobility are also increasing. During the research, a number of factors affecting the demand for transport services were considered. To assess the impact of these factors, data from 2011-2022 were used as a basis, and all data in the form of values were transferred to 2011 prices in order to ensure mutual comparability.

A logarithmic function was used in order to clearly express the relationship between the data as they have different measurement units. Also, the results of the comparative analysis based on different models proved that this type of model is the most suitable. Based on the available data, the following model was developed as a result of the regression analysis.

$$\ln(\text{TRS}) = -0,62 * \ln(\text{PRICE}) + 0,21 * \ln(\text{POP}) + 1,35 * \ln(\text{PCINC}) - 0,17 * \ln(\text{WAGE})$$

Here: TRS - the real value of the transport services provided in the city of Tashkent in billion soums; PRICE - the real value of the fee paid for public transport services in soums; POP - the number of residents of the city of Tashkent is one thousand people; PCINC - real income per capita in thousand soums; WAGE is the minimum wage set in the country in soums.

All coefficients of the model are adequate according to the results of Student's criterion. The coefficient of determination justifies how reliable and accurate the model is (Table 1).

All the criteria listed in the table are at the required level, justifying the high level of reliability and validity of the model.

**The results of the regression analysis carried out to assess the impact of factors on the volume of transport services in Tashkent**

Model 2: OLS, using observations 2011-2022 (T = 12)

Dependent variable: l\_TRS

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
l_PRICE	-0.616875	0.0672390	-9.174	<0.0001	**
l_POP	0.210516	0.0771473	2.729	0.0259	*
l_PCINC	1.35101	0.0666653	20.27	<0.0001	**
l_WAGE	-0.168590	0.0386573	-4.361	0.0024	**
Mean dependent var	8.007008		S.D. dependent var	0.327241	
Sum squared resid	0.005048		S.E. of regression	0.025119	
Uncentered R-squared	0.999993		Centered R-squared	0.995715	
F(4, 8)	305286.0		P-value(F)	9.21e-21	
Log-likelihood	29.61494		Akaike criterion	-51.22987	
Schwarz criterion	-49.29024		Hannan-Quinn	-51.94799	
Rho	-0.606214		Durbin-Watson	3.112152	

Based on the given results, it can be noted that this model can be used to assess the impact of population, public transport fees, real income per capita, minimum wage and draw scientifically based conclusions on transport services in Tashkent city. According to the determined coefficients of the model, the coefficient of elasticity between the amount of fees paid for public transportation services and the volume of transportation services is equal to -0.62, that is, a one percent increase in fees indicates a decrease in demand by 0.62 percent. This is economically correct, that is, when the price increases, the demand should decrease. On the other hand, an increase in the number of residents living in the city by one percent causes an increase in the demand for transport services by 0.21 percent.

It has also been confirmed that the change in the real income of the population is one of the most important factors that increase the demand for transport services. That is, one percent increase in real income per capita increases the volume of transport services by 1.35 percent. However, it should be noted that there is an inverse relationship between the minimum wage set in the country and the demand for transport services, and the elasticity coefficient is equal to -0.17. In fact, an increase in wages should increase the demand for transport services, but the research results show the opposite.

When we investigated the reasons for this, it was found that the difference between the real per capita income and the minimum wage is very large. It can be seen that the share of the informal sector in the formation of the population's income is large, therefore, the impact of the change in the minimum wage on transport services was not in line with economic laws.

In fact, transport services should be related to the volume of the gross product created in the region, but when this factor was included in the above model, the adequacy of the coefficient representing the effect of this factor was found to be inadequate according to the Student's criterion.

Because GNP has a high correlation with other factors included in the model, it causes the problem of multicollinearity. For this reason, the relationship between the transport services provided in the city and the gross regional product was considered excluding other factors. The obtained results justify the existence of a sufficient correlation between the two factors.

$$\ln^{[ro]}(TRS) = -1.84 + 0.99 * \ln^{[ro]}(YHM)$$

Here: YHM - the real value of the gross product created in the city of Tashkent in billion soums.

Based on the available data, the model and its coefficients were found to be adequate and reliable based on the established criteria (Table 2).

**Table 2**

**The results of the regression analysis carried out to assess the effect of GNI on the volume of transport services in Tashkent**

Model 20: OLS, using observations 2011-2022 (T = 12)

Dependent variable: l\_TRS

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
const	-1.84853	0.533394	-3.466	0.0061	**
l_YHM	0.986068	0.0533411	18.49	<0.0001	**
Mean dependent var	8.007008		S.D. dependent var	0.327241	
Sum squared resid	0.033490		S.E. of regression	0.057870	
R-squared	0.971570		Adjusted R-squared	0.968726	
F(1, 10)	341.7351		P-value(F)	4.63e-09	
Log-likelihood	18.26128		Akaike criterion	-32.52257	
Schwarz criterion	-31.55275		Hannan-Quinn	-32.88163	
Rho	0.078345		Durbin-Watson	1.684064	

The results of the mentioned criteria justify that it is appropriate to draw conclusions using the developed model. As a result, it can be noted that a one percent increase in the gross regional product in the region serves to increase the volume of transport services by 0.99 percent. It can be seen that the demand for transport services increases in accordance with the increase of the gross regional product. Taking this into account, changes in the demand for transport services were considered in accordance with the trends of the gross regional product in the following years.

According to the results of our research, the high-speed growth of the transport services provided in the city will be ensured in the next years. In particular, it is necessary to solve the issues of increasing the rate of growth in passenger transport, expanding the possibilities of the types of transport in this direction, organizing them based on the requirements of the times, and optimizing the logistics system. In our opinion, taking into account the traffic jams and problems arising in the logistics system, it would be appropriate to expand the possibilities of public transport, in particular, to effectively use the possibilities of the metro, to reconsider the potential of bus routes and their passenger transportation. Also, solving the problems of ensuring their route graph and speed of movement is one of the problems waiting to be solved in this regard.

**Conclusion.** As a result of the conducted scientific research, the following conclusions were formed and scientific proposals and practical recommendations were developed.

1. We see that the rate of growth of the population of Tashkent is increasing by an average of 2% every year, comparing the period of 2011-2022. This leads to a natural increase in the population's demand and need for transport, an increase in the level of traffic jams and the number of accidents on the roads, as well as an increase in the level of environmental pollution and the consumption of natural resources.

2. In order to implement the use of marketing tools in public transport, it is considered appropriate to determine the target audience and introduce marketing tools based on the potential of the representatives of this audience. It is suggested that the main purpose of

using marketing tools in urban passenger transport is to increase the attractiveness of public transport by determining the needs of the population and increasing the quality of transport.

3. Based on the specifics of public transport, the principles of safety, timely (based on the established schedule) and speedy transportation, harmony, i.e. compliance with the established procedures, provision of information and reliability, and principles of universality are suggested in the effective organization of services.

4. As a passenger transport service, only transportation is considered, that is, such gross product indicators are measured by the volume of passenger transportation, passenger turnover. Such indicators have traditionally been used to evaluate the performance of passenger transport organizations. Services include all types of labor, i.e. individual consumer value produced, natural power, science, education, health care, etc. If we analyze passenger transportation indicators according to statistics for 2011-2022, excluding the pandemic period, it has a growth rate every year, which motivates the development of the concept of identifying the needs of the population and offering quality service in public transport.

5. In developed countries, the organization of public transport services is carried out by local authorities. Private cars are the main competitor of public transport, their share in Germany, France, Italy and others is 75 percent. In the USA, this indicator is more than 90 percent.

According to the information given on the website of the "World Economic Forum", the transport systems of 60 major cities of the world were studied. It takes into account criteria such as the availability of public transport, stops, stations, as well as railway infrastructure for urban electric transport.

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