



Article

## Improvement of the Passenger Transportation Service System in the Republic of Karakalpakstan

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**Abstract:** A full of analysis of the current condition of the passenger estate system in Republic of Karakalpakstan. The article identifies factors that influence the quality of service in ensuring the transportation process of passengers from one point to another and ways to enhance this system using modern information and communication technologies.

**Keywords:** passenger transportation, road transport, transport services, safety, digitalization, efficiency.

### 1. Introduction

Passenger transportation services play an important role in the socio-economic development of regions and the mobility of the population. In modern conditions, the efficiency of the transport system significantly affects economic activity, labor mobility, tourism development, and the accessibility of public services. Road transport is considered one of the most widely used modes of passenger transportation due to its flexibility, accessibility, and relatively low operational costs [1].

Since population growth, urbanization processes and economic development, the demand for passenger transportation services has been considerably increased in recent years. Thus, raising the efficiency of the passenger transportation service system and improving it has received very significant influence from both scientific and practical perspectives.

Unique environmental and socio-economic conditions, such as low population density and significant distance between settlements, prevail in the Republic of Karakalpakstan. These factors add more complexity to the challenge of organizing an effective passenger transport system—which only adds to the difficulty. That is why providing high-quality passenger transportation services and implementing modern information technologies are vitally important for the sustainable development of the region's transport complex [2].

Modern technologies and management approaches can be used to improve the efficiency and quality of the transport service system through passenger transportation services in the Republic of Karakalpakstan.

Currently, the population's mobility and demand for transport services are increasing. In particular, automobile transport occupies a leading position in passenger

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transportation on urban, suburban, and intercity routes. Its main advantages are the convenience of movement, the ability to freely choose routes, and relative speed.

In the context of modern globalization and modernization of the economy, the innovative development of the transport services market is becoming increasingly important. In particular, passenger transportation services by road occupy an important place in the social activity of the population, the mobility of labor resources, and the economic development of regions[3].

## 2. Methodology

The research is based on a combination of statistical, analytical, and comparative research methods. Statistical data on passenger transportation volumes and passenger turnover in the Republic of Karakalpakstan were analyzed using official data sources [4].

The analysis included the evaluation of passenger transportation indicators across different districts and cities over the period from 2020 to 2025. The statistical method was used to determine growth trends and structural changes in passenger transportation services.

In addition, comparative analysis was applied to evaluate the effectiveness of the passenger transportation system and to identify the main factors influencing service quality. The research also considers modern approaches to digitalization and innovative development in the transport sector [5].

The Republic of Karakalpakstan is distinguished by its unique geographical location, low population density, and large distances between regions. This requires the effective organization of the market of passenger transportation services by road and its innovative development. Therefore, identifying priority areas in this area is a pressing scientific and practical issue [6].

**Table 1. Number of passengers transported by road in the Republic of Karakalpakstan (2020–2025), thousand persons.**

	2020 y.	2021 y.	2022 y.	2023 y.	2024 y.	2025 y
<b>Republic of Karakalpakstan</b>	<b>131 343,7</b>	<b>137 468,7</b>	<b>144 597,5</b>	<b>149 917,4</b>	<b>168 524,4</b>	<b>170 396,7</b>
Nukus city	46 217,7	49 287,4	53 215,8	55 187,4	71 606,6	72 071,7
Amudarya	9 271,8	9 515,0	9 656,6	10 067,6	10 628,6	10 763,1
Beruniy	12 627,2	12 896,2	12 938,7	13 151,2	13 201,9	13 359,6
Bozatov	1 293,2	1 354,5	1 518,1	1 591,7	1 595,2	1 643,0
Karauzyak	1 620,5	1 726,2	1 838,2	1 893,4	1 902,3	1 922,8
Kegeyli	4 371,7	4 467,3	4 812,0	4 890,1	5 188,1	5 223,3
Kungrad	6 961,2	7 310,1	7 606,7	7 716,1	7 825,7	7 934,4
Kanlikul	1 104,6	1 105,6	1 142,5	1 168,4	1 187,5	1 192,8
Muynak	1 106,4	1 280,0	1 530,6	1 538,1	1 577,8	1 593,7
Nukus district	2 354,0	2 451,4	2 504,8	2 556,9	2 571,7	2 609,3
Taxiatosh	2 741,4	2 898,4	3 084,0	3 231,5	3 275,1	3 337,5
Taxtakupir	2 066,1	2 074,5	2 243,3	2 379,2	2 388,9	2 418,2
Turtkul	13 860,6	14 086,2	14 470,8	14 886,6	15 049,9	15 290,7
Xodjayli	8 204,8	8 734,5	9 079,7	9 284,2	9 444,3	9 571,6
Chimbay	4 727,5	4 825,5	5 267,9	6 440,8	6 553,6	6 620,2

Shumanay	1 723,3	1 752,5	1 819,1	1 845,2	1 854,6	1 891,9
Ellikkala	11 091,6	11 703,3	11 868,5	12 089,0	12 672,6	12 953,2

\* taken from qrstat.uz.

The number of passengers by road in the Republic of Karakalpakstan reached 131,343.7 thousand in 2020 and 149,917.4 thousand in 2025 - an increase of about 29% was observed during this period. This growth was observed in all districts, especially in the city of Nukus. In the city of Nukus, 46,217.7 thousand passengers were transported by road in 2020, and 72,071.7 thousand in 2025 [7].

**Table 2. Passenger turnover of road transport in the Republic of Karakalpakstan (2020–2025), million passenger-km.**

	2020 y.	2021 y.	2022 y.	2023y.	2024 y.	2025 y
<b>Republic of Karakalpakstan</b>	<b>3 611,2</b>	<b>3 985,4</b>	<b>4 209,3</b>	<b>4 391,5</b>	<b>4 600,3</b>	<b>4 808,9</b>
Nukus city	949,2	1 195,7	1 276,7	1 354,9	1 493,2	1 630,3
Amudarya	312,3	312,7	314,8	328,6	332,6	337,4
Beruniy	425,4	429,5	434,1	437,7	440,9	449,8
Bozатов	48,9	49,3	52,0	53,1	56,0	57,6
Karauzyak	65,4	65,4	72,7	75,7	80,6	84,2
Kegeyli	126,1	178,4	181,7	191,4	198,5	204,8
Kungrad	208,4	209,6	214,2	218,3	224,3	230,9
Kanlikul	24,6	24,7	25,0	25,0	27,6	28,5
Muynak	41,3	42,1	45,7	47,6	54,2	55,5
Nukus district	76,3	76,4	81,0	83,1	86,5	90,0
Taxiatosh	83,5	83,6	90,0	92,8	99,3	103,9
Taxtakupir	65,8	66,6	78,4	82,4	87,1	89,8
Turtkul	431,6	447,4	518,6	551,3	556,4	568,3
Xodjayli	199,3	227,7	233,7	242,0	246,1	250,2
Chimbay	135,5	135,6	139,1	143,5	147,1	150,5
Shumanay	63,2	73,4	75,7	77,7	79,7	81,4
Ellikkala	354,2	367,4	375,9	386,5	390,2	395,8

\* taken from qrstat.uz.

In the Republic of Karakalpakstan, road transport has clear growth indicators in passenger transportation, and the main part of the country's passenger flow along routes is carried out through road transport. On the scale of Uzbekistan as a whole, road transport plays a dominant role in passenger transportation [8].

Passenger turnover of road transport in the Republic of Karakalpakstan in 2020 amounted to 3,611.2 million passenger-km, in 2022 - 4,209.3 million passenger-km, in 2025 - 4,808.9 million passenger-km. The passenger turnover of road transport in the city of Nukus in 2020 amounted to 949.2 million passenger-km, in 2022 - 1,276.7 million passenger-km, in 2025 - 1,630.3 million passenger-km.

The system of passenger transportation services is based on the interaction of vehicles, infrastructure, management bodies, and service personnel. The effective functioning of this system directly affects the socio-economic activity of the population [9].

The development of passenger transportation by road is associated with the following factors:

- population growth;
- acceleration of urbanization processes;
- expansion of the labor market;
- development of tourism and the service sector.

From this point of view, the scientific improvement of the passenger transportation services system ensures the sustainable development of the transport sector [10].

Improving the quality of service is one of the main directions for improving the passenger transportation system. In this regard, it is advisable to implement the following measures:

- regular technical inspection of vehicles;
- introduction of new, energy-efficient vehicles;
- retraining and advanced training of drivers;
- development of service culture;
- assessment of service quality based on feedback received from passengers.

Such an approach, along with increasing the level of service, also ensures the competitiveness of transport enterprises [11].

Modern information and communication technologies play an important role in the management of passenger transportation services. Online monitoring of vehicle traffic through GPS control systems, the implementation of an electronic ticketing system, and the use of mobile applications will increase the efficiency of the service [12].

Digitalization creates the following opportunities:

- control over compliance with traffic schedules;
- provide accurate and prompt information for passengers;
- transparency of payment processes;
- use accurate data when making management decisions.

Innovative development means entering a qualitatively new level in the market of motor transport services. This includes not only the introduction of new technologies, but also the improvement of management, service provision, and economic relations [13].

Innovative development in the conditions of the Republic of Karakalpakstan serves the following goals: increasing the convenience of transport services for the population, ensuring the safety of passenger transportation, forming healthy competition among market participants, and increasing the economic efficiency of transport services.

A market of motor transport services promotes economic efficiency through innovative approaches. Increased Revenues: By reducing costs, increasing passenger traffic, and improving the quality of service, revenues for enterprises will increase.

Moreover, development of the market of transport services: generates new jobs, raises regional economic activity, expands possibilities of attraction investment.

It is also of great economic importance to improve the passenger transportation services system. Well-arranged transport services lead to a decrease in operating costs, an increase in revenues, and attractiveness for investment.

For economic efficiency: it is optimization of routes network, reasonable use of vehicles, fuel consumption reduction and increase in passenger traffic through the services quality improvement [14].

You are a technical writer, with NO Creativity Just factual reporting. Using a combined approach of technical, organizational and digital solutions allows a region to

increase the quality of services, security as well as economic efficiency. It is these measures, which are being put in place that will impact on the sustainability of the transport sector.

The analysis shows that the innovative development of passenger transportation services market in the Republic of Karakalpakstan is strategic. Priority areas should include the introduction of digital technologies, modernization of infrastructure and improvement in service quality. We will provide quality, safety and efficient transport services to the people by thoroughly implementing these measures.»

### 3. Result and Discussion

The analysis of passenger transportation indicators shows that road transport plays a leading role in the transport system of the Republic of Karakalpakstan. In the road transport sector, statistical figures indicate that the volume of passengers transported on roads rose from 131,343.7 thousand (year 2020) to 170,396.7 thousand (% share in total traffic - year 2025); thus +29%.

There was a marked rise in passenger transit in the city of Nukus. Transported passengers for the year 2020 is equal to 46.2177 million, while for 2025 it is already 72.0717 million passengers. This increase demonstrates the growing dynamism of people's movement and economic development in the area [15].

Passenger turnover also showed consistent growth over the period under review. Passenger turnover in the Republic of Karakalpakstan is 3,611.2 million passenger-km (2020) and 4,808.9 million passenger-km (2025).

Modernization of transport infrastructure, introduction of modern vehicles, improvement of service quality and provision of digital technologies at the process management level in transport are among the significant factors that influence passenger transportation.

Digitalization enhances transport services. GPS monitoring systems, electronic ticketing systems and mobile applications make it possible to better control the movement of vehicles, improve passenger information systems and transparency in payment processes.

### 4. Conclusion

As can be seen from the results of this research, transport by road is still the main passenger transport in Republic of Karakalpakstan. Analyzing the passenger transportation and passenger turnover a gradual increase of these indicators is observed as it reflects the demand for transport services.

A system approach is needed to modernizing passenger transportation service system in terms of: modernizing a fleet of vehicles; optimizing route networks; improving quality features and implementing new digital technologies.

This will boost the effectiveness of transport services, safety for passengers, and competitiveness of transport enterprises through innovative management methods and digital technologies. These measures will promote the sustainable development of the transport sector and enhance accessibility and quality of passenger transportation services for citizens.

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