Assessment Of Transmission Development Of Transport Services To The Population Of Kashkadarya Region On The Basis Of Trend Models

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ABSTRACT

The development of the sector of transport services to the population and changes in relation to other sectors of services are analyzed. We made estimates, economic analysis and forecasting on the basis of trend models in the process of development of the transport services sector.

KEYWORDS

Quality of life, trend models, n-indicator trend model, exponential trend model, functional model, empirical model, correlation coefficient, regression equation, covariance, Student's test, forecasting

INTRODUCTION

In a market economy, it is necessary to create a concept for improving the quality of transport services in Uzbekistan in accordance with the new socio-economic conditions. In recent years, this concept has been widely used in world practice. At the formation of this

concept can be used some concepts of the concept of "quality of life", which is widely used in world practice in recent years.

The concept of "quality of life" forms the conditions, determinants of physical, mental and social well-being man. It is not just about objective factors that assess the quality of life (nutrition, housing, employment, level of education), but also the subjective perception of such concepts as "self-sufficiency", "happiness", "satisfaction", "pleasure". is also going on. It is also important to develop transport services, such as communication and information services, household services, utilities and intellectual services. The concept of 'quality of life' also includes human interactions with the environment. This relationship represents the degree to which needs are met and the availability of available capacity is in line with expected opportunities.

Adherence to the provisions of the concept of "quality of life" also serves as a key basis for the development of services to improve the living conditions and welfare of the population. It will be necessary to study the current living conditions, assess the interaction of habitats with the environment, adapt the transport services sector to the needs of the population to meet their needs using the available opportunities.

One of the priorities in the development and liberalization of the economy is the further development of road and transport infrastructure, the introduction of information and communication technologies in the economy, social sphere, management system.

MAIN PART

The priorities of the social sphere also focus on this area, which includes the following tasks:

- Radical improvement of transport services to the population, increase of safety of passenger transport and reduction of emissions of harmful substances into the environment, purchase of new comfortable buses, construction and reconstruction of bus stations and bus stations;
- Accelerate the construction and reconstruction of road infrastructure, first of all, the development of regional roads, capital and current repairs of inter-farm rural roads, streets of settlements.

These indicators will further increase the level of service to the population while protecting the interests of the general public.

Based on the above, in the context of modernization of the country, a number of problems need to be addressed in order to expand the use of econometric modeling, taking into account the climate of each region, the conditions of a market economy. For example:

- Elimination of differences in transport networks between the regions;
- Modeling the priority development of local transport service providers;
- Improving the competitive environment between local transport service providers;
- More complete involvement of the transport and service sector, taking into account the production funds and labor force on the ground, ie modeling

management in the proper use of limited resources of society.

New technologies and new methods should be used to develop transport services in the region and reduce gas, water and electricity shortages in the regions.

Many scientists of our country have shown the following peculiarities in determining the structure of the transport services industry:

First, the most important feature of transport services is the provision of general conditions to the population. General conditions, on the one hand, provide a direct process of material production, and, on the other hand, can ensure the daily life of a person. It can be defined as a service that arises in the process of production and in the system of general division of labor, consisting of the sum of the general conditions of human life and production;

Second, no new material product is created in the transport service, but the costs incurred for the existing types of services are understood;

Third, transportation services are directly related to all sectors. The task of transport services is to provide the general conditions necessary for all production and consumers;

Fourth, the process of transport production is consistent with the beneficial effect of consumption as a result of transport services. Hence, the feature of the transport sector, which is one of the main sectors of the service, is that it is a key factor in the movement of products from one place to another. The movement of the product, its storage, delivery is the production process of the infrastructure networks and coincides with the main production process. However, in the main production process, the product can only be ready for consumption when it is delivered to the consumer;

Fifth, the transport service sector is manifested in the form of processes of transportation and storage of goods and products, ensuring the movement of products;

Sixth, the formation and development of the transport services sector requires large initial capital investments. Hence the high fund capacity of infrastructure facilities;

Seventh, the efficiency of transport services can only be determined on the example of other sectors. In other words, service efficiency is mainly reflected in manufacturing sectors. Consequently, the effectiveness of service activities is felt after a long time.

In the modern era of development of social and service sectors, the provision of services is gaining popularity. Therefore, the labor efficiency per unit of output achieved is required to be able to calculate fixed assets, material and financial costs.

The following formulas can be used to determine the scope of these services:[1]

$$TP_t = \lambda_1 (A_t, t);$$
$$(1)$$

$$TP_t^0 = \lambda_2 (TP_t, A_t, t);$$
$$(2)$$

Where: TP_t - transport service provided in a year, thousand people;

$TP^o{}_t$ - transport service turnover in a years,

[km].

The road is a mirror that shows the level of culture of each region.

This ensures the movement of service networks, the economic mechanism. This method is widely used in the analysis and forecasting of development trends of service processes. This is because it is assumed that the resultant effects of the actions of the main factors in development are generalized in the time factor.

In order to ensure the balanced development and diversification of the activities of enterprises in the service sector, increase the competitiveness and quality of services they provide, the Cabinet of Ministers has developed a program for the development of the services sector for 2016-2020 [2].

The program identifies priorities and tasks for the development of services in the Republic of Uzbekistan in 2016-2020:

Increase of gross domestic product through the development of the services sector, bringing its share in the economy of the republic to 48.7%;

1.8-fold increase in services in rural areas by 2020;

Creation of conditions for the accelerated development of the service sector, structural changes through the development of engineering and communications, road and transport infrastructure, the introduction of modern information and communication technologies in the industry.

Industrialization is directly related to the quality of roads. Currently, the condition of transport roads is not at the required level.

The development of the service sector is a stimulus to meet the needs of the population.

Based on the above, the main internal problems of modernization of regional development in modern conditions can be:

Development of transport, energy, telecommunications, logistics services on a new modern technical base, ensuring the real integration of economic zones;

Ensuring a balanced distribution of resources between the regions of the country;

Flexibility of regional economic structures to the requirements of a market economy and sustainable development, development of service sectors.

Therefore, a market economy cannot exist and function in isolation from other spheres of society and, above all, from the state. Moreover, the economy cannot develop without the active participation and support of the state. In turn, no government can remain without involvement in the state of the economy, regardless of its ideological and political orientation. Government programs play a crucial role in the growth and development of the economy.

Table 1
Services in Kashkadarya region
Share in 2010-2018[3] (in billion soums)

Indicators	2010	2014	2015	2016	2017	2018
Total services	997,2	3066,4	3645,6	4556,2	5859,3	6975,9
By main types, including:						
Communication and information services	89,4	241,2	274,8	328,7	370,6	426,1
Financial services	83,1	254,2	312,9	412,8	566,9	787,4
Transportation services	198,9	652,2	792,8	910,1	1491,5	1608,9
Accommodation and catering services	31,4	20,9	25,4	146,9	185,1	220,8
Trade services	312,6	1133,8	1290,6	1646,3	1935,8	2337,0
Real estate related services	31,4	108,3	136,9	170,2	191,3	226,9
Educational services	39,3	89,8	106,5	131,1	163,9	227,8
Health services	16,4	28,2	39,5	45,8	54,4	75,0
Rental services	29,7	88,1	109,1	135,9	158,0	197,7
Household and computer repair services	48,4	135,4	185,3	216,4	226,5	256,5
Individual services	57,1	150,8	158,3	209,2	234,5	262,9
Technical testing and architectural services	20,3	21,2	33,3	30,0	50,3	76,7
Other services	39,2	142,3	180,2	172,8	212,2	272,2

We can see the 5-year development trend of the transport services sector in Kashkadarya region, as well as analyze the share of each service sector in the total services in 2018.

As can be seen from Figure 1, the share of trade and transport services to the population of the region is much higher than that of other services.
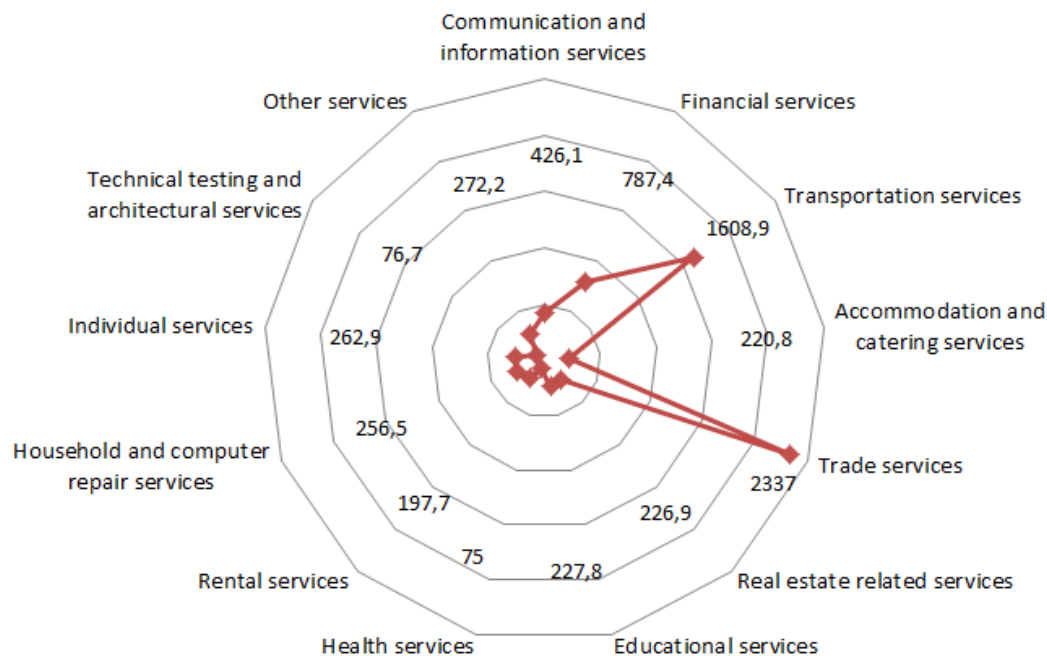
Figure 1. Share of services in Kashkadarya region in 2018 (billion soums) [4]

K.Xovard, N.D.Eriashvili, B.A.Solovev, D.A.Tsigichko, L.Abdullaeva, M. Based on the research of scientists such as Nasretdinova, [5] the first aspect can be divided into three main elements: information for management decisions, information needed for forecasting and planning calculations, information needed for research.

The first element consists of information on the general situation in the field, in particular, the situation in the field of domestic services, utilities and transport services. Such information is based on the operational and

technical accounting system. In this case, the data are mainly derived from the initial data of the accounting, as well as from the operational and periodic statistical reports.

The second element contains the information needed for forecasting and planning. In this regard, its component should be data that allow a comprehensive analysis of the field under study.

The third element should contain a problem-oriented piece of information that allows for the calculation of different models that reflect

the interrelationships of the processes under study [6].

The following sectors of the economy include the social sphere: housing and communal services, non-industrial types of consumer services, passenger transport, communications (in the field of social organizations and public services), water management (in the social sphere), health, physical education and social security, education, culture and arts, credit and public insurance, management of government and public organizations.

It is necessary to organize the successful management of the transport services sector in the region in the conditions of market relations and competition in such a way that it affects the internal and external environment of the industry. This will require the creation of new organizational econometric models of service.

The Institute of Forecasting and Macroeconomic Research has developed a long-term strategy for the Uzbek economy. The main goal expected from it is to ensure sustainable and sustainable economic development in order to improve the living standards of the country's population. On the basis of this strategy, the main indicators and options for the long-term development of the Uzbek economy were considered in several cases.

We found it necessary to use trend models in assessing the development of transport services to the population of Kashkadarya region. We have created trend models in the n-indicator and exponential view of the development of each of the service sectors in the region. To do this, we used the smallest quadratic method in generating trend models of the process.

$$Y_x = a_0 + a_1 x + a_2 x^2 + \cdots + a_k x^k \tag{3}$$

To create a trend model, you need to do the following:

$$F = \sum (Y - Y_x)^2 \rightarrow min \tag{4) or}$$

$$F = \sum \left(Y - a_0 - a_1 x - a_2 x^2 - \cdots - a_k x^k\right)^2 \rightarrow min \tag{5}$$

if we take a special derivate from this, a system of equations in the following view is formed.

$$\begin{cases} \sum Y = a_0 n + a_1 \sum x + a_2 \sum x^2 + \cdots + a_k \sum x^k \\ \sum Yx = a_0 \sum x + a_1 \sum x^2 + a_2 \sum x^3 + \cdots + a_k \sum x^{k+1} \\ \text{… … … … … … … … … … … … … …} \\ \sum Yx^k = a_0 \sum x^k + a_1 \sum x^{k+1} + a_2 \sum x^{k+2} + \cdots + a_k \sum x^{2k} \end{cases} \tag{6}$$

$$Y_x = a_0 e^{a_1 x} \tag{7}$$

To create a trend model, you need to do the following:

To do this, we naturally logarithm both sides of the equation.

$$\ln Y_x = a_1 x + \ln a_0 \tag{8}$$

$$F = \sum (\ln Y - \ln Y_x)^2 \to min \tag{9}$$

or

$$F = \sum (\ln Y - \ln a_0 - a_1 x)^2 \to min \tag{10}$$

If we take a special derivate from this, we get a system of equations in the following view:

$$\begin{cases} \sum (\ln Y) = n \ln a_0 + a_1 \sum x \\ \sum (x \ln Y) = (\ln a_0) \sum x + a_1 \sum x^2 \end{cases} \tag{11}$$

We evaluate the results by the following evaluation criteria:

Fisher's F-criterion is used to assess the "significance" of the regression equation. The amount of this F-criterion is related to the determination coefficient as follows:

$$F_{haqiqiy} = \frac{r_{xy}^2}{1 - r_{xy}^2} \cdot (n - 2), \quad n \geq 3. \tag{12}$$

If $\alpha = 0,05$ (five percent meaning level)and the degree of freedom $k_1 = 1$ and $k_2 = n - 2$, then the table value of the F criterion from the tables given Fisher distribution of random quantities F_{table} is found. If this $F_{real} > F_{table}$ inequality is reasonable, the regression equation is statistically significant.

Errors in the regression equation and random errors in the calculation of parameters and the correlation coefficient are also affected. Therefore, and standard errors in the calculation of parameters are detected.

The random error of the regression coefficient is determined by the following formula:

$$m_b = \sqrt{\frac{\sum (y - y_x)^2 / (n - 2)}{\sum (x - \bar{x})^2}}. \tag{13}$$

The random error of the regression equation is determined by the following formula:

$$m_a = \sqrt{\frac{\sum (y - y_x)^2}{n - 2} \cdot \frac{\sum x^2}{n \cdot \sum (x - \bar{x})^2}}. \tag{14}$$

The random error of the linear correlation coefficient is determined by the following formula:

$$m_r = \sqrt{\frac{1-r^2}{n-2}} \qquad (15)$$

The assessment of the statistical significance of the parameters of the regression equation can also be done using the Student Criterion (the number of degrees of freedom n-2 and $\alpha = 0,05$ the table values of the sign are found in the t Student's distribution table). It includes:[7]

$$t_a = \frac{a}{m_a}, \quad t_b = \frac{b}{m_b}, \quad t_r = \frac{r_{xy}}{m_r}. \qquad (16)$$

If the default values found for the symbol t are greater than its table value (i.e. $t_a > t_{table}$, $t_b > t_{table}$,

$t_{rxy} > t_{table}$), "a" and "b" The parameters are statistically significant.

We denoted each service network as Y, and generated trend models by relating the values obtained from the observations to the time factor t. Based on statistical data (2004–2018), several variants of trend models of each service sector were developed and evaluated by evaluation criteria and selected optimal models.
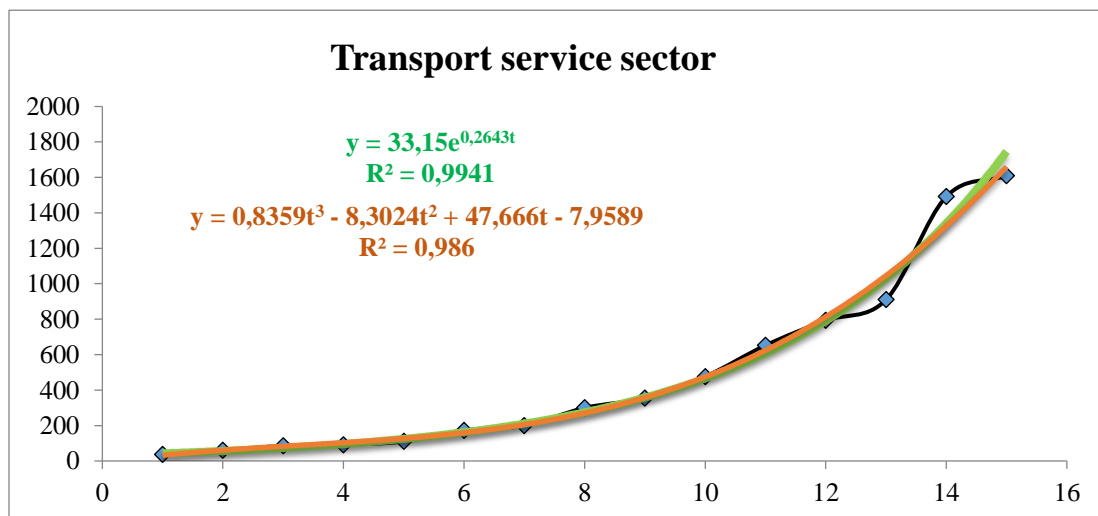

Transport service sector

$y = 33,15e^{0,2643t}$
$R^2 = 0,9941$

$y = 0,8359t^3 - 8,3024t^2 + 47,666t - 7,9589$
$R^2 = 0,986$

Figure 2. Trend model of the volume of transport services provided to the population of Kashkadarya region[8]

Trend models of transport services to the population of the region are shown in Figure 2.

At the same time, several models have been created, depending on the changing trends of

the transport service network. Of these, when R^2= 0.994, F_{count} = 149.5, t_{count} = 12.23 (when $\alpha = 0,05$ t_{table} = 2.1314, F_{table} = 2.4034), we selected the regression equation in the form y = $33.15e^{0.2643t}$. When we have R^2 = 0.986, Fcount = 143.83, t_{count} = 11.48 ($\alpha = 0,05$ when t_{table} = 2.1314, F_{table} = 2.4034), y = $0.8359t^3 - 8.3030t^2 + 47.666t - 7,9589$ We could have chosen the regression equation in view. However, since the reforms in this area at the present time are consistent with the change in the regression equation in the exponential view, we considered the trend model in the first view to be adequate.

Based on the generated trend models, we calculated that the 5-year development process forecast of the service industries can achieve the following result.

$$Y(2021) = 33{,}15e^{0,2643*18} = 3839{,}3;$$

$$Y(2022) = 33{,}15e^{0,2643*19} = 4999{,}2;$$

$$Y(2023) = 33{,}15e^{0,2643*20} = 6509{,}7;$$

$$Y(2024) = 33{,}15e^{0,2643*21} = 8476{,}4;$$

$$Y(2025) = 33{,}15e^{0,2643*22} = 11037{,}4;$$

The transport sector in the region is expected to grow 1.30 times in 2021 compared to 2020, and 3.74 times in 2025 compared to 2020.

CONCLUSIONS

The problem of increasing the efficiency of transport services to the population can be solved by combining traditional and innovative measures for the development of the service sector. Traditional measures are aimed at increasing the level of provision of the population with transport services and strengthening the material and technical base of the service sector.

The basis of modern forms and methods of development of transport services to the population is the improvement of econometric modeling. Proposals have been developed to study best practices, introduce transport service standards, and model the development of ways to improve the quality and culture of transport services.

The implementation of the above proposals and recommendations will increase the efficiency of transport services in the region.

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