

## Digital Logistics as a Factor of Increasing the Volume and Quality of Transport Services

Atadzhanova Zulfiya Saparbaevna<sup>1</sup>; Umarova Dilfuza<sup>2</sup>; Rakhmanberdiev Ravshan Raxmatullayevich<sup>3</sup>; Muradov Abdurakhim Soyibovich<sup>4</sup>

<sup>1</sup>Senior Lecturer, Department of Economics, Tashkent State Transport University, Tashkent, Uzbekistan.

<sup>1</sup>zatadzanova0@gmail.com

<sup>2</sup>Senior Lecturer, Department of Economics, Tashkent State Transport University, Tashkent, Uzbekistan.

<sup>2</sup>umarova\_dilfuza\_3103@mail.ru

<sup>3</sup>Deputy Head of the Main Department of Development Logistics and Digitalization, JSC UTU.

<sup>3</sup>r.ravshan68@gmail.com

<sup>4</sup>Senior Lecturer, Department of Logistics Tashkent State Transport University, Tashkent, Uzbekistan.

<sup>4</sup>abdurahimmurodov579@gmail.com

### Abstract

*In this article, the advantages of digital logistics in transport activity, the hierarchy of digitization of railway transport, the importance of the level of Internet access in the Republic in the organization of services through e-commerce areas of structural subdivisions of its lower stage, the effectiveness of digital logistics are given information.*

**Key-words:** Digitization, Logistics, Transformation, Strategy, E-commerce Field, Trend, Technology, Commercial, Chain.

### 1. Introduction

In recent years, a lot of strategic development work has been carried out on improving the transport and communication system in the Republic. The transport independence of the Republic was ensured and a national system connecting all the regions of the Republic was created. The effective transport system created in the country serves as a factor for the development of foreign economic relations and integration with other countries. Currently, more than 13 thousand enterprises and organizations operate in the transport sector.

The quality and value of transport services play an important role in the development of the country's export potential. Proceeding from this, the country's railway highways are electrified at a rapid pace. Uzbekistan ranks among the 30 advanced countries of the world in terms of the length of highways and railway highways.

But the activities aimed at developing transport enterprises and infrastructures are not able to ensure the quality of services in accordance with modern requirements. Therefore, the concept of the development strategy of the Republic of Uzbekistan up to 2035 indicates a low level of service as one of the main problems in the field of transport and logistics.

When assessing the quality level of Transport services, it will be correct to evaluate all factors that affect it, in particular by taking into account the unused capacity. Evaluation of the quality of services based on information received from customers brings the transport enterprise closer to the customers and helps to achieve the electronic marketing and digital transport policy envisaged in the development strategy of transport [1,2].

The global effort to digitize has also entered the logistics industry. The Transport and logistics sector is associated with many other areas, which effectively operate with the transport sector

It can't be imagined that the economic system will lag behind the pace of the adoption of digital technology. Digital transformation processes take place in all spheres of the economy, which is one of the conditions for the successful digitization of the activities of contractors and suppliers of building resources from the point of view of material production networks, such as the development of the construction, transport and logistics sector.

## **2. Materials and Methods**

The global effort to digitize has also entered the logistics industry. Many scientists are conducting scientific research in the field of digital logistics, and Russian scientists Vasilenok V.L, Kruglova A.I, Aleksashkina E.I in their research work, they described digital logistics as follows: "Digital Logistics this is the search, storage and transmission of information, as well as the optimization of the routes of digital technologies, routes, material and information flows that enable the identification and forecasting of needs, including the reduction of the time available in supply chains".

In the case of A. A. Koroleva, digital logistics is the rapid formalization of cargo in cross-border communications in these international transport, the complete automation of the work of documentation in the implementation of cargo transportation within the country, technologies that do not interfere with

the human factor, the digitization of cargo transportation, which includes the intellectual system of cargo tracking and management in all [3,4].

B.A. Lyovin and O.V. Efimova said that digital technologies in their scientific work are confidently moving from a range of auxiliary tools to the main one, they can significantly reduce the cost of management and communication in the organization and implementation of Transportation, improve the quality of transport and logistics services and the labour productivity of railway workers, as well as make the company more competitive.

Academician S.S. Gulomov from Uzbek scientists "The further economic development and increased competitiveness of any state in the era of digital changes will depend on the implementation and development of modern digital technologies in a multilateral manner. The digitization of the country's economy allows achieving the optimization of production and logistics operations, increase efficiency in the labour market and production, reduce costs and cost of production, increase transparency in public administration," he believes.

F.B. Shakirova, in his scientific view, describes that "the word about digitization can be understood as digital-looking information that allows to seriously increase the efficiency of processing large volumes of key production factors in economic activity and the use of the results of their analysis, compared with traditional forms of economic conduct, the delivery of various types of production, technologies, equipment, sales, storage.

### **3. Results and Discussion**

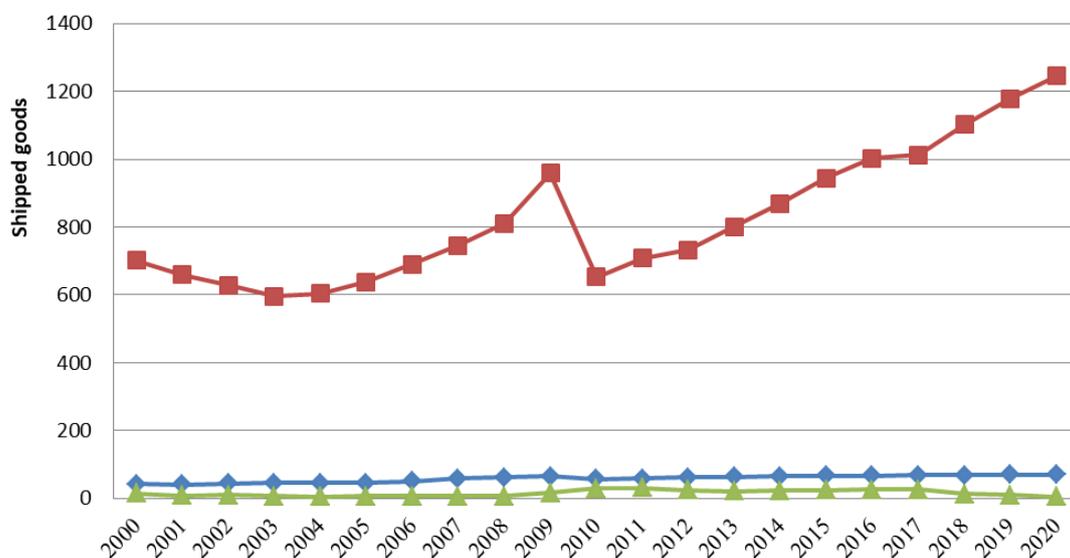
As a result of acquaintance with the scientific work of the above scientists, the aspects of modelling and statistical analysis of the organization and management of information and transport processes of logistic processes using digital technologies have not been fully studied. In particular, such important aspects as the methods of introducing information systems into the logistics activities of a transport company, the principles of regression modelling based on automated information systems in transport-logistics processes, the effectiveness of the use of automated information systems in the process of transportation of goods, the conditions of development have not been studied in depth scientifically. This determines the relevance of this article.

In order to achieve the stated objective, observation, comparison and regression analysis techniques were used in the process of carrying out the research work.

The use of digital technologies in the logistics complex is currently the main competitive advantage of a company specializing in the transport industry. Their extensive use allows improving the services provided by increasing quality and speed.

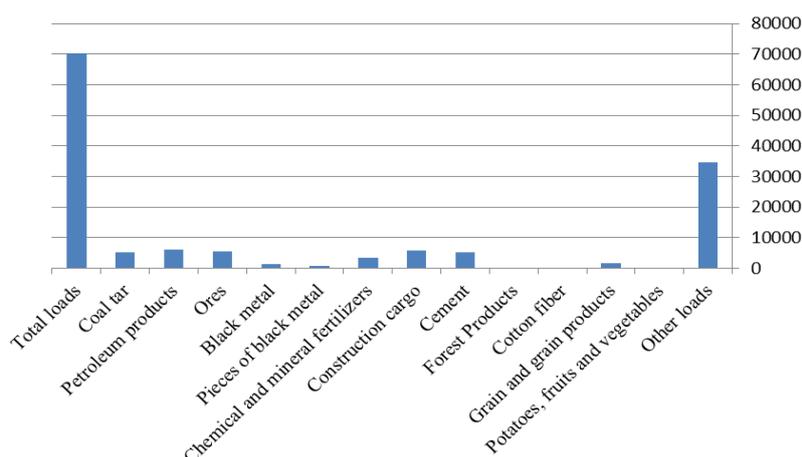
Digitization of Transport and logistics activities allows to improve job security, reduce the costs of the parties, accelerate and simplify monitoring and control. Special attention is paid to digitization as I work on the railway transport. On the basis of digitization, it is possible to meet the demand of consumers for the quality of transport services and increase the position of JSC in the international market. Despite the fact that the Republic's transport system is leading the way in terms of the volume of cargo transportation, it is possible to see a significant change in 2010 during the analysis period, which has caused the consequences of the global economic crisis as well as the depreciation of existing vehicles. The share of the railway in the total volume of transported cargo decreased for some time during the periods under consideration.

Figure 1 - Dynamics of Change of Traffic Volume by Types of Transport



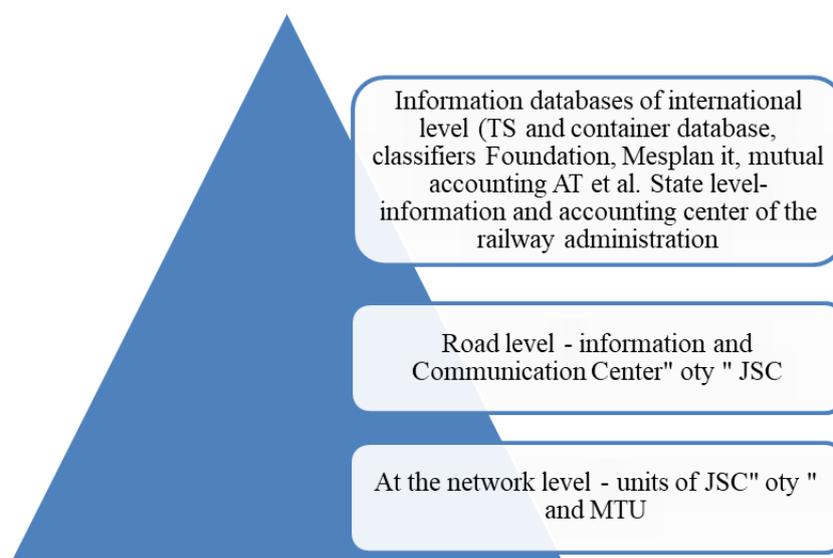
A large part of the cargo transported by rail is mainly industrial cargo and containers (other cargo).

Figure 2 - The Composition of the Total Cargo Transported by Rail, Thousand Tones



By digitizing the activity of JSC "Uzbek Railways", the volume and quality of services rendered to consumers will increase. This is mainly done at different stages of the digital railway hierarchy.

Figure 3 - Digital Railway Services Hierarchy



The lower tier of the digital railway services hierarchy is the regional rail links, and the execution of orders for transport services carried out by them on the basis of digital technologies, that is, in the electronic trading areas, is fully satisfied with the criterion of "time consumption that consumers have gone to complete the order".

The e-commerce space (ESM) is a specialized information system in which customers or consumers of transportation services have the opportunity to provide information that seems to be of interest to them. ESM operates in the " Internet " network. At its initial stage of development, ESM is a commercial area of the seller of transport services by type – regional railway chains (MTU).

The area of electronic commerce attracts other railways, various transport enterprises and all enterprises in mutual relations in its development processes. The openness of the e-commerce space allows access to it using the World "Internet" network to cooperate in trade and transport processes on a national and international scale.

The creation of esmini for the sale of transportation services of MTU is one of the tools for the development of activities and the main objective of it:

- Create access to transportation services for customers and business partners;
- Improve the quality of working with customers on account of the loss of shortcomings;
- Simplify the processes of ordering transport services and accelerate financial calculations;
- Increase the speed of information exchange between customers, partners and MTUs;
- Reduction of manual labor of MTU employees on the account of receiving orders electronically;
- Comprehensive provision of transport services;
- Maximizing the increase in the electronic share of turnover between mtus and customers;
- Increase the share of railway transportation in the market of transport services and the volume of sales of services.

In order to accomplish the above objectives, esm should address the following issues:

- providing information on terms of Service and tariffs, provided services;
- advance calculation of transportation fees;
- simplify the arrangement and submission of orders to transport services;
- provide services with the opportunity to control the execution of the order;
- Provide on-demand cooperation of MTU partners and customers;
- Organization of information exchange through MTUning information systems;
- Organization of agreements and contracts for the provision of services with the use of electronic digital signature.

The possibility of issuing cargo orders through e-trade areas should be convenient for different regions of the Republic. For this purpose, it is desirable to provide Internet services to residents of the Republic, as well as various business entities. The indicators of internet access of the population in the Republic of Uzbekistan are as follows:

Table 1 - Internet Access of the Population (On the Account of the Permanent Population of 100 People), Units

	2015	2016	2017	2018	2019
Total	26.6	30.2	34.5	40.4	48.8
Including: individuals	25,8	29,1	33,2	39,1	46,9

Source: stat.uz.

In 2015-2019, we will consider the trend of the population in Uzbekistan in the time line of the indicator of Internet access (Table 2)

Table 2 - Indicators of Internet Provision of Population in Uzbekistan in 2015-2019

Year	Internet access for year-end status	Year	Internet access for year-end status
2015	26,6	2018	40,4
2016	30,2	2019	48,8
2017	34,5	Total	180,5

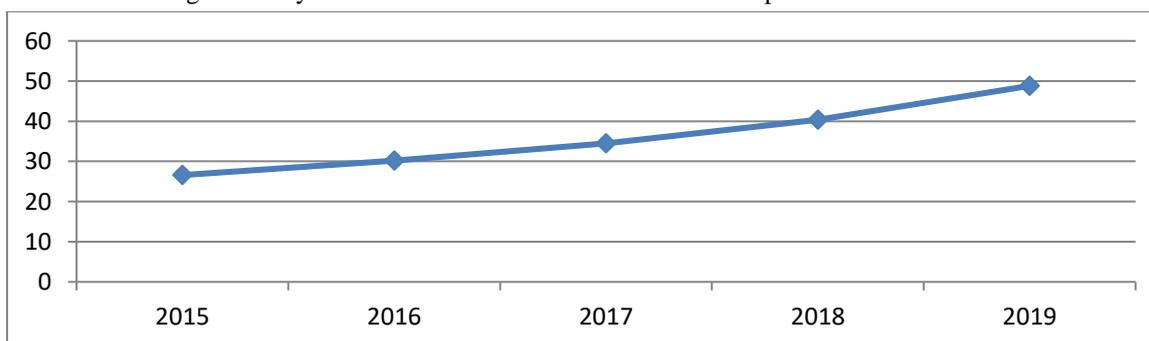
To determine the variability of the time series, we determine the chain sizes of absolute growth (Table 3).

Table 3 - Indicators of the Dynamics of Internet Access of the Population in Uzbekistan in 2015-2019

Year	Internet access for year-end status	Absolute change	Absolute change in magnitude difference
2015	26,6	-	-
2016	30,2	3,6	0,7
2017	34,5	4,3	1,6
2018	40,4	5,9	2,5
2019	48,8	8,4	4,8
Average	36,1	22,2	9,6

We describe the indicators of the population's internet presence in the graph.

Figure 4 - Dynamics of Internet Access Indicators of Population in Uzbekistan



As can be seen from figure3 and Figure 4, the fact that the population is provided with the Internet has a steady growth trend. The average absolute growth has a positive magnitude. According to the end of the year in Uzbekistan, we use the following linear function for the indicator of the population's availability with the Internet:

$$Y_t = a_0 - a_t \cdot t$$

$a_0$ , in order to calculate the parameters of  $a_t$ , we use Table 4 data.

Table 4 - Chart of Calculation of Parameters of Linear Trend Function

Year	Internet access for year-end status	$t_i$	$t_i^2$	$Y_i \cdot t_i$	$\hat{Y}_i$ theoretical values of the trend	$\varepsilon_i$ deviation from the trend	$\varepsilon_i^2$ deviation
2015	26,6	-2	4	-53,2	26,4	0,2	0,04
2016	30,2	-1	1	-30,2	30,1	0,1	0,01
2017	34,5	0	0	0	34,5	0,0	0
2018	40,4	1	1	40,4	40,5	-0,1	0,01
2019	48,8	2	4	97,6	49	-0,2	0,04
Total	180,5	0	10	54,6	180,5	0,0	0,1

Table data  $a_0 = \frac{\sum_{i=1}^n Y_i}{n}$  and  $a_1 = \frac{\sum_{i=1}^n Y_i \cdot t_i}{\sum_{i=1}^n t_i^2}$  when putting into formulas, the system of normal equations will have the following appearance:

$$a_0 = \frac{180,5}{5} = 36,1 ; a_1 = \frac{54,6}{10} = 5,46$$

$$Y_t = 36,1 - 5,46 \cdot t$$

Thus, during the period under review, the level of Internet access of the population changed to an average of 5.46 units per year.

In Table 4, theoretical values are presented to calculate the deviations of the rank real level from the theoretical level.

We determine the error of the recurrence of the linear trend coefficient by the following formula:

$$\sigma^2 = \frac{\sum (y_i - \bar{y}_i)^2}{n} = \frac{0,1}{5} = 0,02$$

$$\sigma = \sqrt{0,02} = 0,1414$$

This indicates that the average squared deviation is much less.

Based on these indicators, it is possible to determine the forecast of the level of coverage of the population with Internet services for the future period, as well as to expand the possibilities of using transport services through e-commerce areas. As a result, all types of digital logistics are effective and the ground for the transportation company's entry into international markets is laid.

#### 4. Conclusion

Digital logistics in the railway business provides economic efficiency for consumers and partners. These are:

1. Technological efficiency. On account of the perfection of technological processes, the time spent on servicing is reduced (on account of the acceleration of information processing and transmission), and the speed of load transmission is increased.

2. The effect of competitiveness. Digitization increases the chances and share of competition in the market of transport services of the company. As a result, due to the increase in satisfaction with the quality of service, the volume of customers increases, and this is due to a reduction in the waiting time for documentation, the speed and quality of cargo delivery.
3. Commercial benefits. Thanks to digital logistics, there will be an increase in the volume of Transportation, productivity will increase, costs will be saved, new IT services will appear, additional revenues will be generated from the provision of IT services, and logistics costs will be saved.
4. Socio-economic effect. The organizational structure of the company is improved; working conditions are improved; the quality and productivity of Labour, information processing, transmission and storage are improved; the number of paper documents and the volume of information are reduced, the number of employees, especially management personnel (due to the increase in labour productivity); the time of use of information is reduced, the decisions taken in the management of transport activities are made more quickly.

## References

- Uzdaily. (2019). Concept of the Development Strategy of Uzbekistan-2035 put for discussion. UzDaily.uz. <https://www.uzdaily.uz/en/post/49727>
- Gulyamov S.S., Azizova M.I. (2020). Efficiency of digital logistics in Uzbekistan. *Scientific electronic Journal "Bulletin of statistics of Uzbekistan"*. Number 2.
- F.B. Shakirova. (2020). Digital economy as a new direction of economic theory. *International Journal of Advanced Science and Technology*. 29(9s), 4053-4056.
- Berkinov B.B. (2015). *Econometrics: tutorial. T.: Science and technology*, 184.
- Koroleva. (2019). Economic effects of digital logistics. *Journal of the Belarusian State University. Economy*. (1), 68–76.
- G.V. Bubnova, R.S. Simak, G.G. Levkin. (2020). Cost management in transport and logistics systems based on the use of digital technologies. *Bulletin of the Siberian Institute of Business and Information Technologies*. 2(34).
- Bubnova, G.V., & Levin, B.A. (2017). Digital Logistics as an innovative mechanism for the development and effective functioning of the transport and logistics systems and complexes. *International journal of open information technologies*, 5(3), 72-78.
- Boris A. Lyovin, Olga V. Efimova. (2017). Digital Logistics and Electronic Data Exchange in Freight Transportation. *World of transportation*, 15(2), 142–149.
- Muradov, A.S., & Atadzhanova, Z.S. (2020). Logistic infrastructure development-the way to increase the quality of transport services. *ACADEMICIA: An International Multidisciplinary Research Journal*, 10(3), 115-121.