IMPROVING THE QUALITY OF TRANSPORT SERVICES THROUGH THE DEVELOPMENT OF LOGISTICS INFRASTRUCTURE

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Abstract. Determining the capacity of a logistics infrastructure as a whole is more complicated because it consists of several elements. Logistics infrastructure is a large integrated system consisting of a set of regulatory, transport, storage and processing, service, financial, information and scientific elements, the potential of which varies over time. The results of the assessment will form the basis for the development of the Concept of Logistics Infrastructure Development Strategy.
Key words: transport services, infrastructure, logistics, logistics cooperation, operational efficiency, investment.

1.Introduction. The quality of transport services is one of the most important factors in increasing production efficiency, and an advanced logistics infrastructure ensures this level of quality.

Logistics infrastructure is assessed by the state of the country's transport infrastructure, the quality of logistics services provided and their quality, customs procedures, the quality of information, the possible complexity of the organization of timely delivery and transportation.

Internationally, the logistics infrastructure has a direct impact on the country's GDP growth. This is due to the high level of service to the flow of goods in the logistics center, the attraction of a large volume of transit goods associated with international transport and transit through the country. Expansion of the range of services and the use of modern warehouses, transport, information and communication systems will create conditions for value added, economic growth, employment and, ultimately, GDP growth.

The transport and logistics services market is one of the fastest growing services in the world. The growth of the country's economy will be accompanied by rapid growth of the market of transport, forwarding and other logistics services. Given the changes in the economy, first of all it is necessary to modernize and build modern transport and logistics infrastructure. Determining the

capacity of a logistics infrastructure as a whole is more complicated because it consists of several elements. It is therefore advisable to evaluate it on individual elements.

2.Analysis of the literature on the subject. Sources devoted to logistics problems cover the issues of infrastructure providing logistics activities to one degree or another.

D. Bauersox views logistics infrastructure facilities as manufacturing facilities, information facilities, transportation companies and their facilities, storage, cargo handling, packaging, logistics management, loading and unloading terminals, retail outlets. According to the author, in the formation of logistics infrastructure it is necessary to determine the number of its facilities (warehouse complexes) with a certain geographical location and calculate the volume of stocks of products stored at each facility. At the same time, the author believes that a set of transport highways, vehicles, public, private, specialized transport companies constitute the logistics infrastructure.

A. D. Chudakov understands logistics infrastructure as participants in the supply chain - suppliers of material and technical resources, producers of intermediate and final finished products for industrial purposes and consumer goods, consumers of products. At the same time, the author describes the logistics infrastructure as an activity that covers all areas of logistics.

L. B. In the monograph "Freight flow management in transport and logistics systems" led by Mirotin, the place and role of transport is identified as the most important component of logistics infrastructure. In this regard, considers the transport network as a technological complex that includes transport enterprises, vehicles, warehouse terminals and logistics intermediaries.

As a result of the study, the logistics infrastructure can be defined as follows: logistics infrastructure is a large complex system consisting of a set of regulatory, transport, storage and processing, service, financial, information and scientific elements, the potential of which varies over time. Assessment of logistics infrastructure potential will be the basis for the country's rise to the top of the international logistics index.

3.Research methodology . Practical, theoretical-analytical and analytical methods were used in the research process.

4.Analysis and results. In recent years, a lot of strategic development work has been done to improve the transport and communication system. The transport independence of the republic was ensured and a national system connecting all regions of the republic was created. The efficient transport system created in the country serves as a factor for the development of foreign economic relations and integration with other countries. Today, more than 13,000 enterprises and organizations operate in the transport sector.

The quality and cost of transport services play a special role in developing the country's export potential. As a result, the country's railways are being rapidly electrified. In terms of the length of roads and railways, Uzbekistan is among the top 30 countries in the world. There are about 100 logistics companies that provide transportation services, storage and processing of goods in all types of vehicles..

The quality of transport services depends on the state of transport and logistics infrastructure. In 2019, 11337.0 billion soums will be allocated for the development of transportation and storage

services. This investment accounts for 6.0% of the total investment, of which 3.4% is foreign investment.

Transportation service is a complex of any operations that are not only involved in the carriage of goods or passengers, but also in the preparation and implementation of it. The structure of the services provided is mainly carried out by the main modes of transport, and their composition is as follows:

Table 1

The structure of transport services

The structure of transport services	2017 year	2018 year	2019 year
Motor transport services	56,7	49,4	47,2
Pipeline transportation services	15,2	17,2	19,7
Railway transport services	11,8	13,6	13,4
Air transport services	8,6	11,5	11,6
Other transportation services	7,7	8,3	8,1

The share of road transport services in the structure of transport services is quite large, but it can be seen a decrease over the years and an increase in other types of transport services. The transportation of some types of products exported from the country to foreign countries is shifting from road transport to air transport. Because one of the main criteria for the quality of transport services for consumers is the delivery time.

The growth rate of transport services provided changed in 2016-2019 and decreased compared to a few years ago.
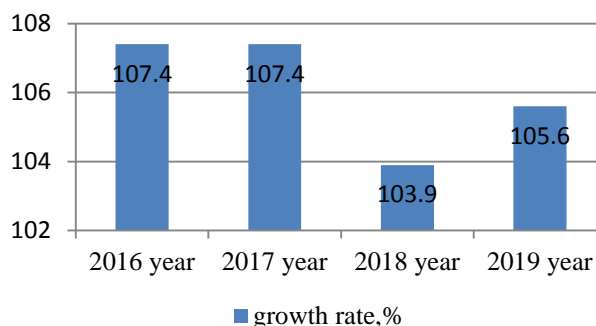

Figure 1. The growth rate of transport services

The increase in the volume of transport services in 2019 compared to the previous year, primarily due to increased demand for freight and passenger services, which, in turn, will lead to rapid growth of tourism, expansion of trade, construction projects, reconstruction of buildings and structures, as well as related to the development of transport and logistics infrastructure.

In the biennial World Bank Logistics Performance Index, Uzbekistan rose 19 places in 2018 from 118th place in 2016. However, this figure is not sufficient for the current rapidly evolving high-tech environment, and the Concept of the Development Strategy of the Republic of Uzbekistan until 2035 envisages entering the top 30.

The main criteria for logistics performance include the efficiency of the customs clearance process, the level of development of trade and transport infrastructure, the simplicity of the organization of international cargo delivery, the quality of logistics services, tracking the movement of goods and compliance with delivery times. All of these criteria can be improved as a result of

logistics infrastructure development. In order to develop measures for the development of logistics infrastructure, it is expedient to assess the current level of all its elements.
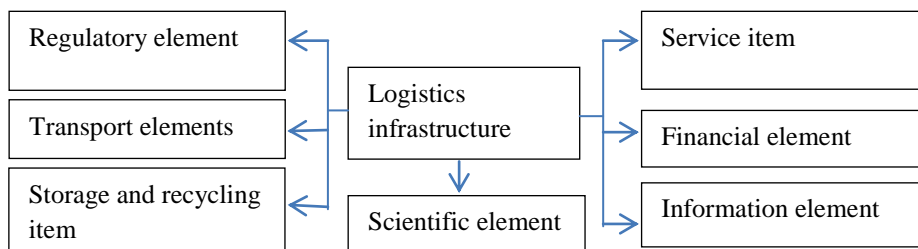

Figure 1. Elements of logistics infrastructure

The regulatory element is the Ministry of Transport, the Association of Private Carriers, the Customs Committee;

The transport element includes vehicles, main railways and highways, freight stations
automobile and railway equipment, artificial structures;

The element of storage and processing includes public and temporary storage warehouses, cargo terminals, cargo distribution centers, logistics centers;

Systems of maintenance of rolling stock of the service element;

road construction, repair and maintenance systems;

The financial element includes large investors, banks, insurance companies;

The information element includes information centers, servers and databases, technologies, software;

The scientific element includes research institutes and laboratories, higher education institutions, institutes of advanced training in the field of logistics and transport.

The potential of these elements varies over time. By determining the level of development of each element, it is possible to determine the potential of the logistics infrastructure in the period under study. Separate development programs will be developed for those with the lowest performance.

The capacity of the logistics infrastructure can be determined using the following formula:

$$Y_{Li} = Y_{Tr} + Y_{Ser} + Y_{Fi} + Y_{Inf} + Y_{scien} + Y_{St.pr} + Y_{reg} \rightarrow max \quad (1)$$

where:

Y_{Li} – logistics infrastructure potential, %

Y_{Tr} – the degree of development of the transport element

Y_{Ser} – level of development of the service element

Y_{Fi} – is the level of development of the financial element

Y_{Inf} – is the level of development of logistics infrastructure

Y_{scien} – is the level of development of the scientific element

$Y_{St.pr}$ – is the level of development of the storage and processing element

Y_{reg} - is the level of development of the regulatory element

The overall capacity of the logistics infrastructure is determined by a separate assessment of the capacity of each element.

The current condition of the transport element can be assessed as follows:

$$y_{Tr} = \frac{A_e}{A_t} + \frac{Y_{yu}}{Y_{um}} + \frac{Yu_a}{Yu_{um}} + \frac{Yq_z}{Yq_{um}} + \frac{Si_{yu}}{Si_{im}} \quad (2)$$

where:

A_e – the number of vehicles that meet environmental and modern technical requirements

A_t –is the total number of vehicles

Y_{yu}– length of high-capacity roads and railways, km

Y_{um} – total length of highways, km

Yu_a– number of automated loading stations

Yu_{um}–number of total freight stations

Yq_z– number of modern and automated automobile and railway devices

Yq_{um} – is the total number of automobile and railway devices

Si_{yu}– the number of artificial structures with safe and high capacity

Si_{im} is the total number of artificial structures available.

The current condition of the service item is evaluated as follows:

$$y_{ser} = \frac{TXK_{tr.maj}}{TXK_{tr}} + \frac{TXK_{y.z.t}}{TXK_y} \quad (3)$$

where:

$TXK_{tr.maj}$ – the number of service enterprises servicing rolling stock with the help of complex and new tools and technologies

TXK_{tr} – the total number of enterprises servicing rolling stock

$TXK_{y.z.t}$ – the number of enterprises engaged in the construction, repair and maintenance of roads using new tools and technologies

TXK_y – the total number of enterprises engaged in construction, repair and maintenance of roads

$$y_{Fi} = \frac{I_J}{I_{is}} + \frac{B_y}{B_{um}} + \frac{K_{ins}}{K_{ins.um}} \quad (4)$$

I_J – the number of large investors who have invested in the context of the existing investment attractiveness

I_{is} is the number of potential investors who can invest

B_y – is the number of banks with high operational efficiency CIR (Cost to income ratio)

B_{um} – is the total number of banks in the country

K_{ins} – are large insurance companies with high ratings

$K_{ins.um}$ – is the total number of insurance companies

The current state of the information element is assessed as follows:

$$y_{Inf} = \frac{I_{AHM}}{I_{AHMyM}} + \frac{MB_{kq}}{MB_J} + \frac{T_z}{T_J} + \frac{Pr_M}{Pr_{um}} \quad (5)$$

where:

I_{AHM} – Number of commercial data centers of private and public organizations aimed at solving scientific, engineering and economic problems

I_{AHMyM} – is the total number of data centers owned by all ministries

MB_{kq} – the number of servers and databases of individual networks with large capacity and information

MB_J – is the number of servers and databases available on all networks

T_z – is the number of national modern information technologies used in the country

T_J – is the total number of information technologies used

Pr_M – is the number of microcontroller software tools used effectively

Pr_{um} – the number of all available software tools available

The state of development of the scientific element can be assessed as follows:

$$y_{scien} = \frac{ITI_r}{ITI_j} + \frac{OTM_r}{OTM_j} + \frac{IPP_l}{IPP_j} \quad (6)$$

where:

ITI_r – the number of institutions with efficient and modern laboratories in terms of the scope of scientific research

ITI_j – is the total number of available research institutes and laboratories

OTM_r – the number of universities with international rankings

OTM_j – is the total number of HEIs available

IPP_l – the number of institutions designed to improve the skills of specialists in the field of logistics

IPP_j – total number of advanced training institutions

The condition of the storage and processing element is evaluated as follows:

$$y_{St.pr} = \frac{S_{max}}{S_{um}} + \frac{Yu_z}{Yu_{um}} + \frac{M_y}{M_{um}} + \frac{LM_{un}}{LM_{um}} \quad (7)$$

where:

S_{max} – the number of warehouses equipped with modern means and having a large cargo turnover

S_{um}– is the number of all available warehouses in the area

Yu_z– the number of large terminals capable of performing cargo-related operations in a short time

Yu_{um} – is the total number of load terminals available

M_y – is the number of service centers conveniently located for cargo owners, using modern technical means and technologies

M_{um} – is the total number of centers available

LM_{un}– the number of universal logistics centers with a large turnover and technical means

LM_{um}– total number of available logistics centers

The following should be considered when evaluating a regulatory element:

$$y_{reg} = \frac{B_{sq}}{B_{jq}} + \frac{X_{st}}{X_t} + \frac{Б_{op}}{Б_{oj}} \quad (8)$$

where:

B_{sq} – the number of decisions and decrees issued by the Ministry of Transport

B_{jq} – is the total number of decisions and decrees issued by the Ministry of Transport

X_{st} is the number of carriers connected to the private carriers association

X_t – is the total number of private carriers

$Б_{op}$ – is the number of transactions optimized by the customs committee

$Б_{oj}$ – the total number of customs operations

5. Conclusion. Based on the results of the assessment of these elements, the development of the Concept of the strategy for the development of logistics infrastructure and in it

- Improving the regulatory framework in the field of logistics

- increase the volume of investments in the development of logistics infrastructure;

- Formation of 3PL-services market and 4PL-level system integrators

- training of personnel in the field of logistics at the level of world standards;

- At the national level, specific measures should be identified in areas such as statistical accounting of logistics development indicators.

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