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THEORETICAL AND METHODOLOGICAL FUNDAMENTALS OF RAILWAY TRANSPORT INFRASTRUCTURE DEVELOPMENT

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Abstract: In this article, the main directions that determine the efficiency of railway transport infrastructure, the interrelation of the concepts of transport complex, transport system and transport infrastructure and the assessment of the main factors influencing the development of railway transport infrastructure, the specifics of optimizing the cost of freight delivery, the effectiveness of railway transport infrastructure functions are shown.

Keywords: transport system, railway transport, transport-logistics, transit transportation, cargo delivery, hierarchy of tasks, transport complex, transport infrastructure.

Introduction

The dynamic development of the world economy and the development of the transport complex and infrastructure are of paramount importance in the process of international integration. According to the World Bank, “the volume of global transport services is estimated at 4.3 trillion. USD 110 billion per year. tons of cargo and 1 trillion. More than 100 million passengers are transported, the number of employees in the transport infrastructure is 100 million. man”[1]. One of the most important projects today is the efforts to restore the Great Silk Road. In the first phase, 900 billion US dollars will be allocated for the implementation of the project "One Belt, One Road" developed by China alone. More than US $ is planned.

In this regard, the rapid and coordinated development of transport systems and infrastructure around the world is considered a pressing issue. Extensive research is being conducted around the world to increase the efficiency of railway transport infrastructure. In particular, the research on a more comprehensive approach to the development of railway transport, the formation of economic approaches to the provision of railway transport infrastructure noted the positive effects of the development of the transport network, however, no comprehensive opinion on the direction and scale of these effects. Therefore, it is necessary to conduct additional research to improve the theoretical and methodological framework for the development of railway transport infrastructure.

In our country, especially in recent years, as an important sector of the economy, attention is paid to the rapid development of transport communications on the basis of modern requirements, and comprehensive and targeted program measures are being implemented. "We need to increase our transit capacity from..."
the current 7 million tons to 16 million tons through the improvement of infrastructure, the introduction of flexible tariffs and the formation of new promising routes" [2]. This, in turn, is related to safety and nature protection at transport infrastructure facilities, national efficiency of transport infrastructure. It is advisable to conduct large-scale research in areas such as the organization of the evaluation system, taking into account the marginal value and the level of risk impact on infrastructure development.

**Literature review**

Theoretical and methodological foundations of the development of railway transport infrastructure are reflected in the scientific research of a number of local and foreign scientists. According to the British economist Anthony Venables, the market or the whole infrastructure of a market economy is an integral part of not only the functioning of the production and social sphere, but also the functioning of all types of markets, while the development of the country's economy related to the degree of maturity [4].

D. According to Bauersoks, the effective functioning of the country's economy depends not only on the basic sectors of material production and non-manufacturing industries, but also on the timely and full satisfaction of needs by transport and communication networks. At the same time, the author emphasizes the transport system, which includes transport networks, vehicles and transport companies [5].

According to Uzbek scientists G.Samadov, A.Zakhidov, A.Gulamov and M.Ravshanov, “the transport system is a set of interconnected modes of transport and infrastructure in the process of transporting goods and passengers, i.e. interconnected transport sectors, labor resources and the country. In order to effectively manage the economy, the management system of all modes of transport is understood” [6].

**Research methodology**

The results of scientific research of national and foreign scientists engaged in the analysis of problems in the development of railway transport infrastructure served as a theoretical and methodological basis for this study. In the preparation of the article used abstract and analytical observation, comparative and factor analysis, indicative, sample observation, comparison, economic-statistical and other methods.

**Analysis and results**

Unlike other sectors of the economy, transport is a prerequisite for production - it can develop successfully without raw materials, but without a transport complex, the main component of which is transport infrastructure, its socio-economic
development is unimaginable. The availability of traffic flows in the country allows to ensure their full development using modern technologies, given the developed transport infrastructure.

Mobilization of transport infrastructure to meet the needs of the country's economy and population in transportation, reliable domestic and interregional trade in accordance with national economic and environmental security requirements, planned and balanced development of land, water and air routes, regional transport, as well as emergency transportation will be focused on preparation.

As part of the country's infrastructure, the transport infrastructure performs certain tasks and functions, depending on certain factors, conditions and characteristics of the region. It is expedient to emphasize the opinion of AB Maksimov in this regard. In his work he outlines the following main functions of transport infrastructure [7]:

- providing the country's economy with transport routes;
- meeting the needs of economic entities in transport facilities;
- formation of the country's transport network;
- ensuring interaction between different modes of transport;
- raising the level of socio-economic development of the country.

The transport infrastructure has a number of unique features that distinguish it from other types of infrastructure in the country. Most economists in this field point out that the main feature of transport infrastructure is the network location of facilities, which is related to the location of production and the system of placement, so this type of infrastructure in the country, unlike other types, is more territorial. Positive transport activity to a certain extent characterizes the concentration of production, the level of development of the industry, its potential, as well as the level of economic and social development of the country [8].

Based on the above considerations and considerations, it is appropriate to cite another key feature of the transport infrastructure. On the one hand, it is impossible to develop material production and social sectors without an effective transport infrastructure, and the socio-economic growth of a region depends on the transport infrastructure, in other words, the creation and development of these facilities does not benefit, but indirectly, increases the profitability of business entities and is reflected in the impact on the value of the country's gross domestic product. Therefore, the value of capital investment in transport infrastructure will largely depend on the pace of development of production and social spheres.

Based on the above considerations, in our opinion, the railway transport infrastructure has a specific character, which is characterized by the ability of the infrastructure complex to ensure the integrity of the railway transport infrastructure and create conditions for its socio-economic development through the implementation of transport and economic relations. It is advisable to understand a particular type. This commentary provides an in-depth study of the development of
railway transport infrastructure and its compliance with the needs of the country in the implementation of transport and economic relations.

It should be noted that the level of development and functional characteristics of railway transport infrastructure is determined by the socio-economic interests of the country and under the influence of various factors. The goal of developing railway transport infrastructure depends on the administrative and economic functions of the system, primarily environmental, social and political functions. Often these tasks are not sufficiently taken into account in order to achieve and achieve them, such as reducing delivery costs and maximizing profits in passenger and cargo transportation. The goals for the development of railway transport infrastructure can be thought of as a generalized strategic goal tree, as shown in Figure 1.

![Strategic goals of railway transport infrastructure development](image)

**Figure 1. Strategic goals of railway transport infrastructure development**

Source: Compiled by the author based on the research conducted.

Based on the transport links within the railway transport infrastructure, it is advisable to include the main elements of the railway transport infrastructure, including components and links of railway transport, as well as other service areas of
socio-economic infrastructure dealing with the delivery of goods from suppliers to consumers.

The final stage involves the development of targeted methods of infrastructure development in the following areas:
- methods of freight and passenger transport management and financing of infrastructure;
- financial support of transportation tariffs, tariff system, control over payment of transportation costs;
- special, freight and passenger transport, city and passenger, as well as customer interactions.

In order to achieve the goals set for the development of railway transport infrastructure, it will be necessary to develop strategic plans with their subsequent implementation. Strategic planning for the development of railway transport infrastructure should be presented in the form of the following stages: assessment, task setting, setting and implementation of priorities (Figure 2).

Thus, the development efficiency of a particular railway transport infrastructure depends on the impact of infrastructure-generating factors and the conditions created for its development in the economy, and is one of the factors determining the level of socio-economic development of the region. It should be noted that the impact on the development of railway transport infrastructure can both increase and decrease under the influence of these factors, so their study allows not only to determine their location, specificity and direction of impact, but also to assess the economic impact of railway transport infrastructure.

**Figure 2. Strategic planning of railway transport infrastructure development**

Source: Compiled by the author based on the research conducted.
Due to the length of the country's territory and the historical development of railways, first rail transport, and then - road and air transport has always played an important role in meeting the transport needs of the region and the country as a whole. Rail transport, which is the basis of the country's transport infrastructure, is of great economic, defense, social and political importance.

As the basis of the country's transport system, railway transport in interaction with other modes of transport meets the needs of industry and the population in transportation and services on domestic and international rail links, in many respects determines the life of all vehicles, determines the development of economic sectors and businesses;

Rail transport has high load carrying capacity and high regularity of transportation. However, it cannot replace other modes of transport. The advantages and disadvantages of railway transport over other modes of transport are given in Table 1. Railway transport activity has significant features compared to other sectors of the economy, which in many respects determines the specifics of the entire economy of the sector [8]. In railway transport, the main production process (freight and passenger transportation) is carried out using specific means of production (rolling stock) that change their position in time and space when performing transport works (services).

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
<th>The main field of application</th>
</tr>
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<tbody>
<tr>
<td><strong>Rail transport</strong></td>
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<tr>
<td>high capacity and carrying capacity of railway lines with tens of millions of tons of cargo and millions of passengers per year on various routes; high speed of cargo delivery compared to river transport and high maneuverability in the use of rolling stock (adjusting the fleet of wagons, changing the direction of freight flows, etc.); regularity of freight and passenger traffic, regardless of climatic conditions, time of year and day; high efficiency in the transportation of bulk cargo over long and medium distances, especially on routes; typically a shorter route of cargo movement than river and sea transport; relatively low cost of freight and passenger transportation; high load carrying capacity (3-4 thousand tons - one train); high level of traffic safety and low level of damage to the environment (5 times less air pollution than road transport).</td>
<td>high cost of railway construction and long coverage period; a large share of conditionally fixed costs in transport costs (up to 70%); consumption of large amounts of metal, including non-ferrous metals (more than 150 tons per 1 km); favorable conditions for theft</td>
<td>transportation of bulk cargoes over medium and long distances; transporting passengers to medium distances and suburban connections.</td>
</tr>
</tbody>
</table>

Source: Compiled by the author based on the research conducted.
The role of railway transport in the country's economy cannot be overestimated, given its large areas and underdeveloped transport infrastructure. The importance of railway transport determines the regularity and versatility of railway transportation, regardless of the season and climatic conditions, the network of railway networks and their high load-carrying capacity. In addition, the traditional transportation of passengers, luggage, cargo by rail for personal needs is of great social and economic importance.

Railway transport infrastructure as an integral part of the country's infrastructure (except for energy, social, communal and other components of the general infrastructure) together with transport networks and enterprises providing passenger and freight services (for all modes of transport) summarizes the system of enterprises and organizations that ensure the efficient operation and development of transport corridors and transport infrastructure (both in terms of service and management functions).

The activity and development of railway transport infrastructure as an element of the socio-economic system is characterized by the following features:
- long periods of construction and capacity building;
- significant payback period for infrastructure funds, as in many cases the effectiveness of the creation of infrastructure facilities is manifested in the long run, including in the main and other sectors;
- long-term use, the dynamic mode of operation, characterized by uneven loading of funds, which requires large power reserves;
- close cooperation with almost all sectors of the economy;
- railway transport does not create a material product, it is impossible to collect and store the transport product;
- the operation of railway transport facilities is inertial;
- there is a significant emergent effect associated with the abundance of interacting elements;
- a significant part of the impact on the performance and development of railway transport is not reflected in its performance, but is reflected in the main, other sectors and the social sphere.

Conclusions and suggestions

In short, the effective organization of stocks of cargo and other material flows in the economy is directly related to improving the efficiency of the transport system and solving organizational and economic problems. Here, of course, we believe that the functioning of this system should be effectively organized. RailwayGiven the specific features of the transport infrastructure, the problems in this area are interrelated, and therefore need to be addressed in a comprehensive manner, it is desirable to eliminate the problems on the basis of integration of
neighboring countries.

It was found that the peculiarity of the railway transport infrastructure as a branch of the economy determines certain features of increasing its efficiency:

- Constant need for relatively rapid construction of railway transport infrastructure and the long-term use of their capabilities;
- Long-term operation of road infrastructure and high capital expenditures.

Hence, the high capital capacity of railway transport infrastructure necessitates the attraction of large amounts of capital for the transport system. Based on this, the article developed a description of the characteristics of the factors influencing the development of railway transport infrastructure.

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