

UDC 338.47:656.2

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**ECONOMIC PREREQUISITES FOR IMPROVING THE ADAPTATION CAPABILITIES OF TRANSPORT CONSTRUCTION ENTERPRISES FOR PERFECTIBILITY THEIR PRODUCTIVITY**

Bereza, I., Bashmakov, M., Chernova, N. (2022). Economic prerequisites for improving the adaptation capabilities of transport construction enterprises for perfectibility their productivity [Ekonomichni peredumovy pokrashchennia adaptatsiinykh mozhlyvostei pidpriemstv transportnoho budivnytstva zadlia udoskonalennia yikh produktyvnosti], *Socio-economic research bulletin, Visnik social'no-ekonomichnih doslidzen'* (ISSN 2313-4569), Odessa National Economic University, Odessa, No. 3-4 (82-83), pp. 9–18.

**Abstract.** *The article considers current directions for improving the economic condition of transport construction enterprises in the crisis phenomena conditions, both in the transport industry and in the country as a whole. The purpose of article is research and economic substantiation of the possibility of improving the economic condition of transport construction enterprises due to the improvement of their adaptation capabilities, better application of all productive potential to market demands of the transport industry. Research methodology involves the use of methods: empirical research (comparison, observation), theoretical research (ascending from the abstract to the concrete), general scientific methods (abstraction and concretization, analysis and synthesis, induction and deduction, analogy), etc. The relevance of solution to the scientific problem defined in the article is that in conditions of increased requirements for the quality parameters of maintenance and service of transport construction facilities, limited funds for transport construction enterprises, there are requirements for increasing productivity and efficiency of activity. The results of the study are as follows: indicators of monitoring the state of transport construction enterprises, which reflect the market potential of such enterprises, taking into account the requests of the transport industry, in the conditions of harmonization of the key directions of activity of the national economy main branches of Ukraine to the world economic formation, are determined. The originality and practical value of the research lies in the fact that the article systematizes the key performance indicators of transport construction enterprises, which affect their productivity and efficiency. The conclusions of the study are as follows: it is shown that the stabilization of fixed assets technical condition of JSC "Ukrainian Railways" through the reproduction of railway infrastructure will provide an opportunity to ensure the strategic development and effective functioning of railway transport, to ensure the necessary level*

of throughput and carrying capacity, safety of train traffic, which will ultimately increase competitiveness railway transport and the state's defense capability.

**Keywords:** transport construction enterprise; transport infrastructure; railway transport; economic efficiency; cost price; organizational and economic mechanism; competitiveness; development.

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**ЕКОНОМІЧНІ ПЕРЕДУМОВИ ПОКРАЩЕННЯ АДАПТАЦІЙНИХ  
МОЖЛИВОСТЕЙ ПІДПРИЄМСТВ ТРАНСПОРТНОГО  
БУДІВНИЦТВА ЗАДЛЯ УДОСКОНАЛЕННЯ ЇХ ПРОДУКТИВНОСТІ**

Береза, І. В., Башмаков, М. С., Чернова, Н. С. Економічні передумови покращення адаптаційних можливостей підприємств транспортного будівництва задля удосконалення їх продуктивності. *Вісник соціально-економічних досліджень* : зб. наук. праць. Одеса : Одеський національний економічний університет. 2022. № 3-4 (82-83). С. 9–18.

**Анотація.** У статті розглянуто актуальні напрямки покращення економічного стану підприємств транспортного будівництва в умовах кризових явищ, як транспортній галузі, так і в країні в цілому. Метою статті є дослідження та економічне обґрунтування можливості покращення економічного стану підприємств транспортного будівництва за рахунок вдосконалення їх адаптаційних можливостей, кращого застосування всього продуктивного потенціалу до ринкових запитів транспортної галузі. Методологія дослідження передбачає використання методів: емпіричного дослідження (порівняння, спостереження), теоретичного дослідження (сходження від абстрактного до конкретного), загальнонаукових методів (абстрагування й конкретизація, аналіз та синтез, індукція та дедукція, аналогія) та ін. Актуальність вирішення наукової проблеми, що визначена у статті, полягає в тому, що в умовах підвищення вимог до якісних параметрів утримання та обслуговування об'єктів транспортного будівництва, обмежених коштів, до підприємств транспортного будівництва пред'являються вимоги щодо підвищення продуктивності та ефективності діяльності. Результати дослідження наступні: визначено показники моніторингу стану підприємств транспортного будівництва, що віддзеркалюють ринковий потенціал таких підприємств з урахуванням запитів транспортної галузі, в умовах гармонізації ключових напрямів діяльності основних галузей національної економіки України до світової економічної формації. Оригінальність і

*практична цінність дослідження полягає в тому, що у статті систематизовано ключові показники діяльності підприємств транспортного будівництва, які саме і впливають на їх продуктивність та ефективність. Висновки дослідження наступні: показано, що стабілізація технічного стану основних засобів АТ «Українська залізниця» через відтворення залізничної інфраструктури, дасть можливість забезпечити стратегічний розвиток та ефективне функціонування залізничного транспорту, забезпечити необхідний рівень пропускної та провізної спроможності, безпеки руху поїздів, що зрештою підвищить конкурентоспроможність залізничного транспорту та обороноздатність держави.*

**Ключові слова:** підприємство транспортного будівництва; транспортна інфраструктура; залізничний транспорт; економічна ефективність; собівартість; організаційно-економічний механізм; конкурентоспроможність; розвиток.

**JEL classification:** D240; L920; R410

**DOI:** [https://doi.org/10.33987/vsed.3-4\(82-83\).2022.9-18](https://doi.org/10.33987/vsed.3-4(82-83).2022.9-18)

## 1. Introduction

Transport construction enterprises (hereinafter PTB) build new railway tracks, artificial structures, repair and construction, construction and assembly works related to the restoration, expansion and reconstruction of the main means of railway transport. Hence, the role and significance of the operation of transport construction enterprises is determined by the role of the railway transport system in the national economy of Ukraine.

The specificity of transport railway construction (a significant number of relatively small often repeated structures scattered throughout the railway network of Ukraine) requires exceptional mobility of transport construction enterprises, which ensure the execution of works in a short time frame using mobile linear economic units with the maximum introduction of progressive structures.

## 2. Aim and methodology of research

Special mobile construction and assembly formations created on railway transport perform a significant amount of construction and assembly and repair and construction works. They are equipped with the necessary equipment, staffed with qualified personnel, workers and engineering and technical workers, have at their disposal housing, institutions located in equipped wagons, or prefabricated and dismantled inventory houses. Such special formations allow you to start the main work immediately after arriving at the site, without spending money and time on the construction of all kinds of temporary structures.

## 3. Literature review, shortcomings and problem statement

A significant contribution to solving the problem of improving the efficiency of railway transport infrastructure and transport construction enterprises was made by the scientific works of domestic scientists: A. O. Bezuglyi [1], Yu. M. Bibyk [2], S. V. Boyko [3], S. Ya. Voytovych [4], O. V. Zhegus [5], M. I. Mishchenko [6; 7].

In the work of the author I. O. Lyutyi [8], the specific features of financing the road infrastructure of Ukraine in modern conditions are considered. The authors O. V. Savchenko and D. V. Martsinko [9] developed this scientific direction and

investigated various methods of pricing with applied possibilities of applying them to the market conditions of our country.

Key aspects of the price policy of construction industry enterprises products were proposed and formed by the author O. E. Sychova [10]. In his work [11] O. V. Skrypyuk investigates the factors of price changes for construction materials and directions of their state regulation in conditions of cyclicity, which directly affects the economic efficiency of transport construction enterprises. In the monograph [12], A. V. Bazylyuk examines the economic environment of transport construction enterprises, financial and accounting and analytical support of enterprises of the road and transport complex.

In accordance with the general needs of the national economy in transportation, taking into account the strategic placement of productive forces in the regions of Ukraine, the economic expediency and rationality of transportation, transportation plans are established in general and for individual directions of railway transport.

Based on the forecasted sizes of future freight and passenger flows, the necessary measures for the development of railways and their fixed assets with the involvement of PTB are determined. These measures should, first of all, proceed from the proportional development of individual enterprises, industries, the need for their comprehensive development, without which it is impossible to ensure the coordinated and uninterrupted operation of railway transport as a whole.

The purpose of this article is to study the peculiarities of the functioning and economic condition of transport construction enterprises, as an integral element of the railway transport infrastructure.

#### **4. The main material research**

The most characteristic construction and assembly mobile formations are:

- mechanized columns for the production of various types of construction and assembly works, equipped with appropriate machines and mechanisms, as well as the necessary means of transport, repair and mechanical workshops and inventory housing stock;
- bridge-building trains and detachments for construction, repair, restoration of artificial structures, both on new railway lines and on the existing railway network;
- track-laying trains for track laying and ballasting, equipped with track-layers, ballast machines and other relatively modern mechanisms for the production of track works;
- construction and assembly trains, intended for the construction of various linear civil structures, the performance of station development works, the construction of traction substation buildings, barrier devices at crossings and the installation of contact network supports during the electrification of railways, the construction of communication lines and the equipment of railway lines with automatic blocking, dispatching centralization, electrical centralization of switches, installation of mechanized sorting slides, execution of other works on signaling, centralization and blocking, as well as for the production of general construction works on other objects of development and maintenance of railway transport, to preserve the throughput capacity of the railway network;
- electrical assembly trains for the installation of traction substations and catenary network on electrified railways, for the installation of power plants and power plants

on railway transport, as well as transformer substations, power transmission lines and other power installation works;

- construction and installation trains for water supply for the installation of pumping and pumping stations, water-bearing buildings, laying of water lines and sewer collectors, as well as the production of separate construction works directly related to these objects.

Track distances, water supply, signaling and communication, as well as construction and installation operational controls function directly on the fixed sections of the track for the performance of a regular complex of repair, construction and construction and assembly works.

All the listed formations, with the exception of mechanized columns, include specialized mobile columns.

In addition to the named special formations, the railway construction has special mobile columns (with the rights of an independent foreman point) for the production of sanitary and technical and finishing works, as well as some other special formations.

That is why, in the article, the economic toolkit for the selection of approaches to the justification of reproduction activity, which will allow optimizing the construction lag and the amount of expenses of the transport construction enterprise by applying economic and mathematical modeling, received further development.

When developing measures for the uninterrupted functioning of railways in market conditions, in a certain strategic perspective, first of all, it is possible to ensure throughput and carrying capacity by improving the operation of existing facilities without additional investments, and then work that requires capital investments.

The most rational measures to ensure the throughput and carrying capacity of railways, at the expense of additional capital investments, are established by economic comparison of possible options according to the established criteria of economic efficiency.

The amount of funds for the development of the production and material base of PTB is determined based on the volume of contracted construction and assembly and repair and construction works planned for these organizations.

In accordance with the specified volume of contractual works, PTB calculates the need for resources (materials and structures manufactured at enterprises; machines and motor vehicles, labor force). Based on the calculation of the need for materials and structures, the need for the development of the production base is determined.

The level of mechanization, as well as the degree of the use of innovative technologies and the introduction of innovative technology and equipment provided in the projects, have a significant impact on the cost of construction and assembly and repair and construction works.

On the other hand, taking into account the specifics of PTB's activity – ensuring the required level of railway capacity and safety of connections – the most important means of technical rearmament of railway transport is the introduction of automation, incl. in order to ensure safe crossing of communication routes.

The production process of transport construction requires labor and means of production.

Means of production consist of means of labor and objects of labor.

The means of labor are the tools with which people influence the objects of labor and process them to meet human needs, and the objects of labor represent the object on which a person affects with the help of the means of labor.

Means of labor gradually wear out in the field of production, but retain their original form. They act repeatedly, for a long time, wear out gradually and do not leave the sphere of production until they are used and replaced by others. Participating in the production process, the means of labor in their natural form are not included in the products created with their help. They are gradually, as they wear out, transferred into products only as a part of the labor materialized in them. Accordingly, part of their cost is transferred to the cost of manufactured products.

The difference in the method of participation of means of labor and objects of labor in the process of production and creation of a product is expressed in the division of means of production into fixed and working capital.

The specific weight of individual elements of fixed assets in their total cost at different PTBs is different. The structure is determined, first of all, by the features of construction production in certain areas.

Thus, in PTB, a significant proportion of the cost of fixed assets (up to 60%) falls on construction machines and mechanisms, power and production equipment. In the fixed assets of industrial enterprises, buildings and structures make up to 65%, while in PTB the specific weight is no more than 20%.

Employees of PTB annually perform a significant amount of construction, assembly and repair and construction works, which made it possible to ensure the safety of train traffic and the further stable functioning of railway transport, namely: continuation of work on the separation of passenger and freight traffic, implementation of accelerated train movement, completed works on strengthening the infrastructure on the main routes, ensuring the safety of connections, reducing accidents. Also, works are being carried out on the reconstruction of the railway infrastructure and the increase of the carrying capacity.

The cost and condition of production capital assets characterizes the degree of technical armament of PTB.

In total, 18.83 km of tracks were built and restored over the past year.

Performed repair works, construction of second tracks, reconstruction of stations and review of the production purpose of tracks at stations.

One of the problems of PTB is the low level of equipment with means of small mechanization.

In total, 455.7 km of tracks were modernized on the railways (102% of the plan), including 243.6 km in long "windows", 833.4 km (116%) of tracks were overhauled, and including performed in a long "window" of 186.7 km.

974.4 km of non-contact track slabs were laid, incl. 481 km during track overhaul, 499.1 km from new rails.

861 sets of new turn signals were replaced (111%). 503 sets (135%) of the old turn signals were replaced, including on reinforced concrete beams 360 sets with a plan of 257 (140%). The average repair of 504 sets of turnouts (115%) was performed.

Complete replacement of rails with new ones for 116.42 km (182%), with old ones – 241.1 km with a plan of 157 km.

To ensure the accelerated movement of PTB passenger trains, the following works were performed: modernization of track 329.8 km, enhanced capital repair of track 79.2 km, capital repair of track 32.8 km, average track repair 418.9 km, complex and rehabilitation repair of track 321.7 km, replacement of rails with new ones 61.6 km, replacement of new turnouts 423 sets, average repair of turnouts 140 sets, major repair of crossings 28 units, closure of inactive crossings 4 units, conversion of crossings in line with another 18 units, reconstruction station entrances 24 units, capital repair of artificial structures was carried out in the amount of UAH 25,898.7 thousand, capital repair of the ground surface was carried out in the amount of UAH 43,087.2 thousand.

There are a considerable number of kilometers in operation in the track, which requires capital repair of the track. Overdue capital repair is 5,820.6 km.

The plan for the capital repair of engineering structures of railways of Ukraine for the year was completed in the amount of UAH 244,711.4 thousand, which is 116% of the work plan. The capital repair plan for man-made structures has been completed by 117% and the ground surface by 116%. The number of active warnings about limiting the speed of trains is 69, with a length of 77.6 km.

From the total number of warnings, it is necessary to highlight warnings – due to wear and defectiveness of the elements of the upper structure of the track: 5 warnings with a length of 4.1 km due to the defectiveness of the rails; 12 warnings with a length of 37.9 km due to defective rail fastening; 1 warning with a length of 0.2 km due to defective sleepers; 6 warnings with a length of 3.7 km due to the presence of splashes; due to track repair – 25 warnings with a length of 28.6 km.

At the end of the year, 1,998 tracks were closed for train traffic and shunting, including 325 – reception and departure, and 626 arrow transfers, incl. in the main tracks – 97, receiving-departure tracks – 135.

The residual value of the fixed assets of the railway industry is 30,814.2 million hryvnias. The percentage of depreciation of fixed assets is 93%. During the year, there was an increase in the value of fixed assets due to the following changes: received fixed assets – 3,849.2 million hryvnias (wear 2472.6 million hryvnias); revaluation was carried out – 15,565.2 million hryvnias (depreciation 14,811.6 million hryvnias); was eliminated – 21,573.7 million hryvnias (depreciation 21,561.0 million hryvnias); other changes (modernization, completion, reconstruction, shortages, etc.) – 2,274.1 million hryvnias (depreciation – UAH 7,917.0 million); amortized – UAH 1,950.8 million.

Total expenses for the year with investments amounted to 11,738.8 million hryvnias (102.3%) including expenses from ordinary activities – UAH 9,122.12 million, of which repair and construction activities amount to UAH 1,769.4 million and current maintenance – UAH 6,588.7 million.

Repairs of fixed assets were carried out for UAH 1,769.4 million (104%).

The cost of repair and construction works is within the planned limits, except for works using scrap materials.

The implementation of the plan for the growth of assets (capital investments) for the production purpose for the year is 2,616.7 million hryvnias (92.5%). Namely:

1. Capital construction was completed for 344.4 million hryvnias (80.4%), including by regional branches: Lviv – 101.4%, Odesa – 98.1%, Prydniprovskya – 94%, South-West – 106.2%, South – 55.4%.
2. Modernization of fixed assets – UAH 2,162.7 million was completed (110.4%), and 2,074.4 million hryvnias were mastered (105.9%), of which: South-Western – 125.3% and 119%. All other railways have 100% implementation and development.

Including by types of work:

- Modernization of the track was carried out in terms of physical volumes by 102.3%, in value terms by 97.8%, with a plan of 445.3 km for the amount of 1569.56 million hryvnias, execution amounted to 455.7 km for the amount of 1535.2 million hryvnias.
- Laying of the track grid on reinforced concrete sleepers and fastening of KPP-5 was completed on 363.6 km for the amount of UAH 878.4 million, which is 138.2%, exceeding the plan due to the increase in the physical volume of work.
- Reconstruction of relocations under the plan of 11 units in the amount of 5.06 million hryvnias, performance is 9 units in the amount of 3.1 million hryvnias. Planned physical volumes on the South-Western (three crossings against two planned) and Southern railways (two against one planned) were not fulfilled.
- Replacement of turnouts with new ones on reinforced concrete sleepers and wooden beams, execution is 585 units in the amount of 371.0 million hryvnias (114.2%), including on reinforced concrete beams, the execution is 538 units in the amount of 126.6 million hryvnias (150.8%); on wooden bars, the performance is 47 comp. in the amount of 9.0 million hryvnias (94.8%).

Modernization of mechanisms and equipment – implementation is 14.2 million hryvnias, which is 93.2%.

The purchase of mechanisms and equipment is completed by 73%. Delivered products worth 84.2 million hryvnias, incl. track tools in the amount of 29.6 million hryvnias (70%).

100.3 million hryvnias of the planned centralized funds for the purchase of equipment, purchased for 58.9 million hryvnias (59%), 165% was purchased with own funds, at the expense of the South-Western Track Service (three units of gantry cranes were purchased outside the plan for the amount of 12.1 million hryvnias).

The actual number of railway employees is 64,474, of which 63 less than the planned quantity.

At the same time, the priorities of the strategic development of the railway industry and PTB were clearly formed. Taking into account the negative impact of the financial and economic crisis on the volume of transportation, the deterioration of the financial situation in the railway industry, in order to reduce the costs of repair work, it is planned to carry out the following works with the introduction of resource-saving technologies for the current year.

## **5. Research results**

In this article, methodical approaches to determining the effectiveness of the system of managing the reproduction activity of transport infrastructure objects on the basis of indicators for evaluating the performance of individual functions of transport construction have been further developed through the development of a general indicator for conducting a comprehensive assessment of the effectiveness of the reproduction management processes of fixed assets.

First of all, to implement the Decree of the President of Ukraine dated 17.06.2008 No. 556/2008 “On additional measures to prevent traffic accidents” regarding the equipment of railway crossings with heavy traffic with technical means that would make it impossible for motor vehicles to enter the crossing when traffic lights are prohibited.

Improving the safety of traffic at railway crossings – to equip 15 crossings with bus traffic with automation, to transfer 68 crossings to the same level as regular crossings, including 43 crossings in the directions of the introduction of accelerated traffic.

## **6. Conclusions**

The following conclusions can be reached on the basis of the conducted research.

In this article, theoretical approaches to the management of the economic activity of transport construction enterprises have been improved, in which, in contrast to the existing ones, the priority of revenue management is established before cost management and goal-oriented performance management is used, which involves the purposeful influence of the management entity using special tools on profitability of each type of reproductive activity in order to maximize the use of production capacities. The essence of organizational and economic principles of PTB functioning is revealed.

Based on these positions, the author justified the economic principles of the mechanism of separate functioning of PTB as a special component of railway transport production, which include the peculiarities of the application of various forms of ownership and economic relations for the implementation of the main activity.

Thus, the main goal of PTB is to stabilize the technical condition of the fixed assets of JSC “Ukrainian Railways” through the reproduction of railway infrastructure, which will make it possible to ensure the strategic development and effective functioning of railway transport, to ensure the necessary level of throughput and carrying capacity, safety of train traffic, which as a result will increase the competitiveness of railway transport will increase the state’s defense capability.

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