ЕКОНОМІКА ТА УПРАВЛІННЯ ПІДПРИЄМСТВАМИ ТРАНСПОРТУ / ECONOMY AND MANAGEMENT OF TRANSPORTATION ENTERPRISES

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"GREENING" AND INTELLECTUALIZATION OF TRANSPORT IN THE CONTEXT OF ENSURING ECONOMIC SECURITY OF TRANSPORTATION ENTERPRISE

Goal. The purpose of the article is to substantiate the necessity of "greening" and intellectualization of transport for ensuring the economic security of transportation enterprises. **Method.** This paper uses the following research methods: dialectical method, systematic approach, comparative and economic analysis, and models of discriminative analysis (five-factor model of E.Altman, Konan Golder's model, and Lis's model). **Results.** The research on the foreign experience with "greening" and intellectualization of the transport system has shown that developed EU countries are actively investing in "green" transport with the goal of minimizing adverse effects on the environment. There are systemic principles of government stimulus for "greening" the transport, which are used in different countries. It is concluded that some countries use methods of fiscal stimuli and direct subsidies for the popularization of "green transport". It is concluded that "greening" and intellectualizing the transport have drastic ecological and economic advantages, hence they are the focus areas of transport infrastructure development. The diagnostics of economic security of urban Municipal enterprise "Khersonelectrotrans" are concluded by utilizing the following models of discriminative analysis: five-factor model of determining the Z index (E. Altman's model); Konan Golder's model; Lis' model. The results illustrate a high probability of bankruptcy for urban Municipal enterprise "Khersonelectrotrans". It is determined that ensuring the economic security of the enterprise is impossible without launching an innovative investment plan and a radical increase in investments for an innovative development. **Practical importance.** The proposed method is to determine economically justified tariffs on the services of urban enterprises that provide electric transport. This will ensure adequate financing for systemic modernization of these enterprises, resulting in "greening" and intellectualization of transport and increased quality of transport services.

Keywords: "greening" transport; intellectualization of transport; economic security of enterprise; diagnostics; transport system

Problem Statement

The relevance of this paper is attributed to the fact that the integration of Ukrainian economics into the global community demands dynamic, balanced, and sustainable development of all its sectors; transport and transport infrastructure in particular.

In the environment of transport system globalization, EU countries face growing competition in the global transportation market. Thus, considerable attention is paid to large-scale and long-term projects aimed at the modernization of transport and transport infrastructures to maintain their competitive edge.

In the light of escalating global issues such as climate change, growing population, pollution, inefficient use and exhaustion of natural resources, resource-intensive economy, etc, it is crucial to

globally transition to technologies and methods that are more environmentally sustainable for the sake of further development of humankind [1, p. 21]. Hence, today developed EU countries are actively investing in "green" transport to minimize adverse effects on the environment.

Analysis of the recent researches and publications

A quite large number of studies have been devoted to the analysis of the problems of modernization of transport and transport system over the past years. Contemporary authors Baranivskyi O. [2], Dmytriieva O. [3], Matsenko O., Havrylova V., Haityna M., Shyian A. [4], Shandova N. [5] determine the relevance of innovative development of Ukrainian transport.

Problems of defining the essential characteristics of economic security of enterprise dedicated research by Danilova E. [6], OnischenkoM., Dutchenko O., Shpitshuz S.[7], Vivchar O. [8-9], Solomina, Gh. [10], Vakhlakova V. [11] and others.

Despite the studies conducted, the problem of "greening" and intellectualization of transport requires more in-depth research to ensuring economic security of transportation enterprises.

Formulating the article goals

The purpose of the article is to substantiate the necessity of "greening" and intellectualization of transport for ensuring the economic security of transportation enterprises. To achieve this purpose, this paper is going to do the following: explore the international experience with "greening" and intellectualization of the transport system; evaluate the economic security of the urban Municipal enterprise "Khersonelectrotrans"; to substantiate the necessity of "greening" and intellectualization of "Khersonelectrotrans" transport.

Main material presentation

Nowadays, the environment friendly approach plays an increasingly important role in economic processes. Businesses have to change their traditional methods to reduce the unfavorable processes of climate change and at the same time, sustainable business performance is also a basic requirement. According to authors Miklós Pakurár, Attila Benedek (Hungary), Muhammad Asif Khan (Pakistan) & Judit Oláh (South Africa) [12, p. 111-112], if management is committed to being environment-friendly, innovation can improve the efficiency of green practices.

The policy of green economy is pursued in two key dimensions:"greening" of economic growth and seeking for the potentials resulting from the implementation of green economy principles.The concept of green growth offers the way to achieve the sustainable development through the effective use of natural resources in economic activities. The dynamic assessment of ecological goods, services and technologies at company and sectoral level covers two aspects: the assessment of green business as a source of innovation and a source of economic capabilities for green growth [13, p. 88-89]. A structural transformation of the transport sector will be needed if environmentally sustainable, green economies are to become a reality.

"Green" (ecologically clean) transport is any transport with low adverse environmental impact. The "greening" programs of transport systems are based on utilizing information and digital technologies via transitioning to hydrogen and electric-based transport, which contribute to substantial improvement in air quality.

Many European companies are considered global frontrunners in transport infrastructure, logistics, transport manufacturing and its intellectualization. However, EU companies had had bitter experiences when the EU had significant potential to become the "green" transport leader but did not assess these prospects in time. The market was taken over by Tesla, the vehicles of which are in the highest demand globally. Tesla promptly recognized decreasing dependency on petroleum and proposed a solid solution.

"Greening" the transport is a part of a functioning "green" economy, which is aimed at ensuring sustainable management of natural resources during the management of economic activities [14, p. 364]. Therefore, developed countries place great emphasis on the popularization of alternative fuel vehicles. Eventually, the sales of electric and hybrid vehicles in the European transport market nearly tripled in 2020 (over 1 million vehicles), making up nearly 10% of overall market sales [15].

The Table 1 illustrates the principles of government stimuli for "greening" transport which are implemented in various countries. It is concluded that countries tend to use fiscal stimuli and direct subsidies in order to popularize "green transport".

Table 1

General principles of the government stimuli for "greening" the transport
Source: developed by the authors on the basis of data [2, p. 9; 16; 17]

Method of government stimuli	Countries	Method's characteristics
Fiscal stimulus	Norway, the Netherlands, Sweden, France, Great Britain, Germany, Japan, China	Provides for management of the system of transport taxation: exempts from tax for the first registration, exempts from annual road tax. Also, there are a number of incentives for the owners of "green" transport: free parking, free autobahn transportation, permission to use outlined zones of public transport.
Direct subsidies or one-time payments for buying "green" transport	USA, Sweden, France, Great Britain, Japan, China	In this regard, most countries rely upon their levels of carbon dioxide emissions, or, for instance, China, on their electric range.

Major benefits of "greening" transport are specified in Figure 1.
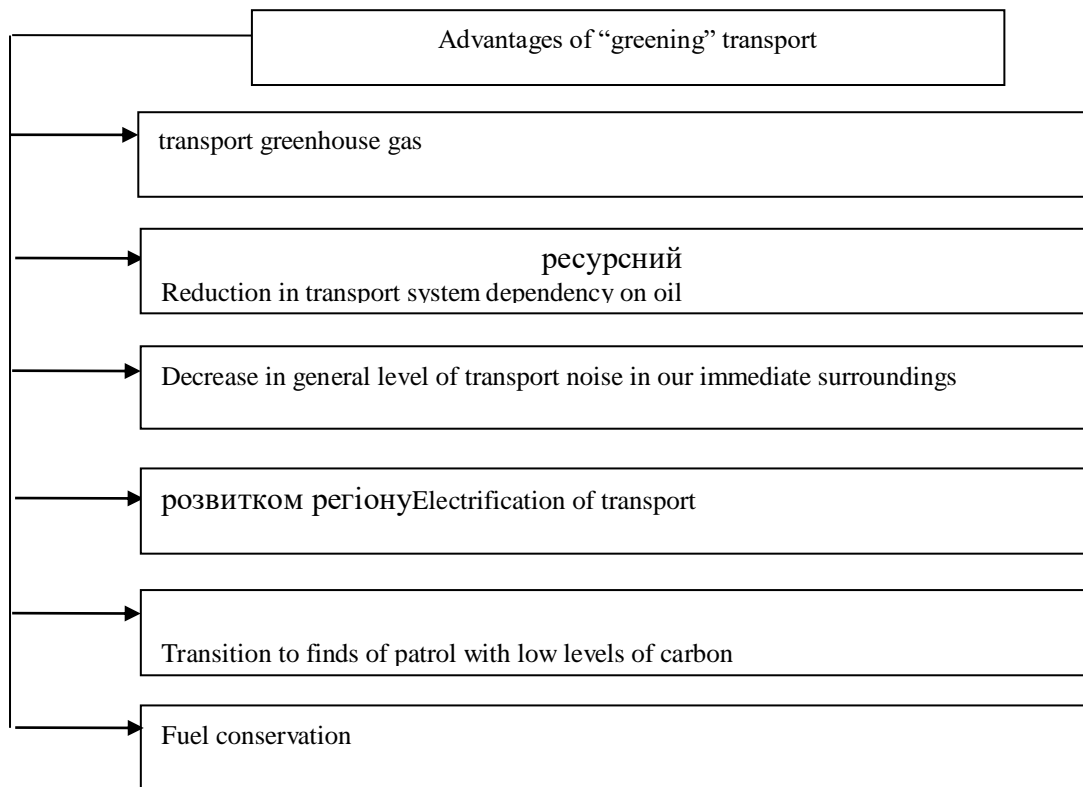

Fig. 1. **Major advantages of "greening" transport**

Source: developed by the authors on the basis of data [2, p. 10; 4, p. 24]

"Green" transport (electric cars, electric trains, trolleybuses, trams, and electric buses) has both considerable ecological and economic effects because it decreases the transport system's dependency on energy imports (oil). An increase in the quantity of "green" transport helps reduce the release of carbon into the ambient air, helps the environment, and fortifies the country's energy security.

However, the biggest tendency of transport system development is the utilization of technological transformations that are accompanied by large-scale implementation of digital technologies into transport.

The major advantages of the intellectualization of transport systems are shown in Figure 2.
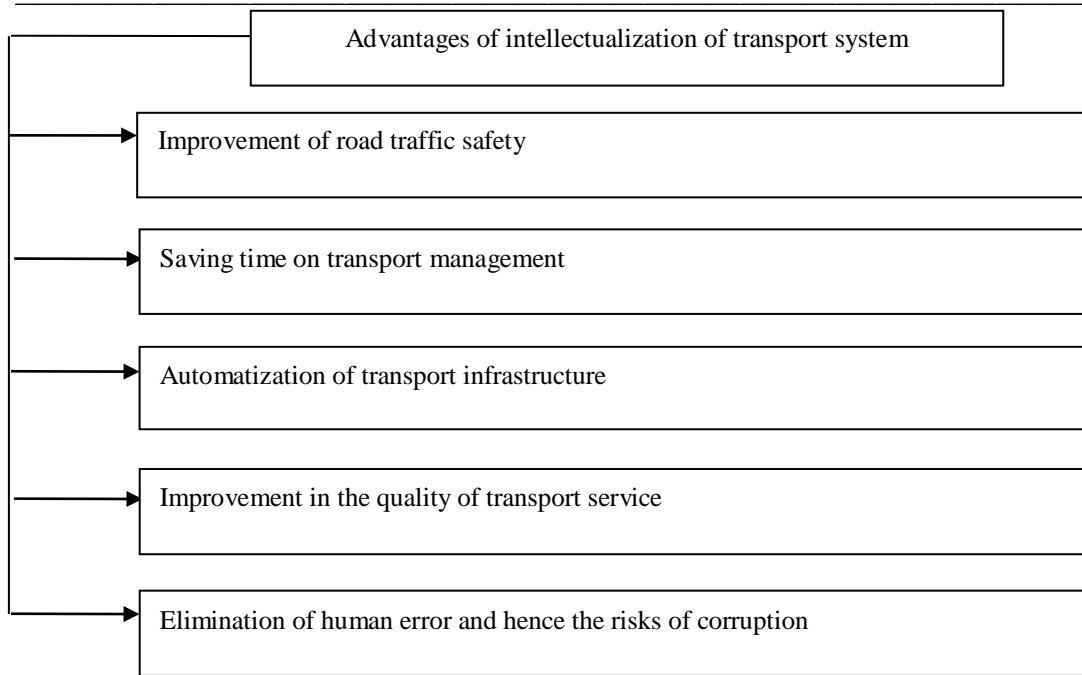
Advantages of intellectualization of transport system

Improvement of road traffic safety

Saving time on transport management

Automatization of transport infrastructure

Improvement in the quality of transport service

Elimination of human error and hence the risks of corruption

Fig.2. Major advantages of transport system intellectualization

Source: developed by the authors on the basis of data [2, p. 10; 4, p. 24]

Therefore, "greening" and intellectualization of transport have significant ecological and economic advantages. Thus, they are the focus areas of transport system development.

The object of research is economic security of the urban Municipal enterprise "Khersonelectrotrans", which is one of the major means of public transport for city Khersonresidents and visitors.

Urban Municipal enterprise "Khersonelectrotrans" was founded in 1960 and is a communal property of the Kherson community. The general characteristics of "Khersonelectrotrans" are illustrated in the Table 2.

Table 2

General characteristics of the urban Municipal enterprise "Khersonelectrotrans"
Source: developed by the authors on the basis of data [18]

Criteria	Characteristics
Full Name	Urban Municipal enterprise "Khersonelectrotrans"
Short Name	UME "Khersonelectrotrans"
Area	Kherson Oblast
legally constituted form of management	Municipal enterprise
Form of ownership	Government owned / Owned by territorial communities
The name of the body, what management area it belongs to	Kherson Chamber of Kherson Oblast
Kind of economic activity as described in Classification of Economic Activities	49.31 "Land passenger transport of urban and suburban carriage"
Legal address	Ukraine, 73036, Kherson Oblast, Kherson, str .Zalaegerszeg, bldg. 12
Authorized capital, thousands UAH	12964
Rolling stock park	45 passenger trolleys
Total length of trolleybus network	97.2 kilometers (in one-dimension computation)
Annual passenger volume	Nearly 30 million passengers
Average number of employees in 2019	312

Public passenger transport is a vital part of Kherson's production infrastructure, which supports vital functions of the community in both production and social fields. Its sustainable and effective functioning is required for economic stabilization, higher quality of life, and social well-being of Kherson residents.

The evaluation of economic security of urban Municipal enterprise "Khersonelectrotrans" is done using the following methods:

- Following the five-factor model of determining the Z index;
- Konan Golder's model;
- Lis' model.

The Table 3 illustrates the results of economic security diagnostics for the urban Municipal enterprise "Khersonelectrotrans" following the five-factor model of determining the Z index.

Table 3

Diagnostics of economic security of urban Municipal enterprise "Khersonelectrotrans" following the five-factor model of determining the Z index

Source: the authors' own development based on data [18]

Indicators	At the end			Deviation (+, −)	
	2017 yr.	2018 yr.	2019 yr.	before 2017 yr.	before 2018 yr.
Current assets, k. UAH	3886	19147	4861	+975	-14286
Current liabilities, k. UAH	32177	45386	45594	+13417	+208
Working capital reserves, k. UAH	-28291	-26239	-40733	-12442	-14494
Total assets, k. UAH	21898	34334	35055	+13157	+721
Working capital reserves in assets	-1.29	-0.76	-1.16	+0.13	-0.40
Net Profit, k. UAH	-3360	-1133	-115	+3245	+1018
Asset profitability based on net income	-0.153	-0.033	-0.003	+0.150	+0.030
Financial result before taxation, k. UAH	-3360	-1133	-115	+3245	+1018
Asset profitability based on profit before tax	-0.153	-0.033	-0.003	+0.150	+0.030
Equity capital, k. UAH	-11277	-12410	-12525	-1248	-115
The funded ratio based on equity capital	-0.35	-0.27	-0.27	+0.08	0
Net revenue from sales, k. UAH	9229	14086	17762	+8533	+3676
Asset utilization Index	0.42	0.41	0.51	+0.09	+0.10
Probability of bankruptcy index (Z)	-2.061	-0.826	-1.068	+0.992	-0.242
Probability of bankruptcy evaluation	very high (Z ≤ 1,80)			↓	↑

The calculations indicate that, during 2017-2019, "Khersonelectrotrans" had an unsatisfactory structure because, during the entire period, it did not have any of its own working capital. The calculations of the profitability of the enterprise's assets, which are based on both net and gross income, showed that "Khersonelectrotrans" is a failing business. The negative value of the enterprise's equity illustrates that the company does not have its own capital and all its assets were made by means of borrowed money. The issue that arises then is that the borrowed capital is bigger than the value of the enterprise's assets, which in turn increases the possibility of the company going bankrupt. The evaluation of the company's asset utilization showed that, in 2017, for each 1 UAH of the company's assets, it made 0.42 UAH, 0.41 UAH in 2018, and 0.51 UAH in 2019. An increase in the asset utilization is a positive trend.

Summarizing the above mentioned data, we can conclude that, according to the 5-factor model of determining the index Z, there is a high chance of "Khersonelectrotrans" going bankrupt. Moreover, this possibility has only increased since 2018, which is a negative trend.

In foreign countries, the Konan Golder's model is used to evaluate the economic security of an enterprise.

The pattern of likelihood of delays in payment, according to different values of Konan Golder's model (ZKG), were derived using the correlation-analysis of 95 small and medium-sized companies. The likelihood of delays in payment for different values of the Konan Golder's model (ZKG) is illustrated in Table 4.

Table 4

Interpretation of Konan Golder's values
Source: [19, p. 202]

Konan Golder's value (Z_{KG})								
+0.210	+0.048	+0.002	-0.026	-0.068	-0.087	-0.107	-0.133	-0.164
The likelihood of delays in payments, %								
100	90	80	70	50	40	30	20	10

The Table 5 illustrates the evaluation of economic security of the enterprise following this model.

Table 5

Evaluation of economic security of urban Municipal enterprise "Khersonelectrotrans" using the Konan Golder's model
Source: the authors' own development based on data [18]

Indicators	At the end			Deviation (+, −)	
	2017 yr.	2018 yr.	2019 yr.	before 2017 yr.	before 2018 yr.
Accounts receivable, k. UAH	1012	16246	1735	+723	-14511
Cash and cash equivalents, k. UAH	128	132	254	+126	+122
Total assets, k. UAH	21898	34334	35055	+13157	+721
Coefficient x_1	0.052	0.477	0.057	+0.005	-0.420
Permanent capital, k. UAH	7334	16005	18309	+10975	+2304
Total liabilities, k. UAH	21898	34334	35055	+13157	+721
Coefficient x_2	0.335	0.466	0.522	+0.187	+0.056
Financial costs, k. UAH	0	0	0	0	0
Net revenue from sales, k. UAH	9229	14086	17762	+8533	+3676
Coefficient x_3	0	0	0	0	0
Labor costs, k. UAH	20945	27077	29534	+8589	+2457
Allocations for social events, k. UAH	4500	5907	6576	+2076	+669
Staff costs, k. UAH	25445	32984	36110	+10665	+3126
Profit (financial result) before tax, k. UAH	-3360	-1133	-115	+3245	+1018
Added value, k. UAH	22085	31851	35995	+13910	+4144
Coefficient x_4	1.152	1.036	1.003	-0.149	-0.032
Gross profits, k. UAH	-38289	-50079	-55468	-17179	-5389
Attracted capital, k. UAH	33175	46744	47580	+14405	+836
Coefficient x_5	-1.154	-1.071	-1.166	-0.012	-0.094
Konan Golder's Index (Z_{KG})	0.327	0.334	0.274	-0.053	-0.060

According to the calculations of Konan Golder's values (Table 5), the relationship between indicator values, and the likelihood of delays in payments shown in Table 4, we can conclude that the likelihood of delays in payments for "Khersonelectrotrans" during 2017-2019 is 100 %, which is indicative of an economic threat to the enterprise.

In foreign practice of business-analysis for express-diagnostics of economic security of enterprise, the Lis' model is used. According to the Lis' model, the estimated threshold of the indicator of an enterprise's economic security is $Z_L = 0.037$ [20, p. 362]. The differentiation of the enterprise following the Lis' model is as follows:
- If $Z_L > 0.037$ – The probability of bankruptcy is low;
- If $Z_L < 0.037$ – The probability of bankruptcy is high.

The Table 6 illustrates the results of economic security diagnostics for the urban Municipal enterprise «Khersonelectrotrans» following the Lis' model.

Table 6

Evaluation of economic security of urban Municipal enterprise "Khersonelectrotrans" using the Lis' model
Source: the authors' own development based on data [18]

Indicators	At the end			Deviation (+, −)	
	2017 yr.	2018 yr.	2019 yr.	before 2017 yr.	before 2018 yr.
Current assets, k. UAH	3886	19147	4861	+975	-14286
Total asset cost, k. UAH	21898	34334	35055	+13157	+721
Coefficient x_1	0.177	0.558	0.139	-0.039	-0.419
Gross profits, k. UAH	-38289	-50079	-55468	-17179	-5389
Coefficient x_2	-1.749	-1.459	-1.582	+0.166	-0.124
Undistributed profit, k. UAH	-24536	-25669	-25784	-1248	-115
Coefficient x_3	-1.120	-0.748	-0.736	+0.385	+0.012
Equity capital, k. UAH	-11277	-12410	-12525	-1248	-115
Borrowed capital, k. UAH	33175	46744	47580	+14405	+836
Coefficient x_4	-0.340	-0.265	-0.263	+0.077	+0.002
Lis' index (Z_L)	-0.214	-0.142	-0.179	+0.035	-0.037

The calculations attest to a high probability of bankruptcy for "Khersonelectrotrans" modeled after Lis.

Summarizing the data, we can conclude that "Khersonelectrotrans" is at a high risk of bankruptcy.

Therefore, the diagnosis of bankruptcy is present in the system of management of economic security of the enterprise. It is worth noting that the diagnosis of bankruptcy is both a function and a particular stage in the management of the enterprise's economic security. It is the starting point for determining an alternative development for the enterprise in the context of increased turbulence and dynamics of the economic environment.

In the current context of the development of a market economy, the major principle of financial success and enterprise competitiveness is a permanent implementation of innovative technologies in all areas of economic activities [21, p. 120-121]. Ensuring an economic security of the enterprise is not feasible without significantly increased investment into the real sector of economy.

The process of globalization has changed the geography of transport and economic relations both locally and globally. The demands on transport have changed drastically as well [5, p. 210]. Today, the strategic development of the Ukrainian transport system is innovation. This direction is decisive in the process of integrating the national transport infrastructure into the trans-European transport network.

Innovation is a complex and wide concept. There are significant unresolved differences in opinions on how to measure it. Shpresim Domi, Remzi Keco, Gentjan Mehmeti (Albania) & Joan-Lluís Capelleras (Spain) [22, p. 70] argued that the higher is the attitude, culture and being open-mind to innovate the more the innovation will take place into the enterprises.

Kayhan Tajeddini & Myfanwy Trueman (United Kingdom of Great Britain and Northern Ireland) [23, p. 281] pointed out that due to fierce competition, globalization and technology advancements along the last decades, the need to innovate is considered imperative. In this context Eva Ivanová & Martin Čepel (Slovak Republic)state that "a key factor of the states' increasing competitiveness is assumed to be the innovation performance of enterprises, which is projected through innovative business processes into the innovation performance of the economy as a whole" [24, p. 54].

Every economic entity is required to clearly envision their potential needs of financial, raw, labor, and intellectual resources, as well as their production capacity and inventory of their availability. They also need to be able to use productive and natural resources efficiently in the process of their economic activities and react promptly and efficiently to changes in their immediate business environment while minimizing environmental risks [25, p. 36]. However, Ukraine ranked 60th among 180 countries in environmental sustainability rating in

2020 [26], which means that not enough attention is paid to the development of "green" business.

The economic potential of the "green" economy indicated the necessity to increase "green" investment, involvement which will allow Ukraine to reach a new level of development. Among the directions of the "green" economy in Ukraine highlighted the rational use of natural resources, environmental protection, the formation of a new environmental behavior of the population, diversification of energy sources, modernization of housing and communal services, production of organic products [1, p. 20].

In order to enhance "green" business with the goal of ensuring sustainable development of Ukraine, governmental bodies and local governments have to develop a mechanism for stimulating domestic enterprises in the context of maximizing the effectiveness of using natural resources [27, p. 244]. This will reduce environmental risks and help to ensure an economic security of the country and domestic enterprises.

In modern conditions of limited sources of funding and limited competition one of the ways to attract capital for modernization of capital stock and implementation of progressive technologies into the production process is reducing the tax burden and determining an appropriate tax on all levels [28, p. 204]. This can take the form of subsidies, additional incentives for buying "green transport", etc. That said, Serhii Rybachok et al. (Ukrainian) [17, p. 67] note that the released funds need to be used towards the following: installation of industrial parks with the use of modern, energy-saving technologies; implementation of innovative technologies in the context of industrial parks' economic activities, and others.

According to O. Baranivskyi (Ukrainian), "today the integration of the Ukrainian transport system, the development of innovations, information and digital technologies envisage the use of intelligent, ecological, safe and integrated transport" [2, p. 8].

The examination of global trends in the area of innovation and technology in transport system has allowed us to select the major ones; they are shown in Table 7.

Table 7

Global trends in the field of transport
Source: developed by the authors on the basis of data [29, p. 6-7]

Fields of transport	Direction	Technological solution
Road transport	Clean transport without carbon. Ensuring the absence of carbon dioxide emissions	Electric cars
		Clean transport technologies (light materials, electric trains, brake pedals, tyre, cleaning systems, power electronics, vehicle control system and digital production technologies), their infrastructure including interface
		Technologies that are more systemic in nature regarding implementation of clean transport and new services in transport infrastructure
	Artificial intelligence implementation	Drones
Transport infrastructure	Digital	Big Data
	Allied infrastructure	Network TEN-T
	Security	Digital infrastructure protection, including cyber security
	Traffic management	Additional satellite navigation services (Galileo / EGNOS)

The "greening" of transport in Kherson can be achieved via replacing mini-buses (marshrutkas) with electro buses.

In order to "green" and intellectualize the public transport of "Khersonelectrotrans" it is necessary to establish a system of modernization of its rolling stock. The most important objective of the systemic modernization is the rolling stock renewal of "Khersonelectrotrans", and an implementation of the automated fare system (AFS) with the goal of improving the quality of transport services.

Taking into account that achieving these goals requires substantial investment of financial resources, O. Palant (Ukrainian) [30, p. 22] propose the investment size for systemic modernization of rolling stock of the urban electric transport to calculate according to the formula:

$$I_M = \frac{\left(S_{AFS} + C_{RS}\right) * I}{1 - (1 + I)^{-t}}, \quad (1)$$

where I_M – investment size for systemic modernization of rolling stock of the urban electric transport, UAH;

S_{AFS} – the spending on the implementation of an automated fare system (AFS), UAH;

C_{RS} – rolling stock renewal cost, UAH;

I – annual inflation rate;

t – time required for modernization, yrs.

Economically justifiable tariff on the services of urban electric transport enterprises we propose to calculate according to the formula:

$$T = \frac{C_{pl} * \left(1 + \frac{P_{pl}}{100\%}\right) * \left(1 + \frac{Gr_i}{100\%} * E_i\right) + I_M - NR_{oth} - CS}{P_V}, \quad (2)$$

where T – economically justifiable tariff on the services of urban electric transport enterprises, UAH;

C_{pl} – full planned service cost of the enterprise, UAH;

P_{pl} – planned level of enterprise's profitability, %;

Gr_i – growth rate of consumer income, %;

E_i – elasticity of demand for the consumer income;

I_M – investment size, UAH;

NR_{oth} – net revenue from other types of activities, UAH;

CS – compensation size (determined by the local governments), UAH;

P_V – total planned passenger volume, passengers.

The proposed methodology is to be used for calculation economically justifiable tariffs on the urban Municipal enterprise "Khersonelectrotrans" services.

The results of the calculations to determine economically justifiable tariffs on the urban Municipal enterprise "Khersonelectrotrans" services are illustrated in Table 8.

Table 8

The results of the calculations to determine economically justifiable tariffs on the urban Municipal enterprise "Khersonelectrotrans" with the account of investment plan

Source: developed by the authors

Indicator	Value
The cost of automated fare collection, million UAH	44.6
Rolling stock renewal cost, million UAH	1090
Investment components, million UAH / year:	
- Current	-
- Calculated taking into account modernization	204.105
Tariffs, UAH / passenger.:	
- Current	5.00
- Normative	5.00
- Calculated taking into account modernization	7.75

The calculated results show that an economically justifiable tariff exceeds the current tariff on the urban Municipal enterprise "Khersonelectrotrans": instead of the current tariff of 5.00 UAH / passenger, an economically justifiable tariff is 7.75 UAH / passenger. This difference is caused by the necessity of addressing social contributors when implementing the tariff by local governments. However, should there be partial or full funding of modernization via government subsidies or other sources, tariffs could be lowered.

Conclusions

The research on the foreign experience with "greening" and intellectualization of the transport system has shown that developed EU countries are actively investing in "green" transport with the goal of minimizing adverse effects on the environment. There are systemic principles of government stimulus for "greening" the transport, which are used in different countries. It is concluded that some countries use methods of fiscal stimuli and direct subsidies for the popularization of "green transport". It is concluded that "greening" and intellectualizing the transport have drastic ecological and economic advantages, hence they are the focus areas of transport infrastructure development.

The diagnostics of economic security of urban Municipal enterprise "Khersonelectrotrans" are concluded by utilizing the following models of discriminative analysis: five-factor model of determining the Z index (E. Altman's model); Konan Golder's model; Lis' model. The results illustrate a high probability of bankruptcy for

A practical implementation of the suggested methods would allow sufficient funding for systemic modernization of the urban Municipal enterprise "Khersonelectrotrans", which would lead to "greening" and intellectualization of transport and increase in service quality. Moreover, the proposed approach allows to account for public interest, which is achievable with the help of partial or full funding for modernization by the local government or private investors.

urban Municipal enterprise "Khersonelectrotrans". It is determined that ensuring the economic security of the enterprise is impossible without launching an innovative investment plan and a radical increase in investments for an innovative development.

Today, the strategic development of the Ukrainian transport system is innovation. The necessity of "greening" and intellectualizing on the urban Municipal enterprise "Khersonelectrotrans" transport has been justified. A practical implementation of these plans requires a considerable amount of financial investments. Thus, we propose the methodology of creating investment plans for determining economically justified tariffs on the services of urban electric transport enterprises, which will provide sufficient funding for a systemic modernization. Implementing the programs of transport "greening" and intellectualization is the strategic direction for Ukraine in the context of integrating the national transport network into trans-European network.

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«ОЗЕЛЕНЕННЯ» ТА ІНТЕЛЕКТУАЛІЗАЦІЯ ТРАНСПОРТУ В КОНТЕКСТІ ЗАБЕЗПЕЧЕННЯ ЕКОНОМІЧНОЇ БЕЗПЕКИ ТРАНСПОРТНОГО ПІДПРИЄМСТВА

Мета. Метою статті є обґрунтування необхідності «озеленення» та інтелектуалізації транспорту для забезпечення економічної безпеки транспортних підприємств. **Методика.** В роботі використано наступні методи наукового дослідження: діалектичний метод пізнання, системний підхід, порівняльний та економічний аналіз, моделі дискримінантного аналізу (п'яти-факторна модель Е.Альтмана, модель Конана-

Гольдера та модель Лису). **Результати.** Дослідження закордонного досвіду «озеленення» та інтелектуалізації транспортної системи показало, що сьогодні розвинені країни ЄС з метою мінімізації негативного впливу на навколишнє природне середовище активно інвестують у «зелений» транспорт. Систематизовано принципи державного стимулювання «озеленення» транспорту, які використовують уряди різних країн. Встановлено, що задля популяризації «зеленого транспорту» держави використовують методи фіскального стимулювання та прямі субсидії. Визначено, що «озеленення» та інтелектуалізація транспорту мають значні екологічні та економічні переваги, а тому є пріоритетними напрямами інноваційного розвитку транспортної системи. Проведено діагностику економічної безпеки міського комунального підприємства «Херсонелектротранс» за допомогою наступних моделей дискримінантного аналізу: за п'яти-факторною моделлю визначення індексу Z (модель Е. Альтмана); за показником Конана-Гольдера; за моделлю Лису. Проведені розрахунки свідчать про високу загрозу банкрутства міського комунального підприємства «Херсонелектротранс». Зазначено, що забезпечення економічної безпеки підприємства є неможливим без активізації інноваційно-інвестиційної діяльності й кардинального збільшення інвестицій в інноваційний розвиток. **Практична значимість.** Запропоновано методику визначення економічно обґрунтованих тарифів на послуги підприємств міського електричного транспорту, яка забезпечить належне фінансування системної модернізації підприємства, що приведе до «озеленення» та інтелектуалізації транспорту, покращення якості надання транспортних послуг.

Ключові слова: «озеленення» транспорту; інтелектуалізація транспорту; економічна безпека підприємства; діагностика; транспортна система

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