DOI: 10.15587/978-617-8360-18-4.CH2

Kateryna Khavrova, Yurii Pokanevych, Yuliia Fisun,
Yevhen Denysov, Oleksandr Kindratenko

2 INTEGRATION STRATEGIES IN THE CONTEXT OF GLOBAL CHALLENGES

ABSTRACT

This study is devoted to the development of a system of anti-crisis management of transport enterprises to ensure their effective functioning in modern economic conditions.

The state of the transport industry of Ukraine was studied, where the following indicators were analyzed: the number of operating business entities, the number of employees, the volume of products sold (goods, services), the level of profitability of enterprises. It was determined that most of the analyzed indicators are decreasing in dynamics, which is primarily due to the consequences of military aggression against Ukraine. The main problems that hinder the development of the transport industry of Ukraine were identified. The prerequisites for the emergence of crisis phenomena in the activities of transport enterprises were studied – internal and external factors that can lead an enterprise to a crisis were identified.

The need for the implementation of anti-crisis management to overcome crisis phenomena in the activities of transport enterprises was substantiated. A system of anti-crisis management is proposed, which is represented by four main consecutive stages: diagnostics of the state of the enterprise, formation of an anti-crisis strategy and program, application of anti-crisis methods and measures and assessment of the effectiveness of the proposed methods and measures. Each component of this system is disclosed in detail.

It is found that the crisis caused by war is a special type of crisis phenomena. A comparison is made between the traditional and "war" crisis at the enterprise. In particular, it is determined that the second is systemic, long-term, carries not only financial losses, but also a threat to people's lives, destruction of infrastructure and loss of assets. This necessitated the adaptation of traditional anti-crisis management to the conditions of the war period. The features of anti-crisis management of transport enterprises during the war period are considered, in particular diagnostics, strategies, methods, measures and performance assessment.

KEYWORDS

Transport industry of Ukraine, military aggression, anti-crisis management, enterprise crisis, state diagnostics, anti-crisis strategy, military crisis, enterprise profitability.

The main goal of anti-crisis management of an enterprise during the war is to minimize the negative economic and social consequences of the enterprise's activities. Given that such a crisis is characterized

by an acute shortage of time to respond and a limitation on the terms of overcoming the crisis, the main task of anti-crisis management is to make decisions promptly and with the least risk, which would make it possible to achieve the desired result with minimal additional efforts and minimal negative consequences.

At the initial stages of the war, such a desired result is to ensure the uninterrupted operation of the enterprise and its survival in new war conditions. At this time, it is important to respond quickly to changes, ensuring the safety of employees and the stability of production and supply of products. As the war progresses, the priorities of anti-crisis management may change. The task of ensuring the survival of the enterprise turns into adaptation and adjustment of functioning in war conditions.

It is clear that the impact of war on enterprises is different and anti-crisis management requires an individual approach. However, in all cases, the main principles of anti-crisis management in wartime remain efficiency, risk minimization and priority of ensuring the uninterrupted operation of the enterprise.

Thus, in times of war, especially in the first "period of shock", all decisions must be made very quickly, since the situation changes every day and in such a case, untimely response can be costly for the enterprise. In this case, increasing the speed of making anti-crisis decisions in war conditions involves reducing the levels of management, a limit on the approval of decisions, within which decisions can be made without the approval of a senior manager, or decentralization, so that decisions are made not only from the top down, but also on missions, for the rapid resolution of local problems. As one of the managers whose business survived the first stages of the war notes: "It is better to make a mistake quickly than to think long".

The main goal of anti-crisis diagnostics in wartime is to identify the impact of war on the activities of the enterprise: assessing the current situation and identifying the causes of deviations.

2.1 STATE OF THE TRANSPORT INDUSTRY OF UKRAINE AND PREREQUISITES FOR THE EMERGENCE OF CRISIS PHENOMENA IN THE ACTIVITIES OF TRANSPORT ENTERPRISES

Today, transport plays a key role in ensuring the effective functioning of the economy and meeting the needs of society. Transport enterprises ensure the movement of goods, services and people both within the country and at the international level. However, the functioning of transport enterprises in a market economy is influenced by various factors of the external and internal environment. In Ukraine, the conditions of martial law open up new challenges and threats for transport enterprises, which significantly affects the stability and functioning of this industry. The introduction of anti-crisis management in the activities of transport enterprises will make it possible to avoid or reduce the negative impact of crisis phenomena and ensure their sustainable functioning in modern economic conditions.

In order to be able to apply anti-crisis management, it is important to timely identify the symptoms of crisis phenomena and establish the factors that led to the emergence of a crisis situation at the enterprise. To clarify the prerequisites for the emergence of crisis phenomena in the activities of transport enterprises, it is first necessary to examine the current state of the transport industry of Ukraine. The general state of the transport industry in 2022 deteriorated significantly, as evidenced by the following indicators:

1. Number of operating business entities. According to the State Statistics Service [1], the number of operating business entities in the "Transport, warehousing, postal and courier activities" industry began to decline starting in 2020 (**Fig.2.1**).

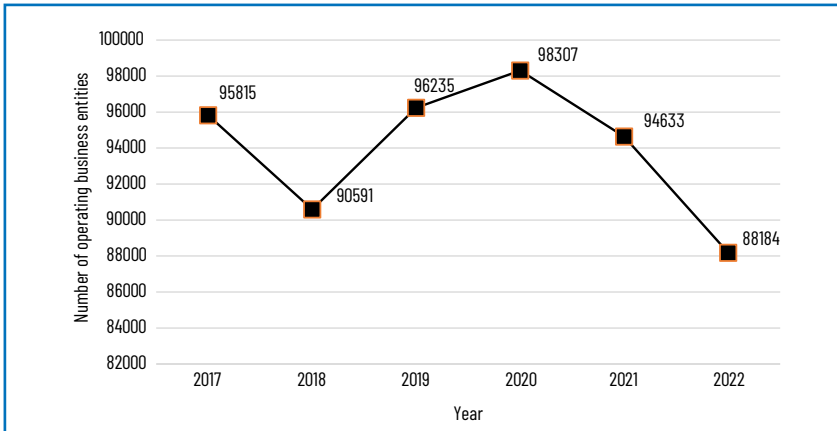

Fig. 2.1 Number of operating economic entities in the transport sector for 2017–2022, units

Source: [1]

2. Number of employees. The number of employees in the transport sector in 2022 decreased by 102,620 people (**Fig. 2.2**) [1]. Due to the consequences of the war, many enterprises were forced to reduce their activities or lose their infrastructure, which led to a decrease in the number of employees.

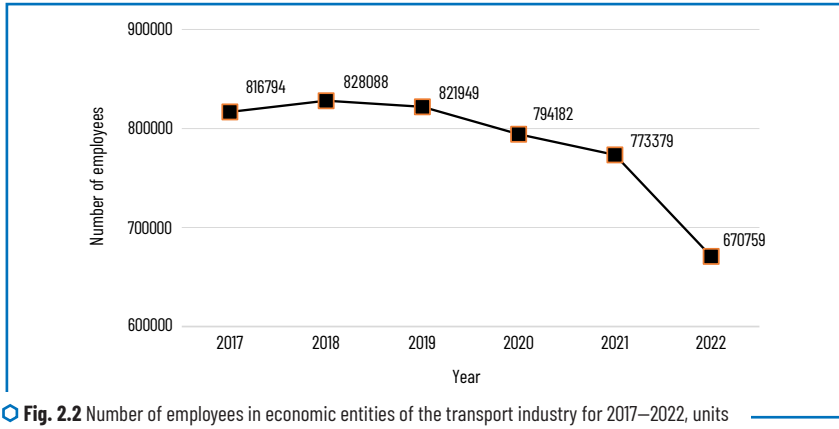

Fig. 2.2 Number of employees in economic entities of the transport industry for 2017–2022, units

Source: [1]

3. Volume of products sold (goods, services). Before the start of the war in 2022, the volume of products sold (goods, services) was constantly increasing, as evidenced by the data (**Fig. 2.3**) [1]. In 2022, the volume of products sold decreased by 112,539,339.3 thousand UAH.

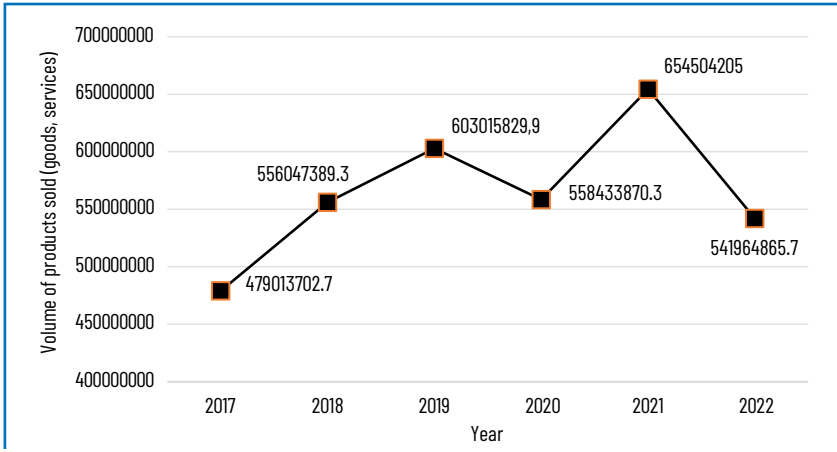

Fig. 2.3 Volume of sales (goods, services) of transport sector entities in 2017–2022, thousand UAH

Source: [1]

4. Level of profitability of enterprises. This indicator indicates how effectively transport enterprises use their resources to generate profit. The overall level of profitability of transport enterprises in Ukraine has always been low, however, in 2022 [1] the industry suffered large-scale losses (**Table 2.1**, **Fig. 2.4**) due to reduced demand, increased costs, currency fluctuations, etc.

Table 2.1 Profitability of transport enterprises in Ukraine in 2017–2022 by their size, %

Year	Overall profitability	Large enterprises	Medium enterprises	Small enterprises	Micro-enterprises
2017	–3.5	–6.7	2.3	–5.2	–14.0
2018	–4.3	–9.3	1.3	2.2	1.3
2019	1.4	–2.2	6.4	2.9	1.7
2020	1.6	2.4	1.9	–0.9	0.6
2021	3.7	4.5	3.6	2.0	2.1
2022	–4.2	–4.1	–5.5	–2.6	–11.9

Source: developed based on data [1]

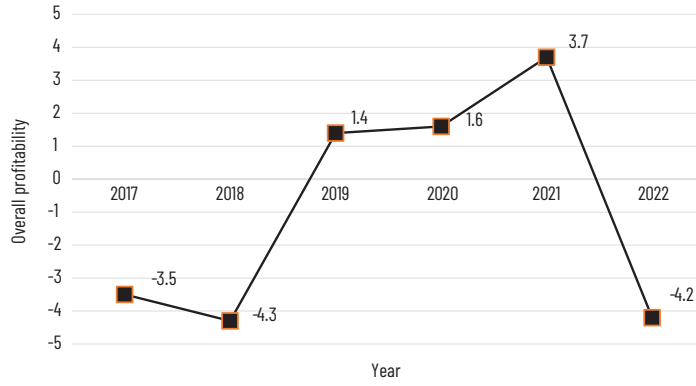

Fig. 2.4 Overall profitability of transport industry enterprises for 2017–2022, %

Source: [1]

The latest survey conducted by Advanter Group [2] at the end of 2023 on general problems that prevent the restoration and development of business shows: the biggest problem of enterprises is uncertainty (**Fig. 2.5**).

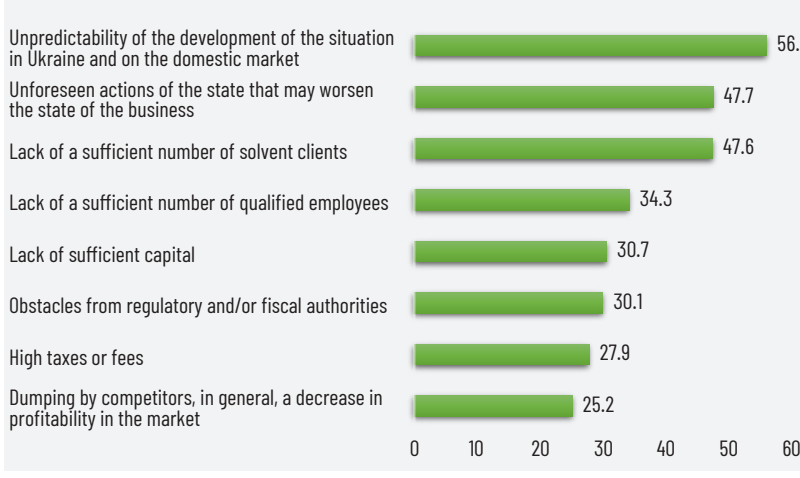

Fig. 2.5 Main problems hindering the restoration and development of business in Ukraine in 2023

Source: [2]

Thus, the general state of the transport industry in Ukraine has declined since 2022. This was undoubtedly a consequence of military aggression against Ukraine. Thus, in particular, the aviation industry suffers the most due to the run ban. However, as can be seen in previous years, most of the analyzed indicators were at a fairly low level. This is due to a number of problems of transport enterprises.

Firstly, this is outdated equipment and infrastructure. A large number of transport enterprises, especially municipally owned, have outdated buses, trams, trolleybuses and other transport, which leads to an increase in maintenance and repair costs, and also reduces the quality of such services.

Secondly, there is a lack of funding and investment in this industry. Many enterprises have limited financial resources, investors have no incentive to invest in the transport sector due to low profitability, and government support is almost non-existent.

Thirdly, high prices for fuel and other resources. Fuel is the main component of costs for many transport enterprises, especially in road transport. The increase in prices for petroleum products, which is especially observed during the war, leads to a significant increase in the cost of refueling cars, buses, minibuses, taxis and other vehicles. Because of this, the transport business has to increase tariffs, for example, for travel, or the prices of its services to compensate for costs, which can lead to a decrease in demand from consumers.

All these problems lead to the emergence of crises and crisis phenomena in the activities of transport enterprises.

According to scientists, solving the problems of transport enterprises can be achieved through the following measures [3]:

— reducing the tax burden or partial compensation for the costs of resource provision for enterprises engaged in international freight transportation;

— lobbying by the state to increase the quota for issuing permits for international transportation for Ukraine;

— carrying out high-quality reconstruction of transport routes to increase the transit attractiveness of Ukraine and reduce the costs of domestic enterprises for the repair of vehicles;

— introducing an anti-crisis management system to effectively counteract the impact of external and internal threats.

Thus, the prerequisites for the emergence of crisis phenomena in transport enterprises of Ukraine are associated with the peculiarities of the functioning of the domestic transport industry and the cumulative effect of a number of negative macroeconomic factors that have accumulated over a long time and whose influence intensified during the period of the full-scale invasion of Ukraine.

That is, the entire set of factors that can lead an enterprise to a crisis can be divided into two groups:

— external — on which the enterprise is unable to influence or its influence is limited;

— internal — arise as a result of the activities of the enterprise itself.

The prerequisites for the emergence of crisis phenomena in the activities of transport enterprises (**Fig. 2.6**) are:

External:

— political instability — low trust in government institutions, uncertainty of the political course, instability of legislation, unpredictable actions of the state, obstacles from regulators;

– economic instability – economic or financial crises, rising inflation, budget deficit, devaluation of the hryvnia, credit restrictions, rising unemployment, high level of taxes;

– currency fluctuations – increasing cost of imported raw materials, materials, equipment;

– low level of demand – decrease in sales volume, necessity of reducing activities, increase in inventories of goods;

– low level of investment attractiveness – limited access to capital, lack of innovation, high level of risk.

Internal:

– equipment wear and tear – increase in maintenance costs, decrease in productivity, risks of accidents and downtime, limited opportunities for development;

– outdated infrastructure – low productivity, increased maintenance and repair costs, limited opportunities for development;

– lack of free funds and financing – risk of insolvency, delayed project development, reduced liquidity, loss of investment opportunities;

– ineffective management – inability to adapt, inability to make quick decisions, loss of potential opportunities, low level of staff motivation;

– personnel problems – low qualifications and skills of employees, lack of motivation, outflow of qualified employees, conflicts in the team, ineffective distribution of duties and responsibilities.

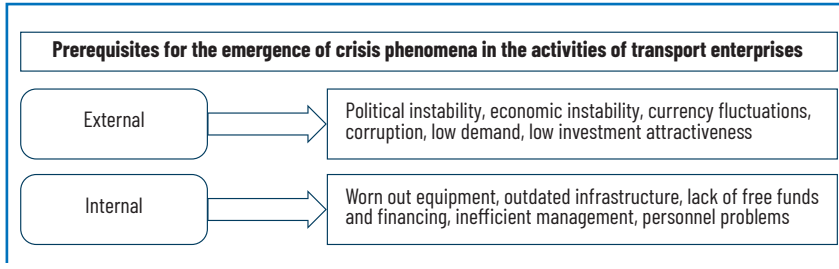

Fig. 2.6 Prerequisites for the emergence of crisis phenomena in the activities of transport enterprises

Source: author's development

2.2 THE SYSTEM OF ANTI-CRISIS MANAGEMENT OF TRANSPORT ENTERPRISES AND ITS COMPONENTS

The development of transport enterprises in Ukraine occurs under the influence of many negative internal and external factors, therefore, predicting and avoiding crisis phenomena and minimizing their consequences is one of the priority tasks.

Overcoming the crisis state of the enterprise requires the comprehensive application of anti-crisis management, the implementation of which will be carried out throughout the entire period of operation

of the enterprise, because the possibility of a crisis occurs at all stages of its development. Elimination of crisis phenomena in the transport industry is possible through the formation and application of the system of anti-crisis management of transport enterprises.

Such a system can be represented by four main stages: diagnostics of the state of the enterprise, formation of an anti-crisis strategy and program, application of anti-crisis methods and measures, assessment of the effectiveness of the proposed methods and measures (**Fig. 2.7**).

Successful problem solving should be preceded by a thorough analysis of the situation. The basis of the anti-crisis management system of the enterprise should be conducting research and identifying weaknesses in the functioning of the enterprise. In order to identify crisis phenomena at the enterprise and prevent bankruptcy in the future, a permanent system of monitoring and diagnostics of the enterprise is necessary. The basis for assessing the factors of the crisis situation is the analysis of the external and internal environment.

Stage I	*Diagnostics*
	Comprehensive analysis of financial and economic condition (liquidity, solvency, profitability indicators); analysis of revenue growth rate, sales profitability, availability of own working capital; analysis of models for assessing the probability of bankruptcy, etc.
Stage II	*Formation of an anti-crisis strategy and program*
	Growth strategies (concentration, integration, diversification), marketing strategy, production strategy, cost minimization strategy, stabilization strategy, financial strategy, restructuring strategy, offensive strategy, harvesting strategy, etc.
Stage III	*Application of anti-crisis methods and measures*
	Methods: autosourcing, benchmarking, regularization, downsizing, restructuring, rehabilitation, etc. *Measures:* cost reduction, marketing activities to increase sales, tax optimization, stopping secondary production, etc.
Stage IV	*Assessment of the effectiveness of the proposed methods and measures*
	Assessment methods: *Economic analysis* – analysis of key financial and economic indicators; *Expert assessments* – qualitative or quantitative assessment of expert opinions; *Comparisons* – comparison of crisis indicators with actual ones

Fig. 2.7 Anti-crisis management system of the enterprise

Source: author's development

The process of anti-crisis diagnostics of the state of enterprises (**Stage I**) includes various methods and tools. First of all, the main performance indicators should be analyzed, such as the growth rate of revenue, profitability of sales, availability of working capital. Factor analysis can be used to study the

impact of various factors on financial results. These indicators allow to track key aspects of the enterprise's activities. Thus, a decline in revenue or a decrease in profitability may indicate problems in management or ineffective sales strategies.

For a comprehensive assessment of the financial and economic condition, indicators should be used that cover various aspects of the enterprise's activities, such as property status, liquidity, profitability, solvency, business activity, logistics, etc. This provides an overall assessment of various aspects of the activities of transport enterprises, which allows identifying problems in the financial sphere of the enterprise.

In addition, enterprises can use various models of assessing the probability of bankruptcy to predict crisis situations in order to prevent possible problems and take timely measures. Such a comprehensive approach to diagnosing the enterprise's activities helps to effectively manage its activities and make informed decisions to ensure sustainable development.

It is worth noting that anti-crisis diagnostics of an enterprise can cover not only the analysis of financial indicators. It should also include checking other important aspects of the enterprise's functioning, such as business processes, organizational structure or HR direction, which will also allow identifying possible weaknesses in the management and functioning of the enterprise.

Along with quantitative methods of financial analysis, it is advisable to use qualitative methods, such as PEST and SWOT analysis. These methods allow to take into account external and internal factors that can affect the activities of the enterprise, and identify opportunities, threats, strengths and weaknesses. The results of these methods can also help in developing strategies, which will only increase the quality of anti-crisis decisions taken.

If deviations are detected during diagnostics that can lead to a crisis state of the enterprise, the next stage is the development of an anti-crisis strategy and program (**Stage II**). This strategy is a set of actions aimed at overcoming crisis phenomena and strengthening the enterprise's position in the market.

An anti-crisis strategy is a specially developed action plan for managing crisis situations in order to overcome crisis phenomena and prevent bankruptcy. The main goals of the anti-crisis strategy should be focused on eliminating the main causes of the crisis by reducing the impact of relevant factors, taking into account the existing limitations of the enterprise. The main goal is to restore financial stability and ensure the stable functioning of the business.

The development of an enterprise's anti-crisis strategy consists of the following stages: analysis of the crisis situation at the enterprise; review of the mission and system of goals; analysis of alternatives and selection of an anti-crisis strategy [4].

The entire set of possible strategies from the point of view of anti-crisis management can be divided into two groups:

1) strategies for ensuring crisis prevention within the framework of preventive anti-crisis management;

2) strategies for ensuring survival in crisis situations and minimizing possible losses.

Strategies for ensuring crisis prevention within the framework of preventive anti-crisis management should be applied at the stage of identifying minor deviations in the enterprise's activities or in the case of preventive actions to prevent future crisis phenomena. Strategies for ensuring survival in crisis situations are applied already during an ongoing crisis at the enterprise.

Table 2.2 lists possible anti-crisis strategies that can be used to overcome a crisis at a certain stage [4–6]. Their diversity allows the enterprise to choose the one that is most appropriate at a certain stage of the organization's development and corresponds to the formed general strategy of the enterprise.

The means of implementing an anti-crisis strategy is the development and implementation of an anti-crisis program. An anti-crisis program is a document that defines the main measures to overcome crisis phenomena at an enterprise. Within one anti-crisis strategy, there may be several anti-crisis programs that include a set of measures to achieve goals. This document may be developed at the level of the entire enterprise or have subprograms for individual divisions and functional services.

The structure of the anti-crisis program should include the following components: a list of planned measures; determination of start and end dates; resources required for implementation; expected results from implementation; responsible persons and executors for each measure.

After the strategy and anti-crisis program are developed, the next step is the direct implementation of anti-crisis methods and measures (**Stage III**). This stage includes the implementation of specific actions aimed at overcoming crisis situations and restoring the stability of the enterprise. The set of anti-crisis measures is unique for each enterprise, as it must take into account various factors, such as the stage of the crisis process, the specifics of the industry, the size of the enterprise, etc.

Table 2.2 Anti-crisis strategies according to the crisis stage of the enterprise

Stages of crisis	Signs of manifestation	Anti-crisis strategies
Strategic crisis	Lack or insufficient development of the strategic management system, shortcomings in marketing activities, decrease in the market value of the enterprise	Organizational, personnel, marketing, investment, crisis prevention, anticipation, cost reduction
Structural crisis	Deterioration of the financial condition of the enterprise, decrease in sources and potential for development, reduction in activity volumes, loss of market share, decrease in the number of personnel	Marketing, production, cost minimization, turnaround, stabilization, diversification, innovation, cost leadership, counteraction, anticipation, concentration, cost reduction
Operational crisis	Decrease in the most important economic indicators, loss of profit of the enterprise	Marketing, cost minimization, turnaround, stabilization, offensive, defense, defensive, counteraction, restructuring, transformation
Liquidity crisis	Increase in the enterprise's debt to creditors, deterioration in the indicators of liquidity and solvency of the enterprise	Financial, cost minimization, restructuring, reduction, harvesting, growth
Insolvency (threat of bankruptcy)	Deficit of liquid funds for the fulfillment of external financial obligations (repayment of debts), production is constrained by a shortage of materials, the period for repayment of receivables increases	Financial, merger, liquidation, reduction, restructuring, exit, survival
Bankruptcy	Initiation of bankruptcy proceedings, excess of obligations over the enterprise's own capital	Liquidation, exit, merger, reorganization

Measures (which are specified in the anti-crisis program) are formed in the form of specific tasks that must be taken. It is worth remembering that for the successful implementation of these measures, it is necessary to determine not only responsible persons, but also specific deadlines, necessary resources and expected results from each measure. Such an approach will help the enterprise effectively achieve its goals.

Anti-crisis methods are approaches to crisis management. They include a wide range of measures. In particular, the methods include: autosourcing, benchmarking, regularization, downsizing, restructuring, rehabilitation, etc. [4].

Anti-crisis measures are actions and steps to overcome the crisis. Measures, in turn, can also be specified in tasks and objectives. All measures should be divided into two categories: measures when symptoms or a "mild" crisis occur; measures in case of acute crisis [4].

When symptoms or a "mild" crisis occur, the following options for anti-crisis measures can be used: reducing or optimizing costs, optimizing the capital structure, improving the quality and competitiveness of products, increasing marketing efficiency, reducing the share of obsolete equipment, optimizing the credit policy of the enterprise, etc.

In case of acute crisis, the following measures can be used: modernization or stopping unprofitable secondary production, implementation of non-production facilities, strict control of all types of alternative costs, reviewing the organizational structure to eliminate unnecessary levels of management, measures to release funds for product improvement, etc.

The final stage of the anti-crisis management system is an assessment of the effectiveness of the implementation of the implemented measures (**Stage IV**). The effectiveness of anti-crisis management of an enterprise consists in the ability to achieve the optimal effect from the implementation of relevant anti-crisis programs while preserving all preferences as much as possible with minimal expenditure of funds and resources.

The criteria for assessing the effectiveness of anti-crisis measures include [7]:

1. *Has a change been achieved in the most important indicators of economic and financial activity and the financial condition of the enterprise during the period of anti-crisis management?* This criterion measures what changes have occurred in the financial indicators of the enterprise after the implementation of anti-crisis measures compared to the initial values.

2. *What is the speed of obtaining positive changes per unit of time?* Measures how quickly positive changes have occurred in the activities of the enterprise after the implementation of anti-crisis measures.

3. *What is the cost-effectiveness of obtaining a positive effect?* This criterion is the ratio between the achieved increase in the results of economic and financial activity and the amount of costs associated with achieving this result.

4. *What is the sufficiency of changes to restore the viability parameters of the enterprise?* This criterion determines how much the achieved changes are sufficient to restore the viability of the enterprise and compares the actually achieved indicators with reference values.

If the measures to overcome the crisis were ineffective, and the crisis continues to develop or the measures taken have not had an adequate effect, the enterprise should return to the starting point of searching for the causes and developing a new program or strategy for overcoming the crisis.

Thus, the general process of anti-crisis management of the enterprise, taking into account the stage of the crisis, can be presented as follows (**Table 2.3**) [4–6].

Table 2.3 Anti-crisis management according to each stage of the crisis at the enterprise

Crisis stage	Diagnostic methods, tools	Recommended anti-crisis management
Strategic crisis	Analysis of the strategic and marketing activities of the enterprise	Review of strategy, restructuring, increase in market value of the enterprise
Structural crisis	Analysis of the production and economic indicators of the enterprise	Normalization of the enterprise's activities: reducing costs, increasing productivity, increasing the economic added value of the enterprise
Operational crisis	Balance sheet analysis, express analysis of the financial condition of the enterprise	Eliminating the causes of the crisis: minimizing losses, increasing the profitability of the enterprise's capital
Liquidity crisis	Analysis of the liquidity, financial stability and solvency of the enterprise	Preventing the development (deepening) of the crisis: finding funds to continue financing activities, directing part of the working capital to repay losses
Insolvency (threat of bankruptcy)	Comprehensive assessment of the enterprise's activities, analysis of equity and solvency	Preventing the initiation of bankruptcy proceedings (settlement): finding liquid funds to fulfill immediate financial obligations, attracting new external financial capital, obtaining a temporary deferral or prolongation of previously received loans
Bankruptcy	Determination of supercritical solvency, analysis of debt security with real assets, assessment of business activity and investment attractiveness of the enterprise	Removing the enterprise from bankruptcy (rehabilitation): partial mobilization of available assets to settle obligations, going through the bankruptcy procedure with minimal losses for the owners of the enterprise

Source: author's development based on [4–6]

Thus, the proposed anti-crisis management system will allow transport enterprises to respond in a timely manner to changes in the economic environment, will help ensure financial stability, and also increase their competitiveness in the transport services market.

The main goal of anti-crisis management of an enterprise during the war is to minimize the negative economic and social consequences of the enterprise's activities. Given that such a crisis is characterized by an acute shortage of time to respond and a limitation on the terms of overcoming the crisis, the main task of anti-crisis management is to make decisions promptly and with the least risk.

2.3 FEATURES OF ANTI–CRISIS MANAGEMENT OF TRANSPORT ENTERPRISES DURING WARTIME

A regular (traditional) crisis at an enterprise most often arises due to various factors, such as economic instability, market instability, internal management problems, etc. Such a crisis is usually characterized by a limited time frame and can be completely overcome with the help of the right management anti-crisis solutions.

In the case of a crisis caused by war, the situation becomes much more complicated and unpredictable. War is a complex and unpredictable factor that significantly affects the activities of all enterprises. Signs of war in the context of enterprise activities include:

— reduction in production capacity;
— possible interruptions in the supply of energy, water, and communications;
— increased risks, including security-related;
— reduced demand for products or services;
— loss of suppliers of raw materials, components, finished products;
— increase in resource prices;
— problems with logistics;
— reduced investment and development;
— loss of personnel (mobilization, migration, reduced motivation).

For transport enterprises, signs of war can have a special impact due to their dependence on the functioning of transport infrastructure and transport safety, namely for them it is possible to include: threat to transport safety, obstacles in logistics and supply, reduced demand for transport, loss of vehicles and infrastructure.

Thus, war is an objective factor that can lead to the destruction of infrastructure, interruptions in supplies, reduced consumer demand and a threat to the safety of employees. The main distinguishing feature of such a crisis at the enterprise is that its consequences can be long-lasting and difficult to recover from [8].

The difference between a traditional crisis and a crisis caused by war is as follows (**Table 2.4**) [9].

That is, the differences are primarily related to the severity and duration of the war, which forces enterprises to go beyond the framework of traditional anti-crisis management. The anti-crisis management system should take into account these challenges and help adjust the functioning of enterprises in martial law conditions [4].

The main goal of anti-crisis management of an enterprise during the war is to minimize the negative economic and social consequences of the enterprise's activities. Given that such a crisis is characterized by an acute shortage of time to respond and a limitation on the terms of overcoming the crisis, the main task of anti-crisis management is to make decisions promptly and with the least risk, which would make it possible to achieve the desired result with minimal additional efforts and minimal negative consequences [9].

At the initial stages of the war, such a desired result is to ensure the uninterrupted operation of the enterprise and its survival in new war conditions. At this time, it is important to respond quickly to changes, ensuring the safety of employees and the stability of production and supply of products. As the war progresses, the priorities of anti-crisis management may change. The task of ensuring the survival of the enterprise turns into adaptation and adjustment of functioning in war conditions.

Table 2.4 Differences between a traditional crisis and a crisis caused by war

Symptom	Traditional crisis	Crisis caused by war
Duration	Has a clear beginning and end, lasts from several weeks to several years	May last for years, without a clear end date. Its impact on business can be felt even after the end of the war
Character	Caused by various factors, both internal (management errors) and external (economic recession)	Caused by an external factor — military actions that cannot be predicted or planned
Speed of spread	Localized after identifying the causes	Global chain reaction
Consequences	Leads to financial losses, staff reductions, strategy changes	Carries not only financial losses, but also a threat to people's lives, destruction of infrastructure, loss of assets
Impact on personnel	Can lead to demotivation, fear for the future, staff turnover	Creates a risk to people's lives and health, increases emotional stress, requires additional support from the employer
Possibility of overcoming	Can be completely overcome and emerge from the crisis with minimal losses	It is impossible to completely overcome the consequences of war at the enterprise. It is only possible to adapt to new conditions, minimize the negative impact and look for opportunities for development

Source: own development based on [9]

It is clear that the impact of war on enterprises is different and anti-crisis management requires an individual approach. However, in all cases, the main principles of anti-crisis management in wartime remain efficiency, risk minimization and priority of ensuring the uninterrupted operation of the enterprise.

Thus, in times of war, especially in the first "period of shock", all decisions must be made very quickly, since the situation changes every day and in such a case, untimely response can be costly for the enterprise. In this case, increasing the speed of making anti-crisis decisions in war conditions involves reducing the levels of management, a limit on the approval of decisions, within which decisions can be made without the approval of a senior manager, or decentralization, so that decisions are made not only from the top down, but also on missions, for the rapid resolution of local problems. As one of the managers whose business survived the first stages of the war notes: "It is better to make a mistake quickly than to think long" [8].

The main goal of anti-crisis diagnostics in wartime is to identify the impact of war on the activities of the enterprise: assessing the current situation and identifying the causes of deviations.

Assessment of the current state of the enterprise includes an analysis of financial indicators, resources, personnel and other aspects of the activity. It is also important to assess the current level of risks and opportunities of the enterprise.

In addition to the analysis of standard indicators, as in a traditional crisis, for transport enterprises in wartime it is important to assess: logistics, transportation safety, material and technical base, operational indicators of activity (volume of transportation, use of vehicles, etc.).

The tools of anti-crisis diagnostics in wartime can be: financial analysis, operational analysis, scenario modeling, SWOT analysis, personnel analysis, etc.

Due to the constant change in the situation in wartime, enterprise diagnostics must be carried out as often as possible. The most effective is the implementation of a system of constant monitoring. The more often diagnostics are carried out, the greater the chance of timely identification and overcoming problems that, in the context of a crisis caused by war, can lead to serious consequences.

Anti-crisis diagnostics will allow to identify the reasons for deviations from the normal functioning of the enterprise during the war period. For example, problems in the supply of raw materials, reduced demand for products or changes in market conditions. Identifying these reasons will allow the enterprise to develop effective anti-crisis strategies for adapting to war conditions.

Forming a strategy in wartime is a difficult task at the beginning due to high uncertainty. Therefore, at the beginning of the war, in the "shock period", the enterprise should skip this stage and quickly implement anti-crisis measures. After adapting and adjusting its functioning in war conditions, the enterprise can apply various anti-crisis management strategies, in particular, protective, stabilization, survival, cost reduction, marketing, financial, etc. will be effective.

At the beginning of the war or during its exacerbation, the most effective anti-crisis strategy is the survival strategy. This strategy is aimed at helping enterprises survive during the active phase of the war, reduce costs and preserve critical resources. The main measures of this strategy may be to optimize liquidity and current asset management, restore financial stability, restore or increase production volumes. After adapting to wartime conditions, it is worth applying growth strategies that can increase the competitiveness of the enterprise.

Among the important methods that should be used in anti-crisis management in wartime, the following should be highlighted [4]:

— outsourcing — can free the enterprise from processes that do not bring direct income, but require time and human resources. Outsourcing can help ensure uninterrupted operation in the event of the loss of employees (due to layoffs, migration) who were entrusted with certain business processes;

— diversification — expanding the product range, developing new markets. This method can provide the enterprise with growth points if the main directions become irrelevant and unprofitable. In wartime, transport enterprises can expand their geographical coverage, introduce new vehicles, expand the provision of services;

— reorganization — the most effective way can be considered a merger. The merger of several enterprises can help them survive and increase the economic efficiency of their activities;

— downsizing — reducing the size of the enterprise, production facilities, and the number of personnel to increase the level of its functioning, reduce costs and the cost of products. Although reducing activity is an unpleasant step, sometimes in conditions of reduced supplies, reorientation of production, changes in logistics chains, this is the only way to maintain the previous pace of work and its resources and continue operating in the market;

— modernization — updating or improving an object or process. For transport enterprises, modernization is especially important, since most enterprises need to update equipment, modernize the sales system,

improve management systems, etc. The importance of this method during wartime is that modernization increases the competitiveness of the business, labor productivity, and ensures the transition to new systems and methods of doing business.

Anti-crisis measures must be taken to successfully adapt to wartime conditions. The measures are individual for each business. Common anti-crisis measures, such as freezing areas of work, closing projects, abandoning development plans and placing employees on unpaid leave, can indeed help at the beginning of the war. However, later these measures can have a negative impact on the further development of the enterprise. After the initial "shock period", it becomes important to create long-term strategies and plans that will allow the enterprise to adapt to new conditions and resume its activities during the war period. Let's list possible anti-crisis measures [4].

One of the important measures is communication with staff. Maintaining contact with employees and explaining the current situation to them helps to avoid panic and creates a favorable climate in the team. Regular briefings, dialogue and openness about plans and prospects allow to maintain trust and motivation of employees. informed employees about the physical condition of the company every day. Some also regularly informed clients about the situation and their current plans. These managers reported that it was important for them to return employees to work after the first days of complete instability in order to create a certain level of normal life.

Retraining employees — allows the company to retain valuable personnel potential. For example, transferring employees to other departments or positions or, if there is not enough money and it is necessary to lay off people, it is possible to reduce everyone's salary, because during the war it is important for employees to have at least some stable income.

It is necessary to pay attention to more careful work with customers — analyze the impact of the war on the client base and respond quickly to changes. For example, in case of problems with logistics, offer new delivery methods, if the problems are financial, then offer postponement, payment in installments or discounts.

Optimization of routes and resources is important especially for transport companies. Given the possible restrictions on movement and logistics during the war, it is necessary to review the optimal routes, it is possible to reduce the number of transport units in operation or introduce the use of alternative delivery routes.

One of the measures is also a reorientation to the most demanded services — expanding geographical coverage, introducing new vehicles, expanding the provision of services that are relevant.

Entering international markets is also an effective means of expanding sales markets and increasing the profitability of the enterprise. With international contracts, it is possible to provide additional sources of income and reduce dependence on the domestic market.

In war conditions, digitalization also becomes a necessity. Automation of processes or the transition to remote work will help reduce business costs and physically protect employees. Also important are technological innovations — the introduction of new technologies, such as cargo tracking systems, remote control, electronic platforms and marketplaces, etc. Thus, artificial intelligence is increasingly used in business to automate tasks, forecast, recognize patterns and obtain insights. It can be used in various industries, including finance, marketing and supply chain management, to increase efficiency, accuracy and reduce costs. Some examples of the application of artificial intelligence in business include fraud detection, stock

market forecasting, consumer behavior analysis and risk management. It can be concluded that artificial intelligence plays an important role in almost all areas of human activity [10]:

The effectiveness of anti-crisis management in wartime consists in [4]:

— achieving a change in the most important indicators of the financial and economic activity of the enterprise during the period of anti-crisis management (compared to the beginning of the war or the implementation of anti-crisis measures);

— speed of obtaining positive changes per unit of time;

— speed of making management decisions;

— stabilization of the enterprise's activities;

— speed of adaptation of the enterprise to the war;

— cost-effectiveness of obtaining positive results;

— survival of the enterprise (at the beginning of the war or in the event that the enterprise is on the front line).

One of the important sectors in the country's economy, which has significant potential, is the transport sector. However, at the present stage, the vast majority of transport enterprises have low efficiency, which indicates the presence of crisis phenomena [11]. Despite the war conditions, most of the reasons for the low efficiency of transport enterprises lie in themselves, which only intensifies the effects of external factors. Thus, reducing the impact of factors on the activity requires the transport sector enterprises to implement effective anti-crisis management.

2.4 DISCUSSION OF THE RESULTS OF THE STUDY OF ANTI–CRISIS MANAGEMENT

The proposed anti-crisis management system consists of four stages. During the diagnosis, the current state of the enterprise's activities, risks and causes of the emergence of crisis phenomena are analyzed. The formation of an anti-crisis strategy and program involves the development of an action plan and specific measures aimed at reducing the impact of crisis phenomena and maintaining the stability of the enterprise. The stage of applying anti-crisis methods and measures is key, as it involves the direct implementation of measures that can lead the enterprise out of the crisis. The last stage is an assessment of the effectiveness of the proposed methods and measures, which determines the effectiveness of the goals and objectives set, how effective the applied methods and measures are in overcoming the crisis phenomenon. If the crisis is not overcome, the enterprise must return to reviewing the strategy and adjusting it.

A crisis caused by war is a special type of crisis phenomenon. Unlike a traditional crisis, it is systemic, long-term, rapidly spreading with a chain reaction and carries not only financial losses, but also a threat to people's lives, destruction of infrastructure and loss of assets. Accordingly, anti-crisis management must take into account these challenges, in particular through the application of the considered strategies, methods and measures aimed at minimizing the impact of military actions on the activities of enterprises. Such an approach will allow to ensure more effective management in war conditions, minimize risks and maintain the stability of the functioning of transport enterprises.

2.5 MODELING OF RELOCATION LOGISTICS OF HIGH-TECH ENTERPRISES IN THE CONDITIONS OF MARTIAL LAW IN THE COUNTRY

The special legal regime of the country forced to review the logistics processes of transportation [1–6]. New directions in logistics have appeared, which need to be explored for effective planning of transportation in conditions of military threats.

The logistics of transportation of industrial cargo to the rear has its own characteristics [7, 8], which are associated with the movement of enterprises from the frontline zone to a relatively safe location, to establish the production of high-tech products, including weapons and military equipment. Transport routes are formed in advance and are associated with the choice of the location of the enterprise. The choice of location depends on the availability of supporting infrastructure, energy supply, remoteness of suppliers of components, as well as the availability of qualified personnel [9]. Therefore, it is necessary to take into account a number of factors when locating an enterprise in conditions of military threats [10, 11]. Transport logistics should contribute to the efficiency of the enterprise relocation and the formation of new routes for the supply of components for the stable functioning of high-tech production, in conditions of martial law. To assess the possible and rational routes for moving goods of a high-tech enterprise, it is necessary to form logistics indicators of transportation taking into account the risks of military threats [12]. It is advisable to use the following logistics indicators:

1. The time required to move the enterprise from the frontline zone to the rear (transportation of technological equipment, building structures, etc.) – T.

2. Costs for relocation of the enterprise to the rear – V.

3. Risks of transporting goods, with the enterprise's technological equipment, in conditions of military threats – R.

When modeling the relocation of the enterprise, from the frontline zone to the rear, it is necessary to take into account the available opportunities for choosing a relatively safe location for the enterprise, as well as possible routes for transporting technological equipment, in conditions of military threats.

To form optimization models regarding the relocation of an enterprise under martial law, let's introduce a Boolean variable x_{epl}

$$x_{epl} = \begin{cases} 1, \text{ if for the relocation of the enterprise} \\ \text{to } e\text{-th possible location the } p\text{-th way for transportation of} \\ \text{goods with technological equipment is chosen} \\ \text{with } l\text{-th possible composition of logistics components} \\ \left(\text{temporary storage city, transshipment, parking areas, etc.}\right); \\ 0, \text{ otherwise.} \end{cases}$$

Then, taking into account the variables x_{epl}, let's present the logistics indicators of the enterprise to the rear in the form

$$T = \sum_{e=1}^{M} \sum_{p=1}^{m_e} \sum_{l=1}^{n_p} t_{epl} x_{epl}, \tag{2.1}$$

where l — the number of possible location of the enterprise when it is relocated to the rear; m_e — the number of possible ways of moving the enterprise to e-th new location; n_p — the number of possible compositions of logistics components that can be used on the p-th way of moving the enterprise; t_{epl} — the time required to relocate the enterprise to the rear when choosing the e-th location, the p-th way of movement and the l-th composition of logistics components.

$$V = \sum_{e=1}^{M} \sum_{p=1}^{m_e} \sum_{l=1}^{n_p} v_{epl} x_{epl}, \tag{2.2}$$

where v_{epl} — evaluation of the costs that are necessary for the realization of the enterprise with moving it to e-th location, taking into account the choice of the p-th path of movement and the l-th possible composition of logistics components.

$$R = \sum_{e=1}^{M} \sum_{p=1}^{m_e} \sum_{l=1}^{n_p} r_{epl} x_{epl}, \tag{2.3}$$

where r_{epl} — the risk that is associated with the possible occurrence of a military threat in the relocation of the enterprise, taking into account the choice of the e-th location of its location, the p-th way of movement and the selected l-th composition of logistics components.

In the state of martial law, it is extremely important that the enterprise's relocation to the rear is carried out in the shortest time, which is related to the possible actions of military threats and the need for faster production of weapons and military equipment (WME).

Therefore, as the main logistics indicator let's use the time of movement of the enterprise (T), which must be minimized. Let's optimize with the use of integer (Boolean) programming. It is necessary to find

$$\min\ T,\ T = \sum_{e=1}^{M} \sum_{p=1}^{m_e} \sum_{l=1}^{n_p} t_{epl} x_{epl}. \tag{2.4}$$

It is necessary to take into account the possible risks of action of military threats that arise when moving the enterprise to a new location

$$R \le R^*,\ R = \sum_{e=1}^{M} \sum_{p=1}^{m_e} \sum_{l=1}^{n_p} r_{epl} x_{epl}, \tag{2.5}$$

where R^* — the permissible risk of military threats in the relocation of the enterprise.

Also, it is necessary to consider the possible cost of relocation of the enterprise

$$V \le V^*, \; V = \sum_{e=1}^{M} \sum_{p=1}^{m_e} \sum_{l=1}^{n_p} v_{epl} x_{epl}, \tag{2.6}$$

where V^* — the permissible (planned) costs of moving the enterprise to the rear.

2.6 MODELING THE SUPPLY OF HIGH-TECH COMPONENTS AT THE NEW LOCATION OF THE ENTERPRISE

When moving the enterprise to the rear, it is necessary to form the composition of suppliers of components required for the production of high -tech products, including WME. Also, it is necessary to choose rational ways of supplying accessories to a new location of the enterprise.

Therefore, let's form a logistics indicators for analyzing the process of supplying components in the form:

1. The cost of supplying components that depend on the new location of the enterprise, the composition of suppliers and the selected delivery routes — W.

2. The time required for the formation of inventories of components that will ensure a stable functioning of the enterprise at a new location — T.

3. Risks related to the supply of components in martial law — R.

Let's introduce Boolean variable x_{efy}

$$x_{efy} = \begin{cases} 1, \text{ if for } e\text{-th new location of the enterprise } f\text{-th composition of suppliers and} \\ y\text{-th composition of ways of supplying components are chosen, otherwise.} \end{cases}$$

Taking into account variables x_{efy}, logistical indicators of supply components look like

$$W = \sum_{e=1}^{M} \sum_{f=1}^{s_e} \sum_{y=1}^{q_f} w_{efy} x_{efy}, \tag{2.7}$$

where w_{efy} — the costs of formation of inventories of components, taking into account the e-th location of the enterprise, the f-th composition of suppliers and the y-th composition of supply routes; M — the number of possible location of the enterprise in the rear; s_e — the number of possible compositions of suppliers of components; q_f — the number of possible compositions of ways of supplying components.

$$T = \sum_{e=1}^{M} \sum_{f=1}^{s_e} \sum_{y=1}^{q_f} t_{efy} x_{efy}, \tag{2.8}$$

where t_{efy} — the time required to form the inventories of components to ensure the sustainable functioning of the enterprise at a new e-th location, taking into account the f-th composition of suppliers and the y-th selected composition of the ways of supplying components to the enterprise.

$$R = \sum_{e=1}^{M} \sum_{f=1}^{s_e} \sum_{y=1}^{q_f} r_{efy} x_{efy} m, \tag{2.9}$$

where r_{efy} – the risk of supplying components in the face of military threats, taking into account the choice of the e-th location of the enterprise, f-th composition of suppliers and the y-th composition supply routes.

In the state of martial law, it is extremely necessary to quickly adjust the work of a high-tech enterprise at a new location.

Therefore, as the main, most significant, logistics indicator, let's use the time (T) required to form the inventories of components, to ensure the restoration of the enterprise at a new location.

It is necessary

$$\min\ T,\ T = \sum_{e=1}^{M} \sum_{f=1}^{s_e} \sum_{y=1}^{q_f} t_{efy} x_{efy}, \tag{2.10}$$

taking into account the restrictions

$$W \le W^*,\ W = \sum_{e=1}^{M} \sum_{f=1}^{s_e} \sum_{y=1}^{q_f} w_{efy} x_{efy}, \tag{2.11}$$

where W^* – the permissible costs for the formation of inventories of components for the sustainable functioning of the enterprise at a new location.

$$R \le R^*,\ R = \sum_{e=1}^{M} \sum_{f=1}^{s_e} \sum_{y=1}^{q_f} r_{efy} x_{efy}, \tag{2.12}$$

where R^* – the permissible risks of supplying components in the face of military threats.

Multicriterial problem is possible to find the rational composition of suppliers and ways of supplying components at the new location of a high-tech enterprise.

Let's introduce a comprehensive logistics supply indicator

$$Q = \alpha_W \overset{\vee}{W} + \alpha_T \overset{\vee}{T} + \alpha_R \overset{\vee}{R}, \tag{2.13}$$

where α_W, α_T, α_R – "scales" of indicators W, T, R.

$$\alpha_W + \alpha_T + \alpha_R = 1, \tag{2.14}$$

where $\overset{\vee}{W}$, $\overset{\vee}{T}$, $\overset{\vee}{R}$ – normalized values of the indicators W, T, R.

$$\overset{\vee}{W} = \frac{W - W_{\min}}{W^* - W_{\min}}, \tag{2.15}$$

where $W_{\min}$ – the minimum cost value.

$$\overset{\vee}{T} = \frac{T - T_{\min}}{T^* - T_{\min}}, \tag{2.16}$$

where $T_{\min}$ – the minimum value of supply time.

$$\overset{\vee}{R} = \frac{R - R_{\min}}{R^* - R_{\min}}, \tag{2.17}$$

where $R_{\min}$ – the minimum value of supply risks.

In order to solve the multicriteria task of searching suppliers and ways of supply is required

$$\min Q = \alpha_W \overset{\vee}{W} + \alpha_T \overset{\vee}{T} + \alpha_R \overset{\vee}{R} = \frac{\alpha_W}{W^* - W_{\min}} \sum_{e=1}^{M} \sum_{f=1}^{s_e} \sum_{y=1}^{q_f} w_{efy} x_{efy} + \frac{\alpha_T}{T^* - T_{\min}} \sum_{e=1}^{M} \sum_{f=1}^{s_e} \sum_{y=1}^{q_f} t_{efy} x_{efy} +$$
$$+ \frac{\alpha_R}{R^* - R_{\min}} \sum_{e=1}^{M} \sum_{f=1}^{s_e} \sum_{y=1}^{q_f} r_{efy} x_{efy} - \frac{\alpha_{W_{\min}}}{W^* - W_{\min}} - \frac{\alpha_{T_{\min}}}{T^* - T_{\min}} - \frac{\alpha_{R_{\min}}}{R^* - R_{\min}}. \tag{2.18}$$

THE MODELING RESULTS OF TRANSPORTATION LOGISTICS IN THE PERIOD OF SPECIAL LEGAL REGIME

The study of logistics processes of transportation during the martial law of the country has been conducted. Separate relevant areas of study related to the relocation of high-tech enterprises in the country of martial law, as well as the supply of high-tech components at the new location of the enterprise, have been determined.

The basic logistics indicators have been formed for the necessity of evaluation of the transportation processes in the conditions of military threats (the time required to move the enterprise from the frontal zone to the rear; the cost of relocating the enterprise to the rear; the risks of transportation of goods, with technological equipment of the enterprise, in the conditions of military threats for supply; formation of stocks of components that will ensure the stable functioning of the enterprise at a new location).

Optimization models have been created to choose rational relocation and the supply of high-tech components. Local optimization of logistics indicators, taking into account restrictions, has been carried out. A multicriterial model has been created to find the rational composition of suppliers and ways of supplying accessories at the new location of a high-tech enterprise.

The proposed approach is the basis for the creation of applied information technology for planning logistics of transportation, taking into account possible military threats during the martial law of the country.

This section analyzes the current state of passenger transportation in Ukraine and evaluates the main sources of its financing. It has been found that in addition to traditional problems with insufficiency of financial resources, the activities of the enterprises have caused the consequences of war. In particular, the volume of passenger transportation decreased by 47.2% compared to the pre-war 2021. Transport infrastructure lost part of the functional capacity. The fall of passenger income has further aggravated the situation.

In view of these challenges, the relevance of the development of the strategy of financial support for the functioning of passenger transport enterprises is substantiated. The proposed strategy is based on the principles of sustainable development, which provide for a harmonious combination of economic, social and environmental aspects.

The study defines the key stages of formation of a comprehensive strategy for financing transport enterprises. Its implementation will help to create a high quality, environmentally friendly and socially responsible transport system. This will not only improve the quality of services and ensure the financial stability of enterprises, but also contribute to the overall socio-economic development of the country, maintaining the balance between economic benefits, citizens' needs and environmental protection.

Passenger transport is one of the main components of the infrastructure of each country, and its development has always been closely linked to the economic well-being and success of the state. Historically, the transport sector has acted as an important indicator of economic development, and its condition and efficiency directly affected the rates of economic growth, social progress and national security [1]. That is why the sustainable development of passenger transport enterprises is a key element of the strategy for the sustainable development of society as a whole. In the context of growing urbanization and increasing load on transport systems, it is important to ensure the efficient, environmentally safe and economically sustainable functioning of passenger transport enterprises.

Financial support for the sustainable development of passenger transport enterprises is an important component for achieving efficiency, environmental safety and economic sustainability of this industry [2]. Financing is a key factor that allows enterprises to innovate, modernize infrastructure, reduce negative environmental impacts and ensure the accessibility of transport services for the population.

For passenger transport enterprises, it is important to make optimal use of financial resources to improve the quality of service and introduce new technologies. Since these enterprises often operate in the field of public services, it is important to ensure their financial stability in order to reduce costs and increase efficiency. Investing in new vehicles, process automation and improved logistics can significantly reduce operating costs and improve the level of service.

In today's conditions, the introduction of environmentally friendly technologies is a major challenge. This requires significant financial resources, since the re-equipment of the transport fleet with environmentally friendly models, such as electric or hydrogen buses, requires large capital investments. This also applies to the modernization of infrastructure, in particular the creation of charging stations for electric vehicles or hydrogen refueling stations. Without adequate financing, such initiatives may become impossible or economically inefficient for enterprises.

Financial stability allows passenger transport enterprises not only to perform their basic functions, but also to provide flexibility in responding to changes in the economic situation, such as fluctuations in energy prices or changes in tariff policy. A key factor is the ability of the enterprise to ensure stable income through the effective use of available resources and cost optimization.

Today, most passenger transport enterprises face problems of lack of financial resources to cover their costs and ensure their development. Problems with financial resources of passenger transport enterprises are a serious challenge to their sustainable development [3, 4]. Insufficient funding, high operating costs, low profitability, difficulties in attracting investments and inefficient financial management — all this requires a comprehensive approach to solving. The introduction of modern financial instruments, attracting additional sources of financing, cost optimization and improving financial transparency can help overcome these problems and ensure sustainable development of passenger transport enterprises.

SCIENTOMETRIC ANALYSIS OF EXISTING PUBLICATIONS ON THE DEVELOPMENT OF METHODOLOGICAL APPROACHES TO THE FORMATION OF A STRATEGY FOR FINANCIAL SUPPORT OF THE CONCEPT OF SUSTAINABLE DEVELOPMENT OF PASSENGER TRANSPORT ENTERPRISES

Financial support for the sustainable development of passenger transport enterprises is one of the main factors determining the success and efficiency of this industry. Reliable and stable financing allows enterprises not only to support their current activities, but also to invest in future development, introduce innovations, modernize infrastructure and comply with environmental standards. However, most passenger transport enterprises in Ukraine lack funds to cover their costs. Due to insufficient financing, many enterprises cannot afford to purchase new vehicles or modernize existing ones. This leads to the use of outdated equipment that has high fuel consumption and frequent breakdowns. Old vehicles do not meet modern standards of comfort and safety, which negatively affects passenger satisfaction. The lack of investment in improving infrastructure and maintenance also reduces the quality of services. The lack of proper financing forces enterprises to operate at a loss. This leads to the accumulation of debts, which complicates further functioning and development. To overcome these problems, comprehensive solutions are needed, which include attracting additional sources of financing, optimizing costs, introducing modern technologies and improving the skills of personnel. Only in this way can the sustainable development of passenger transport in Ukraine be ensured and its competitiveness increased.

However, the ways of finding financial resources for passenger transport enterprises should be considered in the context of their further sustainable development.

The issue of expanding traditional sources of financing for the enterprise is addressed in the work of O. Solodovnik [5] In her work, she notes that financing the sustainable development of enterprises should be carried out with the involvement of a wide range of participants on the basis of cooperation and partnership, taking into account their interests. One of such sources is proposed to consider public-private partnership, which is defined as cooperation between public authorities and the private sector for the purpose of implementing socially significant projects in a wide range of economic activities and is carried out taking

into account the interests of all stakeholders. However, to implement the involvement of private-public partnerships to finance passenger transport development projects, it is necessary to create a clear legal basis for PPP, which defines the rights and obligations of both parties, financing mechanisms, risk sharing and dispute resolution methods.

The partnership must also comply with all regulatory requirements, including environmental standards, safety standards and other regulatory acts. It is important to ensure its compliance with local, national and international standards.

The paper also highlights the characteristic features of financing sustainable development of enterprises, namely, the implementation of sustainable development goals in the functioning of enterprises creates positive social and environmental effects; creates the opportunity to involve a wide range of participants – international financial organizations, supranational state administration bodies (within the framework of integration associations), state administration bodies, state and non-state enterprises, banks and non-bank financial institutions, individuals, etc. is carried out on the basis of cooperation and partnership, taking into account the interests of all interested groups of stakeholders; expands the range of sources of financial resources formation – allows to mobilize not only own and nationally attracted financial resources, but also international public and private financial resources; ensures the emergence and dynamic development of new methods and tools for the formation and use of financial resources, taking into account global priorities and development trends.

The work [6] is devoted to the issue of determining the economic essence and features of financial support for sustainable development of the enterprise.

A special place in the process of forming sufficient sources of financing for the enterprise's activities is occupied by the strategy of financial support. In the work [4] it is determined that the financial strategy should be aimed at implementing such areas of the company's activity as attracting financial resources, balanced placement (investment) of financial resources, ensuring the necessary level of financial security and achieving high quality management of financial activities.

RESULTS OF THE DEVELOPMENT OF SCIENTIFIC AND METHODOLOGICAL PRINCIPLES FOR THE FORMATION OF STRATEGIES FOR FINANCIAL SUPPORT OF THE CONCEPT OF SUSTAINABLE DEVELOPMENT OF PASSENGER TRANSPORT ENTERPRISES

The aim of the study is to develop and substantiate methodological approaches that will contribute to the formation of effective strategies for financial support of sustainable development of passenger transport enterprises. This includes an analysis of the current state of financial support, identification of key problems and barriers, as well as the development of recommendations for overcoming them, taking into account modern trends and innovations in the field of financing transport systems.

To achieve the aim, the following objectives were set:

– analysis of the current state of financial support of passenger transport enterprises and identification of the main sources of financing and assessment of their adequacy to ensure sustainable development;

— identification of internal and external factors affecting the financial stability of passenger transport enterprises;

— identification of key problems associated with insufficient funding, high operating costs, low profitability and other aspects;

— determination of scientific and methodological principles for the formation of effective strategies for financial support;

— development of models and tools that will contribute to the optimization of financial flows, cost reduction and increase in profitability of passenger transport enterprises.

The object of the study is passenger transport enterprises that operate in conditions of increasing load on transport systems and the need to ensure sustainable development. The object of the study covers a wide range of aspects of the activities of passenger transport enterprises that determine their financial support, efficiency, environmental safety and social responsibility. The study of these aspects will allow developing scientifically sound methodological principles for the formation of financial support strategies aimed at ensuring the sustainable development of passenger transport enterprises.

To achieve the set aim, a set of well-known scientific methods was used in the study. Generalization methods were used to generalize modern approaches to the implementation of sustainable development goals in the activities of passenger transport enterprises and to determine the sources of their financing, as well as to form conclusions and recommendations [7, 8]. The logical synthesis method was used to theoretically substantiate the importance of studying the financial support of sustainable development of passenger transport enterprises. The use of analysis and synthesis methods allowed to show the features of ensuring the functioning of passenger transport enterprises in conditions of sustainable development. For a clear presentation of the research results and their schematic interpretation, the method of constructing schemes and models was used.

The proposed general approach to the formation of a financial support strategy [9, 10] is based on the goals of sustainable development and provides for a comprehensive approach to developing a strategy taking into account economic, social and environmental aspects to ensure the sustainable development of the passenger transport industry. Such an approach will ensure not only the financial stability of enterprises, but will also contribute to improving the quality of transport services, preserving the environment and meeting the social needs of the population.

RESULTS OF THE ANALYSIS OF THE CURRENT STATE OF FINANCIAL SUPPORT FOR PASSENGER TRANSPORT ENTERPRISES

Passenger transport plays an important role in the economy of any country. Its importance goes far beyond the simple movement of people from one place to another. This industry is the foundation for many economic, social and environmental processes, influencing various aspects of society and contributing to its development. Efficient passenger transport contributes to the mobility of the workforce, providing workers with the opportunity to quickly and conveniently get to their workplaces.

This increases labor productivity, stimulates economic activity and contributes to GDP growth. However, its impact on the economy [11, 12]:

— the presence of a well-developed transport system allows workers to reduce the time spent traveling to and from work. This reduces stress, increases overall job satisfaction and improves the balance between work and personal life;

— thanks to reliable transport, people can consider work in a wider radius from their place of residence. This expands employment opportunities, reduces unemployment and promotes a more even distribution of the workforce across regions;

— efficient public transport allows employees to arrive at work on time, reducing tardiness and loss of working time. This contributes to increasing the productivity and efficiency of enterprises;

— reducing travel time and improving travel conditions helps reduce fatigue and stress among employees, which has a positive effect on their health and efficiency;

— accessibility increases the attendance of shopping centers, restaurants, cultural and entertainment institutions. This contributes to the growth of local business income and the creation of new jobs;

— the development of the transport system requires significant investments, which stimulates economic activity in the construction industry, production and transport services;

— developed transport allows for the integration of labor markets of different regions, reducing regional imbalances in the level of employment and wages. This contributes to a more even economic development of territories. Accessibility of transport makes cities and regions more attractive for highly qualified specialists, which contributes to the growth of innovative potential and the development of new industries.

The economic activity and development of the country are largely reflected in the volume of passengers transported by passenger transport. The dynamics of gross domestic product (GDP) is one of the key indicators that affects the transport sector (**Fig. 2.8**). The crises that occurred in the country's economy also significantly affected the passenger transport industry. But the industry suffered the greatest shocks in connection with the war. The volume of passengers transported by urban passenger transport in 2022 decreased by 47.6% compared to the pre-war year 2021. Passenger transport enterprises themselves also suffered significant losses as a result of the war. According to analytical calculations, direct losses caused to municipal enterprises and private carriers, in particular to destroyed transport, amount to 0.83 billion USD — these are destroyed trolleybuses, trams, buses [11, 13].

Table 2.5 presents the losses of rolling stock of passenger transport enterprises of Ukraine. As of January 2024, 11% of trolleybuses, 7.9% of trams and more than 5% of buses from their total number were lost. And these losses are not final, since every day the cities of Ukraine suffer from enemy missile attacks.

The largest enterprise in the city of Kyiv, which carries out passenger transportation by both buses and electric transport, is the Municipal Enterprise "Kyivpastrans". The financial resources of the enterprise are presented in **Fig. 2.9**. The enterprise is dependent on borrowed credit resources. Over the past three years, the amount of bank loans of the enterprise has increased threefold. There has also been a sharp increase in the enterprise's accounts payable for goods, works and services to its counterparties.

Table 2.5 Losses of rolling stock of passenger transport enterprises of Ukraine

Types of damaged rolling stock	Units	Initial number of objects	Number of damaged objects
Trolleybuses	Units	2 980	344
Trams	Units	1 922	152
Buses	Units	241 426	13 182

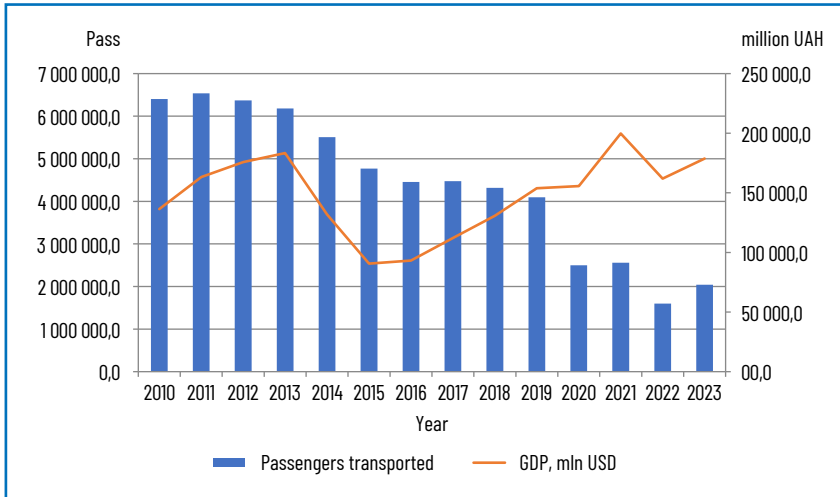

Fig. 2.8 Dynamics of GDP and number of transported passengers in Ukraine during 2010–2023

Therefore, the enterprise operates mainly at the expense of borrowed funds, which indicates a lack of its own financial resources. This creates significant pressure on the financial stability of the enterprise, since high dependence on external financing can lead to increased financial risks. Attracting loans or other external resources may be necessary to ensure current activities, but it also increases debt servicing costs and reduces the flexibility of the enterprise in managing financial flows. Therefore, to achieve financial stability and reduce dependence on external sources, the enterprise needs to develop a strategy for increasing its own financial resources, optimizing costs and increasing profitability.

Analysis of the current state of financial support of passenger transport enterprises shows that they face a number of financial problems, in particular, a lack of own resources and high dependence on external financing. To ensure financial sustainability and support long-term development, it is necessary to implement comprehensive strategies aimed at optimizing costs, diversifying sources of financing and strengthening the role of state support.

Only in this way will enterprises be able to improve their financial situation, improve the quality of services and contribute to the sustainable development of the transport sector.

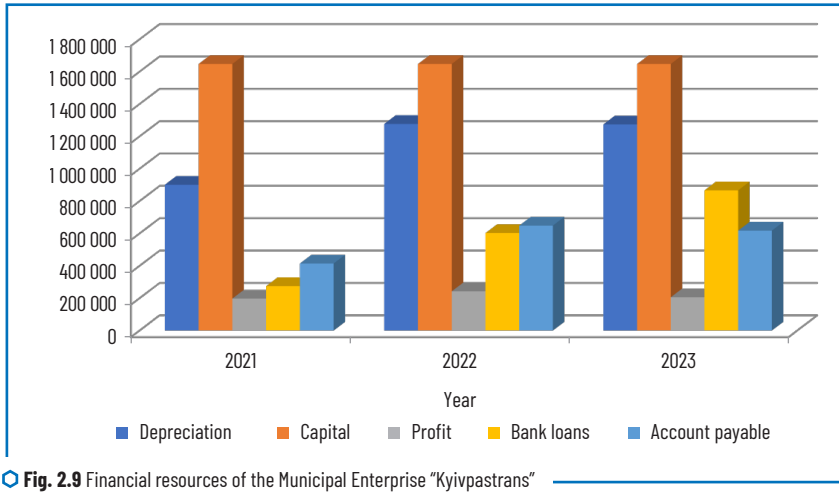

Fig. 2.9 Financial resources of the Municipal Enterprise "Kyivpastrans"

Source: [14]

RESULTS OF DETERMINING SCIENTIFIC AND METHODOLOGICAL PRINCIPLES FOR THE FORMATION OF EFFECTIVE STRATEGIES FOR FINANCIAL SUPPORT OF THE CONCEPT OF SUSTAINABLE DEVELOPMENT OF PASSENGER TRANSPORT ENTERPRISES

The concept of "strategy" is key in various fields of activity, including business, public administration, social sciences and others. A strategy is a long-term action plan aimed at achieving certain goals or objectives in conditions of uncertainty and limited resources. It includes an analysis of the current state, defining goals, developing ways to achieve them and monitoring implementation. A strategy is a fundamental tool for achieving long-term success. That is why there is a need to form an effective strategy for financial support of the concept of sustainable development. Forming a strategy for financial support of the concept of sustainable development of passenger transport enterprises is a critical element for achieving long-term success and stability of this industry. In modern conditions of urbanization and increasing load on transport systems, it is important to ensure the efficient, environmentally safe and economically sustainable functioning of passenger transport enterprises. The purpose of forming a strategy for financial support of the concept of sustainable development of passenger transport enterprises is to create an effective and reliable financial base to support the long-term and balanced development of

transport enterprises, as well as to ensure environmentally responsible and economically efficient functioning of this industry. It should also be noted that when developing this strategy, it is necessary to take into account the goals of sustainable development in order to ensure a comprehensive and balanced approach to the development of the passenger transport industry (**Fig. 2.10**). A fundamental aspect of sustainable development is economic sustainability, as it provides the basis for the long-term and balanced growth of enterprises and society as a whole. It determines the ability of economic systems to withstand internal and external shocks, adapt to changes and ensure sustainable development in the long term.

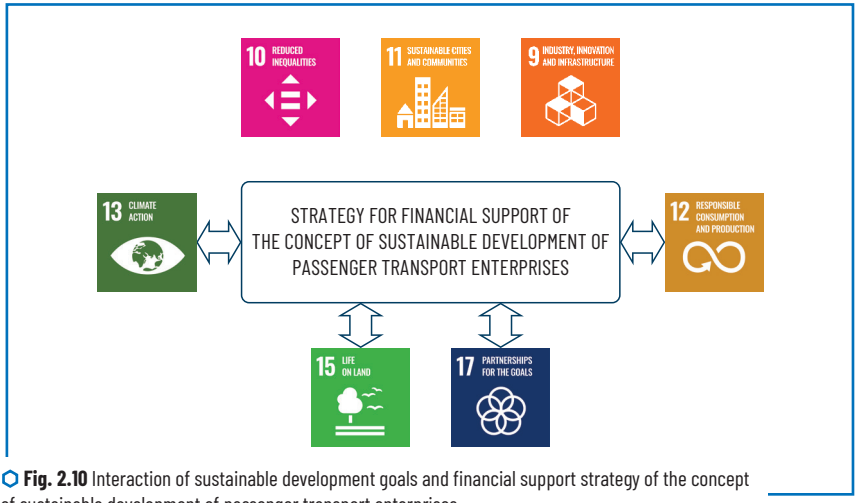

Fig. 2.10 Interaction of sustainable development goals and financial support strategy of the concept of sustainable development of passenger transport enterprises

The basis of economic stability is financial stability, which provides for:

– effective financial management through optimization of financial flows, control over costs and ensuring a sufficient level of liquidity;

– diversification of financing sources;

– financial risk management through the implementation of mechanisms for identifying, assessing and minimizing financial risks.

Economic stability is an integral part of the competitiveness of enterprises. It allows enterprises not only to survive in a competitive environment, but also to thrive, ensuring stable and effective functioning in the long term.

Effective use of resources is a key factor in ensuring economic stability and competitiveness of enterprises. Cost optimization and increasing the efficiency of operational activities allow enterprises not only to reduce costs, but also to increase the productivity and quality of their services. Cost optimization consists in analyzing and reducing costs at all stages of the enterprise's operational activities. Increasing the

efficiency of operational activities allows enterprises to use their resources more productively and provide high quality services. This is achieved through process automation, optimization of logistics processes, and the implementation of advanced management practices.

Environmental responsibility is an integral part of the concept of sustainable development. It consists in ensuring the use of natural resources and waste management in a way that minimizes the negative impact on the environment, preserves it for future generations, and promotes the harmonious coexistence of man and nature. Reducing emissions of harmful substances into the atmosphere, water, and soil is an important component of environmental responsibility, which is especially relevant for passenger transport enterprises. Environmental responsibility of passenger transport enterprises is a critical aspect of their activities aimed at reducing the negative impact on the environment and promoting sustainable development. Ensuring environmental responsibility includes several main areas, such as optimizing resource use, implementing environmentally friendly technologies, reducing emissions, waste management, and raising environmental awareness among employees and passengers. Implementation of this principle involves optimizing and rational use of fuels and lubricants, implementing energy-efficient technologies, implementing environmentally friendly technologies, reducing harmful emissions and raising the environmental awareness of enterprise employees.

The social responsibility of passenger transport enterprises involves taking into account the needs and interests of different groups of the population that use their services. This includes creating comfortable and accessible conditions for all passengers, ensuring safety, supporting social programs and initiatives, and promoting community development. Social responsibility is an important aspect of the activities of enterprises, which allows increasing the trust and satisfaction of customers, as well as strengthening their reputation in society. The social responsibility of passenger transport enterprises includes the following components:

— accessibility and inclusiveness. Passenger transport should be accessible to all segments of the population, therefore vehicles and infrastructure should be equipped with ramps, elevators and special places for passengers with disabilities. This also includes accessibility for the elderly and families with children;

— passenger safety. Transport companies must adhere to high safety standards through regular maintenance of vehicles, the implementation of modern security systems [15], such as surveillance cameras, GPS trackers, emergency communication systems. Also, the implementation of this requirement involves regular training and courses for drivers and other personnel on passenger safety, first aid and emergency response;

— social programs and initiatives. This component involves providing discounts on travel for pensioners, students, large families and other socially vulnerable categories of the population;

— environmental initiatives involve the implementation of measures aimed at reducing harmful emissions, saving energy and resources, as well as conducting information campaigns among passengers on the environmental aspects of using transport and supporting environmentally conscious behavior.

The social responsibility of passenger transport enterprises covers a wide range of measures aimed at ensuring accessibility and safety, improving the quality of service, supporting social programs and

environmental initiatives. Taking into account the needs and interests of different groups of the population is a key element of social responsibility, which contributes to increasing the level of trust in the enterprise, improving its reputation and ensuring sustainable development. The implementation of socially responsible practices allows passenger transport enterprises to effectively use their resources, adapt to changes and achieve long-term success. Innovation is a key factor contributing to the sustainable development of passenger transport enterprises. They allow introducing the latest technologies, improving the quality of services, reducing costs and environmental impact, as well as increasing competitiveness. In the context of rapid technological development and growing requirements for environmental and social responsibility, innovations are becoming an integral part of the sustainable development strategy. The financial strategy of passenger transport enterprises should be focused on creating favorable conditions for the implementation of innovations. This includes investments in research and development, attracting external investments, optimizing costs, creating internal innovation funds, supporting environmental and social innovations. An effective financial strategy will allow enterprises not only to implement advanced technologies, but also to increase competitiveness, ensure environmental and social responsibility, and promote sustainable development of the industry as a whole.

Institutional capacity and effective management play a key role in ensuring the sustainable development of passenger transport enterprises. Development of the regulatory framework, organizational structure, professional resources, strategic and financial planning, operational management, monitoring and evaluation — all this contributes to achieving sustainable development goals. Effective management ensures optimal use of resources, improving the quality of services, reducing risks and increasing the competitiveness of enterprises, which, in turn, contributes to the sustainable development of society as a whole [16]. These components contribute to the proper functioning of enterprises, ensuring the quality of services, efficient use of resources and adherence to the principles of sustainable development.

It should also be noted that the formation of a strategy for the financial support of passenger transport enterprises should be closely correlated with the goals and objectives of the general strategy for the development of the industry, the region and the economy of the country as a whole. This ensures consistency of actions at all levels, contributes to the effective use of resources and allows for comprehensive development. Therefore, when forming a strategy, the goals and objectives of the general strategy for the development of the transport industry should be taken into account, namely, harmonization with industry priorities, coordination with infrastructure projects.

The formation of a strategy for the financial support of sustainable development of passenger transport enterprises is a multi-stage process that requires careful planning, analysis and coordination [17]. The main stages of the formation of a strategy for the financial support of the concept of sustainable development of passenger transport enterprises are presented in **Fig. 2.11**. The first initial stage of the formation of the strategy is the formulation of its mission.

The mission of the strategy for the financial support of the concept of sustainable development of passenger transport enterprises is to create conditions for sustainable, environmentally responsible and socially oriented development of the industry. This includes ensuring financial stability, supporting innovation, reducing environmental impact and improving the quality of life of the population through the

accessibility and quality of transport services. It also means creating conditions that allow transport enterprises not only to survive in the face of economic challenges, but also to develop, responding to the modern needs of society and the environment.

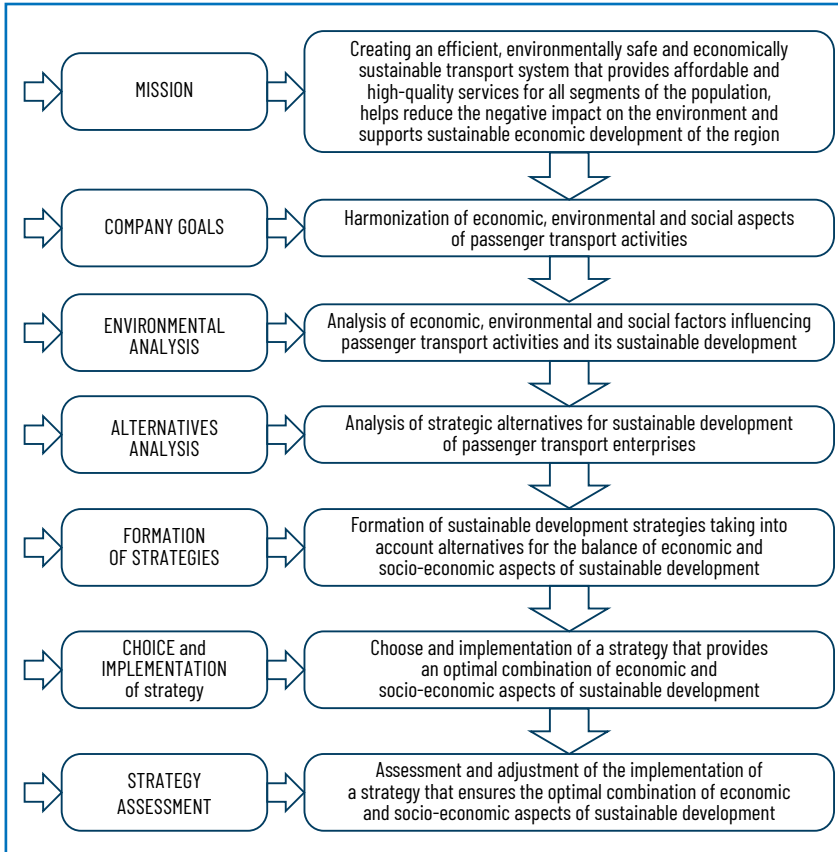

Fig. 2.11 Stages of formation of a strategy for financial support of the concept of sustainable development of passenger transport enterprises

Accordingly, the mission objectives should be:

– ensuring long-term financing involves creating conditions for stable financing of sustainable development projects through diversification of income sources, attracting investments ;

– increasing competitiveness through efficient use of resources, optimizing costs and implementing innovations;

— preserving and improving the environment by reducing environmental impact through the implementation of environmental initiatives and technologies;

— supporting social equality — involves ensuring accessibility and quality of transport services for all segments of the population, with an emphasis on social justice and inclusiveness.

The phased implementation of the stages of formation of a strategy for financial support of the concept of sustainable development of passenger transport enterprises will contribute to the development of a high-quality, environmentally friendly, cost-effective and SOCIALLY responsible transport system. This will not only improve the quality of services, but also contribute to the overall economic and social development of the country, while maintaining a balance between the needs of citizens, economic benefits and environmental protection.

A generalized scheme of the strategy for financial support of the concept of sustainable development of passenger transport enterprises is presented in **Fig. 2.12**.

The generalized scheme of the financial support strategy of the concept of sustainable development of passenger transport enterprises is an important tool for systematizing and optimizing financial flows in this area. The proposed strategy should take into account not only economic aspects, but also social and environmental factors, since sustainable development requires a balance between work efficiency, environmental care and social needs of citizens.

The economic aspects of the financial support strategy are aimed at ensuring stable and effective use of enterprise resources. Their components are:

1. Financial sustainability of enterprises. Passenger transport faces high costs for infrastructure maintenance (roads, stops, depots), technical maintenance of vehicles (buses, trolleybuses, trams, trains), personnel remuneration, fuel and energy. On the other hand, the main sources of income are fares from passengers, budget financing and other payment sources. Cost optimization and revenue growth are important for achieving financial sustainability of enterprises. In many countries, including Ukraine, passenger transport often requires state subsidies due to low transportation tariffs. This is due to the fact that passenger transport is a socially important service, and tariffs often do not cover all costs.

2. Pricing policy and tariffs. Setting tariffs that correspond to the level of costs and revenues of the enterprise is one of the most important economic aspects. Determining fair and affordable tariffs, as well as ensuring their flexibility depending on demand, is of great importance for achieving economic efficiency.

3. Investments in infrastructure development. Investments in new, more efficient vehicles (electric buses, low-floor trams, new routes) can reduce fuel and maintenance costs, increase the level of safety and comfort for passengers.

4. Productivity and efficiency. Proper route planning, including determining the frequency of runs and load levels, can significantly increase transport efficiency. Route optimization can reduce service costs and reduce waiting times for passengers.

5. Attracting private investment. In conditions of limited budget financing, private investment can become an important source of capital for the development of passenger transport. For large infrastructure projects, bond loans or other forms of financing can be used, which allows attracting private investors and minimizing dependence on the state budget.

6. Economic impact on the region and the country's economy. Passenger transport directly affects the economy of a city or region, ensuring labor mobility, supporting the labor market, and promoting the development of trade and tourism. Increasing the availability of transport contributes to increased economic activity, improving access to jobs, and maintaining economic stability in regions.

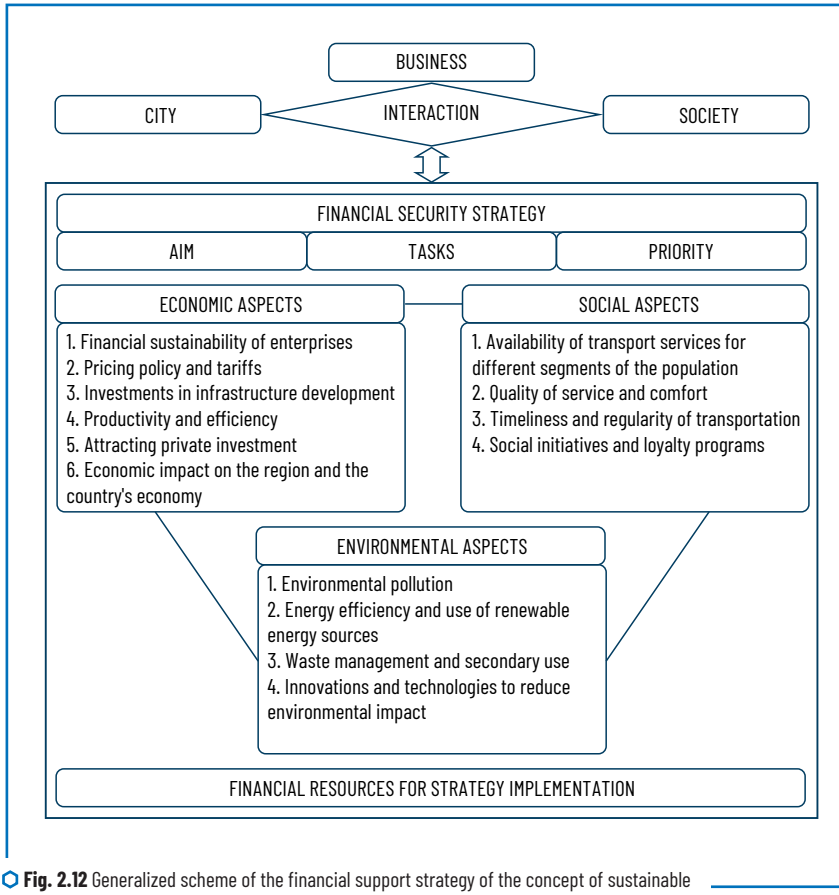

Fig. 2.12 Generalized scheme of the financial support strategy of the concept of sustainable development of passenger transport enterprises

Social aspects of passenger transport activities focus on ensuring accessibility and quality of services for all segments of the population.

This includes:

1. Accessibility of transport services for different segments of the population. Passenger transport should be accessible to all segments of the population, including people with disabilities, pensioners, chil-

dren, students, as well as socially vulnerable groups. Adaptation of infrastructure (ramps, elevators, special places for wheelchairs) and ticket benefits are important.

2. Quality of service and comfort. High quality of service and comfort during trips are of great importance for citizens using passenger transport. This includes cleanliness, availability of air conditioning, comfortable seats, provision of Wi-Fi and access to other amenities.

3. Timeliness and regularity of transportation. For passengers, it is important that transport runs regularly and the schedule is convenient and predictable. Irregular or delayed runs can lead to increased travel time, which creates significant social inconvenience.

4. Social initiatives and loyalty programs. The development of loyalty programs, in particular for frequent travelers or for students and pensioners, encourages citizens to use public transport. This may include cards with bonuses, discounts or free trips after a certain number of uses.

The environmental aspects of the financial security strategy are aimed at preserving the environment and reducing the negative impact of transport on the environment. They include:

1. Environmental pollution. Passenger transport is a significant source of carbon dioxide (CO_2) emissions, which contribute to climate change. CO_2 emissions depend largely on the type of transport (buses, trams, trolleybuses, trains). Transport running on fossil fuels (diesel, gasoline) is the main source of these emissions. In addition to CO_2, traditional vehicles also emit nitrogen oxides (NO_x), sulfur dioxide (CO_2), particulate matter and other harmful substances that cause air pollution, impair human health and can lead to the formation of acid rain.

2. Energy efficiency and the use of renewable energy sources. The use of energy from renewable sources, such as solar, wind and hydropower, to charge electric vehicles is an important component of reducing the negative impact on the environment. For example, electric buses or trams powered by energy produced from renewable sources significantly reduce emissions of pollutants into the atmosphere.

3. Waste management and recycling. One aspect of environmental responsibility is the proper management of waste generated during the operation of vehicles. This includes the disposal of old vehicles, batteries and other components that can pollute the environment.

4. Innovation and technologies to reduce environmental impact. The introduction of new technologies, such as automation, unmanned vehicles and intelligent transport systems, can significantly increase the efficiency of transport and reduce its environmental footprint.

The overall strategy for financial support for the concept of sustainable development of passenger transport enterprises is complex and multifactorial. It should synthesize economic, social and environmental aspects to ensure the sustainable development of the industry.

Such an approach will ensure not only the financial sustainability of enterprises, but will also contribute to improving the quality of transport services, preserving the environment and meeting the social needs of the population.

The proposed general approach to the formation of a financial support strategy is based on the goals of sustainable development and provides for a comprehensive approach to developing a strategy taking into account economic, social and environmental aspects to ensure the sustainable development of the passenger transport industry. Such an approach will ensure not only the financial stability of enterprises.

CONCLUSIONS

The state of the passenger transport industry was analyzed and the main sources of financing were assessed. In addition to the problem of lack of financial resources, the war made significant adjustments to the activities of passenger transport enterprises. The decline in passenger transport volumes was 47.2% compared to the pre-war year of 2021. The infrastructure of passenger transport enterprises also suffered significant losses. The decrease in passenger income also negatively affected the volume of transportation. In view of this, the development of a strategy for financial support for the activities of enterprises is particularly relevant. However, the development processes of passenger transport enterprises should take place taking into account the concept of sustainable development and based on the principles of sustainable development.

As a result of the study, the main stages of forming a strategy for financial support for the concept of sustainable development of passenger transport enterprises were formed. The implementation of the stages of forming a strategy for financial support for the concept of sustainable development of passenger transport enterprises will contribute to the development of a high-quality, environmentally friendly, cost-effective and socially responsible transport system. This will not only improve the quality of services, but also contribute to the overall economic and social development of the country, while maintaining a balance between the needs of citizens, economic benefits and environmental protection.

A generalized strategy for financial support of the concept of sustainable development of passenger transport enterprises has been developed. The general strategy for financial support of the concept of sustainable development of passenger transport enterprises is comprehensive and multifactorial. It is based on the principles of sustainable development and synthesizes economic, social and environmental aspects to ensure sustainable development of the industry. Such an approach will ensure not only the financial sustainability of enterprises, but will also contribute to improving the quality of transport services, preserving the environment and meeting the social needs of the population.

USE OF ARTIFICIAL INTELLIGENCE

The authors used OpenAI ChatGPT (using the GPT-4 model, version 2023) and Anthropic Claude (Claude 2, 2023) as AI language assistant models during writing. They served to improve the writing process, but did not replace the authors' scientific analysis.

The AI-based writing tools were used to assist in text generation (suggesting starting expressions for some paragraphs), stylistic improvement, language editing (to correct grammatical errors and improve the quality of academic writing), and to recommend titles or headings/subheadings.

The authors carefully edited the AI-generated drafts, checking the accuracy of informational claims against data and sources, ensuring scientific accuracy and objectivity in the manuscript. This human review ensures that the article includes the authors' analysis and original conclusions.

The authors claim full responsibility for this publication.

The use of ChatGPT and Anthropic Claude did not influence the results or conclusions of the study. The authors used AI tools for writing, but not for data analysis or conclusions. The results and conclusions of the study were based on the authors' independent assessment of the data and their work in the related literature, and we declare that the interpretations provided are the authors' own.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest with respect to this study, including financial, personal, authorship or other, that could influence the study and its results presented in this article.

REFERENCES

1. State Statistics Service of Ukraine. Available at: https://ukrstat.gov.ua/
2. Doslidzhennia stanu biznesu v Ukraini (2023). Advanter Group. Available at: https://drive.google.com/file/d/10YDWomKCwc2XN0PfBbQvmw6LaoNhx123/view
3. Chuprin, Ye. S., Kondratenko, D. V., Heleveria, Ye. M. (2019). Analysis and perspectives for development of ukraines transport industry from the position of motor transport enterprises. Naukovyi visnyk Uzhhorodskoho natsionalnoho universytetu. Seriia: Mizhnarodni ekonomichni vidnosyny ta svitove hospodarstvo, 24 (3), 125–130.
4. Sharanov, R. S. (2023). Formation of the mechanism of crisis management in an enterprise. [Doctoral dissertation; Universytet mytnoi spravy ta finansiv].
5. Zhdanov, V. Krizis na predpriiatii. Etapy razvitiia. Kratko. Shkola Investitcionnoi otcenki proektov, aktcii, biznesa. Available at: https://finzz.ru/etapy-krizisa.html
6. Ivaniuta, S. (2007). Antykryzove upravlinnia. Kyiv: Tsentr uchbovoi literatury, 287.
7. Yankovets, T. M., Cherniuk, Yu. V. (2016). Otsinka efektyvnosti vprovadzhennia antykryzovykh zakhodiv na pidpryiemstvi. Informatsiino-analitychne zabezpechennia efektyvnosti diialnosti pidpryiemstv u konteksti ekonomichnoi bezpeky v umovakh intehratsii z YeS. Kyiv: KNUTD, 213–214.
8. Opatska, S., Johansen, W., Gordon, A. (2023). Business crisis management in wartime: Insights from Ukraine. Journal of Contingencies and Crisis Management, 32 (1). https://doi.org/10.1111/1468-5973.12513
9. Vatchenko, B. S., Sharanov, R. S. (2022). Antykryzove upravlinnia pidpryiemstvom v umovakh viiny. Ekonomichnyi prostir, 182, 38–43.
10. Ilchenko, V., Kiselev, V.; Prokopenko, O., Järvis, M. (Eds.) (2024). Artificial intelligence as a pledge of leadership in business and entrepreneurship and the risks of its application. AI-Driven Transformation: Mapping the Course for Future Business Landscapes. Tallinn: Teadmus OÜ, 7–17.
11. Samoilenko, Y., Britchenko, I., Levchenko, I., Lošonczi, P., Bilichenko, O., Bodnar, O. (2022). Economic Security of the Enterprise Within the Conditions of Digital Transformation. Economic Affairs, 67 (4), 619-629. https://doi.org/10.46852/0424-2513.4.2022.28

12. Fedorovych, O. Ye., Zapadnia, K. O., Ivanov, M. V. (2016). Using the precedential approach for action plan formation for increasing competitiveness of developing enterprise. Radioelectronic and Computer Systems, 1 (75), 114–118.
13. Fedorovych, O. Ye., Pronchakov, Yu. L. (2020). Method to organize logistic transport interactions for the new order portfolio of distributed virtual manufacture. Radioelectronic and Computer Systems, 2 (94), 102–108. https://doi.org/10.32620/reks.2020.2.09
14. Fedorovych, O. E., Slomchynskyi, O. V., Puidenko, V. A. (2018). Investigation of logistics to manage high-tech technology production of virtual enterprise. Aerospace Technic and Technology, 4, 107–115. https://doi.org/10.32620/aktt.2018.4.13
15. Fedorovych, O. E., Haidenko, O. A., Puidenko, V. A. (2017). Planning of cargo transportation in terms of high risks. Aerospace Technic and Technology, 6, 98–102. https://doi.org/10.32620/aktt.2017.6.14
16. Fedorovych, O. Ye., Uruskyi, O. S., Lutai, L. M., Zapadnia, K. O. (2020). Optimization of the new technique creation life cycle in a competitive environment and stochastic behavior of high technology products market. Aerospace Technic and Technology, 6, 80–85. https://doi.org/10.32620/aktt.2020.6.09
17. Aleksiyev, O., Aleksiyev, V., Neronov, S. (2023). Multi-agents in transport process control. Bulletin of Kharkov National Automobile and Highway University, 100, 15–18. https://doi.org/10.30977/bul.2219-5548.2023.100.0.15
18. Kryvoruchko, O., Dmytriiev, I., Poyasnik, G., Shevchenko, I., Levchenko, Ia.; Dmytriiev, I., Levchenko, Ia. (Eds.) (2021). Transport and logistics services as a component of the transport complex and their quality management. Problems and prospects of development of the road transport complex: financing, management, innovation, quality, safety – integrated approach. Kharkiv: TECHNOLOGY CENTER, 42–62. http://doi.org/10.15587/978-617-7319-45-9.ch4
19. Levchenko, Ia., Dmytriiev, I., Dmytriieva, O., Shevchenko, I., Britchenko, I., Tripak, M. et al.; Dmytriiev, I., Levchenko, Ia. (Eds.) (2021). Problems and prospects of development of the road transport complex: financing, management, innovation, quality, safety – integrated approach. Kharkiv: TECHNOLOGY CENTER, 180. http://doi.org/10.15587/978-617-7319-45-9
20. Andriushchenko, K., Stefanyshyn, D., Sahaidak, M., Tepliuk, M., Buchynska, O., Rozmetova, E. et al. (2018). Process of resources provision management of the enterprise's activity with consideration of gender factor. Eastern-European Journal of Enterprise Technologies, 6 (3 (96)), 6–19. https://doi.org/10.15587/1729-4061.2018.150799
21. Simplifying the conditions for doing business during martial law: a detailed analysis of the draft law (2024). L&M Finance Group. Available at: https://lmfgr.com/tpost/i6a6z9lmp1-simplifying-the-conditions-for-doing-bus
22. Cherevko, N. (2024). Right to work under martial law: Legislative aspect in Ukraine. Ûridičnij Časopis Nacìonal'noï Akademiï Vnutrìšnìh Sprav, 14 (3), 55–65. https://doi.org/10.56215/naia-chasopis/3.2024.55
23. Samoilenko, Y., Britchenko, I., Levchenko, I., Lošonczi, P., Bilichenko, O., Bodnar, O. (2022). Economic Security of the Enterprise Within the Conditions of Digital Transformation. Economic Affairs, 67 (4), 619–629. https://doi.org/10.46852/0424-2513.4.2022.28

24. Natsionalna dopovid "Tsili staloho rozvytku: Ukraina" (2017). Available at: https://me.gov.ua/Documents/Detail?lang=uk-UA&id=6f446a44-9bba-41b0-8642-8db3593e696e&title=NatsionalnaDopovid-tsiliStalogoRozvitku
25. Report of the World Commission on Environment and Development: "Our common future" (1987). The General Assembly of the United Nations. New York, 374. Available at: https://digitallibrary.un.org/record/139811?ln=en#record-files-collapse-header
26. Kozhukhova, T. V. (2014). Strategies of funding sustainable development. Hlobalni ta natsionalni problemy ekonomiky, 2, 218—221.
27. Zaitseva, L. (2021). Methodological principles of financial strategy development sustainable development of public companies. Black Sea Economic Studies, 67. https://doi.org/10.32843/bses.67-14
28. Solodovnik, O. (2023). Financial support for the sustainable development of enterprises. Economy and Society, 49. https://doi.org/10.32782/2524-0072/2023-49-17
29. Hutsul, M. O. (2016). Concept of financial support sustainable development of enterprise. Naukovyi visnyk Uzhhorodskoho natsionalnoho universytetu, 7, 102—106. Available at: http://www.visnyk-econom.uzhnu.uz.ua/archive/7_1_2016ua/29.pdf
30. Ilchuk, V. P., Shpomer, T. O. (2018). Financial Support for Sustainable Development of Enterprises in the Real Sector of the Economy. Problemy ekonomiky, 2 (36), 310—316. Available at: https://www.problecon.com/export_pdf/problems-of-economy-2018-2_0-pages-310_316.pdf
31. Zamula, O., Tuchkova, A. (2020). Implementation of the concept of sustainable development into the competitiveness management system of the air transport company. Efektyvna Ekonomika, 12. https://doi.org/10.32702/2307-2105-2020.12.121
32. Birbirenko, S., Korba, D. (2019). Theoretical aspects of the formation of the financial strategy of a modern enterprise. Scientific Notes of Taurida National V.I. Vernadsky University. Series: Economy and Management, 30 (5 (69)), 47—51. https://doi.org/10.32838/2523-4803/69-5-9
33. Hutsaliuk, O., Antonenko, N., Nazarenko, I., Boiko, N., Karlova, I., Babych, L. (2024). Cognitive Model Building to Improve the Efficiency of Enterprise Liquid Cash Management. Technology-Driven Business Innovation: Unleashing the Digital Advantage, 199—209. https://doi.org/10.1007/978-3-031-62656-2_18
34. Zvit pro priami zbytky infrastruktury vid ruinuvan vnaslidok viiskovoi ahresii Rosii proty Ukrainy stanom na pochatok 2024 roku (2024). Available at: https://kse.ua/wp-content/uploads/2024/04/01.01.24_Damages_Report.pdf
35. Proekt Planu vidnovlennia Ukrainy (2022). Materialy robochoi hrupy «Audytu zbytkiv, ponesenykh vnaslidok viiny». Available at: https://www.kmu.gov.ua/storage/app/sites/1/recoveryrada/ua/audit-of-war-damage.pdf
36. State Statistics Service of Ukraine. Available at: https://ukrstat.gov.ua/
37. YouControl. Available at: https://youcontrol.com.ua/
38. Samoilenko, Y., Britchenko, I., Levchenko, I., Lošonczi, P., Bilichenko, O., Bodnar, O. (2022). Economic Security of the Enterprise Within the Conditions of Digital Transformation. Economic Affairs, 67 (4), 619-629. https://doi.org/10.46852/0424-2513.4.2022.28

39. EU transport policies: looking back and moving forward (2024). Available at: https://publyon.com/eu-transport-policies-looking-back-and-moving-forward/
40. Pro zatverdzhennia planu zakhodiv z realizatsii Natsionalnoi transportnoi stratehii Ukrainy na period do 2030 roku (2021). Rozporiadzhennia KMU No. 321-r. 07.04.2021. Available at: https://www.kmu.gov.ua/npas/pro-zatverdzhennya-planu-zahodiv-z-realizaciyi-nacionalnoyi-transportnoyi-strategiyi-ukrayini-na-period-do-2030-roku-321-070421