

The object of this study is to assess the financial stability and readiness of motor transport enterprises for economic development. The proposed two-component methodological approach makes it possible to optimize the assessment of the readiness of enterprises for development based on the calculation of the integral indicator of investment sufficiency and the level of material cost.

The proposed methodical approach was tested, which showed the low resource capacity of enterprises. The dynamics of the integral indicator of investment sufficiency showed that, in general, for enterprises engaged in road freight transportation, its level is much lower than the standard value, which is equal to 3. Its value fluctuated on average at the level of 1.2–1.7, that is, it was in the range of lack or limited resources for economic development.

This indicates the dominance of survival strategies, not development, among motor transport enterprises, and a weak state policy that does not stimulate investment activity in a legal transparent environment. It is proposed to take into consideration the developed approach in the implementation of the state policy of supporting and stimulating enterprises that actively invest, and increase legal turnover, income, and labor reimbursement.

The obtained results can be used both at the level of individual motor transport enterprises and for aggregated assessment in the industry as a whole. An additional advantage of the developed two-component methodological approach to assessing the state and readiness of the enterprise for development is the possibility of using different components for each component, differentiating their weight in the integral assessment, and the possibility of adjusting target ranges

Keywords: economic development, motor transport enterprises, indicator of investment sufficiency, level of material costs

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PRINCIPLE OF THE ASSESSMENT OF THE READINESS OF MOTOR TRANSPORT ENTERPRISES FOR ECONOMIC DEVELOPMENT BASED ON A TWO-COMPONENT METHODOLOGICAL APPROACH

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1. Introduction

A difficult period of adaptation to modern conditions and requirements for the transport sector will accelerate the processes of transition to a new level of competition in the freight market. Digital transformation is accelerating, consumer preferences are changing, and new business models are being introduced [1]. In the future, the competitive envi-

ronment will be determined by technological modernization, in fact, the restart of infrastructure in general, and transport in particular.

Most businesses have weak financial stability. Despite overcoming the ongoing crisis of unprofitability of motor transport enterprises in the freight market, their profitability remains low, which does not make it possible to accumulate enough capital to finance development [2].

This situation has led to the emergence of economic and social problems: aggravation of the shortage of working capital; low level of competitiveness and attractiveness for foreign investments; lack of effective policies aimed at stimulating the growth of financial resources; insufficient level of financial potential and economic base.

The negative impact of the ongoing processes has significantly increased the requirements for ensuring the sustainability of supply chains of goods, and the processes of optimizing logistics, mergers and acquisitions of transport companies have intensified in this market. A growing trend is the development of e-commerce, which stimulates the acquisition of control over transport and logistics companies at all levels of the supply chain – manufacturer, warehouse, and sales centers [3–5]. Increasing investments in modern technologies of supply chain logistics is considered a tool to improve the quality of transport services, reduce operating costs, and reduce the impact on the environment.

European initiatives on transport development strategies are supported by large-scale financial resources and various financial instruments for the recovery of the transport sector. The budget of the relevant funds for these purposes is estimated at more than EUR 1.8 trillion. This further emphasizes the findings of this study that the success of the development of the transport sector is critically dependent on a consistent state incentive policy, supported by the formation of powerful financial funds and tools [6–8].

The priority innovative direction of development of the transport industry is its digitalization. Accordingly, investments in the introduction of digital technologies in the business processes of transport enterprises will become increasingly important to ensure the maintenance of competitive positions in the market. At the same time, there is a wide range of digital technologies and tools, and their application depends on the type and specialization of transport enterprises. In general, there are two main models of their activities:

- 1) enterprises providing services for the transportation of goods;
- 2) enterprises that manage the fleet and provide rental services.

For the first type of enterprise, the priority areas of investment in digital technologies are digital tools that make it possible in real-time to acquire data on the delivery of goods, possible obstacles, delays, etc. Such technologies are needed to quickly respond promptly to possible problems or change the needs of service consumers to avoid delays and unscheduled costs.

For enterprises of the second type, investments in digital solutions for monitoring the condition of their vehicles, the intended purpose of their use, location, etc. are prioritized. Such investments are necessary both for control and the ability to meet modern standards of safety and environmental friendliness of the use of road transport.

Scientific research on the topic under study is important because the economic development of enterprises cannot be achieved without innovative development. Low efficiency of costs for technological innovations does not provide development opportunities. Innovation requires an increase in sources of capital investment, the expansion of which is impossible without the use of state innovation

policy tools: public-private partnership programs, technological development, and preferential taxation [7, 8].

A relevant task is to devise a methodological approach to assessing the readiness of enterprises for development and recommendations for expanding investment opportunities. The results of such research are necessary for practice because they are due to the need for enterprises to update fixed assets, the need to switch to modern technologies, the introduction of innovative products, and the growing demand for qualitatively new transport services.

2. Literature review and problem statement

International experts note that the development of sustainable transport infrastructure will be based on four dimensions of sustainability: environmental (resilience to climate change), social (inclusiveness), institutional (technological development), and economic (productivity and flexibility) [9]. They estimate that by 2040 the need for investment in transport infrastructure will be up to USD 2 trillion, which is considered the “golden era” of transport infrastructure.

Among the main trends that will determine the development of transport in the EU countries for 2021–2024 are the following [10]:

- 1) priority of the transition to alternative fuels;
- 2) ensuring competition in the aviation industry;
- 3) a modal-neutral approach that contributes to the sustainable development of transport;
- 4) green financing to increase the sustainability of the EU transport industry.

It is worth noting that the current action plan for the implementation of the Transport Strategy provides for the development of multimodal transport technologies and infrastructure complexes to ensure interaction between different types of transport. In particular, paragraph 21 of the plan provides for a partial reorientation of road freight transport to rail and inland waterway transport [11]. In general, the trend in the development of intermodal and multimodal transportation determines the priority for motor transport enterprises to invest in projects, which will make it possible to quickly adapt and integrate into such technologies. The objective priority for investing in development is the projects of preparation for the transition to renewable fuels through the renewal of the transport fleet and ensuring compliance with new environmental standards.

The complexity and multidimensionality of economic development determine the presence of a wide range of scientific interpretations and understandings of such development, for the disclosure of which various algorithms and methods for its evaluation are developed and applied. Researchers apply various methodological approaches to assessing the financial condition of enterprises, and their readiness to implement various economic development strategies.

Thus, the author of [12], systematizing methodological approaches to the development of the enterprise, identifies the following types of them: innovative, economic, strategic, marketing, and competitive. The author concludes that each specified approach or combination has its advantages for use but at the same time, reflects only a separate specific effect associated with the development of the enterprise. However, the effectiveness of their application will depend primarily on the readiness to implement de-

velopment strategies on a non-alternative basis and adapt to new conditions of functioning, which occurs under the influence of internal and external changes, which complicates the process of assessing the readiness of enterprises for development.

Considering the functioning and development of the enterprise through the prism of competitiveness, respectively, methodological approaches are developed to assess the level of such competitiveness. Thus, some researchers note that the competitiveness of an enterprise depends on many factors: technical and technological, organizational, and managerial, financial and economic, socio-psychological, natural-geographical, transport, environmental, industry, and market. Therefore, competitiveness cannot be measured by a single statistical indicator [13]. Accordingly, the authors' approach to the need to apply various assessment methods, which are systematized according to two criteria: the degree of objectivity/subjectivity and the type of assessment (quantitative and qualitative), is justified. They thus distinguish 4 groups of methods for assessing competitiveness: objective-quantitative (calculated and calculated-graphic), objective-qualitative (models of structural and strategic analysis), subjective qualitative (matrix methods), and subjectively quantitative (methods of expert assessments).

Different methods have advantages and disadvantages, and accordingly, their application should correspond to the goals and possibilities of their effective use. Difficulties arise because for some evaluation methods, complex calculation algorithms for determining the resulting indicators are also necessary, and hence more costs for their use. Other methods are less complex but also with a lower probability of accuracy and validity of their results. This complicates the choice of the optimal procedure.

Often, the development of an enterprise is considered in the context of assessing its potential. The implementation of this approach is based on the use of various methods for assessing such potential, which, in turn, is also considered for its individual types, in particular, innovative, investment, technological, competitive, marketing, labor, etc., or integrated.

In [14], the author singled out the following principles for assessing the potential for the economic development of an enterprise:

- 1) determining the key properties of the enterprise;
- 2) consideration of the potential of economic development of the enterprise as a set of its properties;
- 3) selection of criterion functional properties;
- 4) selection of controlled basic properties of both the enterprise and its components;
- 5) selection of uncontrollable basic properties of the enterprise and its components;
- 6) taking into consideration environmental factors;
- 7) orderliness of the process of searching for reserves of economic development of the enterprise.

Despite the rather broad interpretation of these principles, they show the systematic nature and complexity of the potential of the enterprise and, accordingly, methodological approaches and tools for its assessment.

The author also emphasizes the need to apply three levels of indicators for assessing the potential: partial, general, and generalizing. Partial ones will characterize the possibilities of improving the basic properties of the enterprise (in particular, the consumer properties of products or services).

General ones will characterize key properties (in particular, financial results, sales volumes, etc.). Generalizing ones will characterize the criterion properties of the enterprise (for example, its market value).

The grouping of methods for assessing the potential of economic development of enterprises carried out by the author includes the use of individual indicators or their combination; quantitative and qualitative assessment; absolute and comparative estimates; different levels of the hierarchy of assessment indicators, etc. Such diversity opens up wide opportunities to find effective tools and indicators for assessing the current state or potential of the enterprise at the appropriate stage of its development. However, the question of determining the optimal methodology remains unresolved because excessive congestion can erode the accuracy and validity of the results of their application in making management decisions regarding strategic and tactical tasks of enterprise development.

In the context of assessing the potential of enterprises, traditional methods are to determine the effectiveness and feasibility of investments, and investment projects for individual enterprises. In particular, it concerns the assessment of the payback period of investments, the level of net present value, the profitability of investments, and the systematization of risks for the relevant industry or market goods/services. Undoubtedly, the assessment of the effectiveness of investments is critical for the development of the enterprise but it is advisable to apply it to specific investments, relevant target goods, services, and markets. The problem remains that these methods should be preceded by an integral assessment of the state and readiness of the enterprise for development but investments should be the basic criterion and indicator of such assessments.

Several studies are aimed at developing methodological tools for assessing the state and potential of development, which take into consideration industry features and aspects of the functioning of business entities. In particular, this approach is revealed in [15], regarding the development of agricultural enterprises, in [16], on the development and life support of food industry enterprises, etc. To assess the development of motor transport enterprises, there is no definite unified methodological approach, so this issue remains relevant.

In general, it should be noted that the development of methodological approaches to the assessment of various aspects of the activities and development of enterprises is carried out in accordance with the theoretical basis of the issues under study. And, accordingly, the application of existing and new criteria, indicators, and characteristics should be adapted to management tasks, the existing information base for the use of such methodological approaches and tools.

Most researchers justify the need to combine different assessment methods that will provide an acceptable level of validity of conclusions and recommendations for analyzing the current and potential state of development of the enterprise but this issue remains unresolved.

All this suggests that it is expedient to conduct a study on the principle of assessing the readiness of enterprises for development based on the development of a two-component methodological approach that takes into consideration investment sufficiency and material costs. Such a methodical approach determines the logic of monitoring the stability of motor transport enterprises based on the consistency of

key economic indicators with the level of investment and the achievement of target parameters of the structural balance of costs. The advantage of this methodical approach is the possibility of using different components for each component, the possibility of adjusting the target ranges, and establishing a different specific weight in the integral assessment.

3. The aim and objectives of the study

The aim of this study is the principle of assessing the readiness of motor transport enterprises for economic development based on a two-component methodological approach. This will provide an opportunity to investigate the level of investment adequacy and balance of expenses of the enterprise, as well as to develop recommendations for solving existing problems and outlining the directions for further development.

To accomplish the aim, the following tasks have been set:

- to offer a methodical approach to assessing the readiness of enterprises for economic development based on the calculation of the integral indicator of investment sufficiency and the level of material cost;
- to carry out approbation of the proposed two-component approach to assessing the condition and readiness of enterprises for development.

4. The study materials and methods

The object of this study is the assessment of financial stability and readiness of motor transport enterprises for development. Freight companies chronically lack working capital, which increases the risks to current activities and blocks the possibility of investing in their development strategies. Thus, in general, for such enterprises, net working capital is negative over the past 10 years, which requires the introduction of modern tools for financing their activities, which will be affordable and effective [17].

The imbalance of the model of financing the activities of motor transport enterprises is further enhanced by the dominance of the material intensity of the cost and operating costs. The share of material costs and services accounts for about 80 % of all operating costs of the enterprise, which forms a dependence on working capital and the settlement system at enterprises. However, the problem of payments for the services provided for the transportation of goods is acute for the studied industry enterprises, whose current assets are on average 2/3 of receivables. About 20 % more is accumulated in reserves, and highly liquid assets are quite limited [17]. Such a cost structure requires additional working capital to pay VAT and excise taxes in the implementation of material costs, although it reduces the real burden of value-added tax. At the same time, it increases the dependence of motor transport enterprises on the level of tax burden with direct taxes – on profits, on the property, on the wage fund.

In the course of the study, generalization methods were used (to systematize modern mechanisms for the formation and implementation of economic development), statistical observations (for structuring data on financial activities of motor transport enterprises in Ukraine), a systematic approach (to study the principles of economic development),

the method of expert assessments (to determine the criteria for the economic development of motor transport enterprises and internal indicators of the effectiveness of their activities).

The proposed methodical approach to assessing the condition and readiness of motor transport enterprises for development involves, on the one hand, determining a sufficient level of investment for development, and on the other, a balanced level of cost of activity. To take into consideration the first component, it is proposed to use an integral indicator of investment adequacy, compliance with the minimum regulatory level which will confirm the accumulation of a sufficient and stable level of investment at the enterprise. The components of the integral indicator of investment adequacy are the ratio of capital investments with such parameters as depreciation, long-term loan capital, non-current assets, and equity. The normative minimum level of the integral indicator of investment adequacy of an enterprise will depend on the specified parameters of its components, which allows for multivariate calculations. The proposed integral indicator can be used both at the level of individual enterprises and for aggregated assessment in the industry as a whole. Taking into consideration the second component involves determining the level of material consumption as the ratio of material and other operating expenses to the total amount of income from all activities in the enterprise.

5. Research results of the use of the proposed methodological approach to assess the economic development of motor transport enterprises

5.1. Development of a methodical approach to assessing the state and readiness of enterprises for development

A methodical approach to assessing the condition and readiness of motor transport enterprises for development implies determining two components: a sufficient level of investment for development and a balanced level of cost of the activity.

The integral indicator of investment sufficiency is calculated as follows [15]:

$$IS_t = \sum_{i=1}^n \frac{CI_t}{SD_{it}} * P_{it} + \sum_{j=1}^m \frac{SD_{jt}}{CI_t} * P_{jt}, \quad (1)$$

where IS_t is an integral indicator of investment adequacy in the t -period;

CI_t – capital investments in the t -period;

P_{it} – the weight of the i -th type of resource for the integral indicator of investment sufficiency for development in the t -period;

$i=1, 2, \dots, n$;

SD_{it} – indicators of the i -th type of development resources in the t -period;

SD_{jt} – indicators of the j -th type of development resources in the t -period;

P_{jt} – the weight of the j -th type of resource for the integral indicator and investment sufficiency for development in the t -period;

$j=1, 2, \dots, m$.

One of the variants of the normative level of the integral indicator of investment sufficiency is given in Table 1.

The first component of the integral indicator of investment adequacy makes it possible to estimate depreciation adequacy through the ratio of the annual volumes of capital investments of the enterprise and the volume of depreciation deductions. The target minimum level for this ratio is 2.5, based on the logic of the formation of its components. Thus, depreciation deductions show only the actual level of depreciation of existing means of production (fixed assets) formed in previous years. Accordingly, capital investments at the level of depreciation will not ensure even simple reproduction of fixed assets. Moreover, under the conditions of their rather rapid depreciation, both moral and technological, as well as physical.

Table 1

Normative level of the integral indicator of investment adequacy

Components of the integral indicator of investment adequacy	Calculation of indicators	Minimal level	Weight	Contribution to the integral indicator
Depreciation adequacy	The ratio of capital investment to depreciation deductions	2.5	0.25	0.625
Adequacy of long-term loan capital	The ratio of capital investment to long-term loan capital	4	0.25	1.0
Production adequacy	The ratio of non-current assets to capital investments	3.5	0.25	0.875
Adequacy of own capital	The ratio of equity to capital investment	2	0.25	0.5
An integral indicator of investment adequacy		–	1	3.0

Therefore, capital investments should be at least 2.5 times higher than the annual volume of depreciation. There are certain risks concerning enterprises that have practically worn-out fixed assets and, accordingly, minimal depreciation deductions. This can lead to a wide range of values for this component. This feature is generally inherent in indicators that reflect the ratio between the differences in financial and economic indicators of enterprises. Therefore, it is advisable to apply the limiting levels of the ratio, in particular, if they exceed the minimum target standard by 3–4 times, then such a threefold minimum is applied, and not the actual result.

The second component of the integrated assessment makes it possible to assess the adequacy of long-term loan capital through the ratio of annual volumes of capital investments and accumulated long-term liabilities of the enterprise. Similar to the previous ratio, capital investments should be several times higher than such obligations, which will indicate an active investment strategy aimed at the economic development of the enterprise.

The next component of the integrated assessment is aimed at determining production adequacy through

the ratio of the value of non-current assets and capital investments. An inverse ratio is used here since it makes it possible to apply comparable weighty coefficients and target standards. The proposed target standard may be 2–4 times the excess of assets over capital investments and will depend on the needs and fixed assets for the production of goods or the provision of services. Thus, for motor transport enterprises, especially medium and large ones, the presence of a modern transport fleet and its renewal is a critical condition for maintaining competitiveness, market positions, and implementing development strategies.

The next component of the integrated assessment is the adequacy of equity, which is estimated through the ratio of equity and capital investment. Similar to the previous ratio, compliance with the parameters of financial autonomy requires an adequate level of equity. Accordingly, a several times excess of equity capital over capital investments is acceptable.

In general, the application of different regulatory boundaries allows for multivariate calculations and evaluation of results following the goals and strategies of the economic development of enterprises.

To calculate the integral indicator of investment adequacy, the same share of its individual components (ratios) was used, that is, each of them was 25 % (0.25). At the same time, different specific weights can be used for research, as well as to expand the components of the integral indicator. Four components of the integral indicator were used. Accordingly, the minimum normative value of the integral indicator of investment adequacy is 3. And the higher the value of this indicator, the better the potential of implementing the strategy of its economic development, which means that a more effective mechanism for managing its economic development is used.

At the same time, it seems appropriate to supplement the minimum target level with a sufficient level, in particular, which will be twice the minimum level. Conceptually, this is shown in Fig. 1.

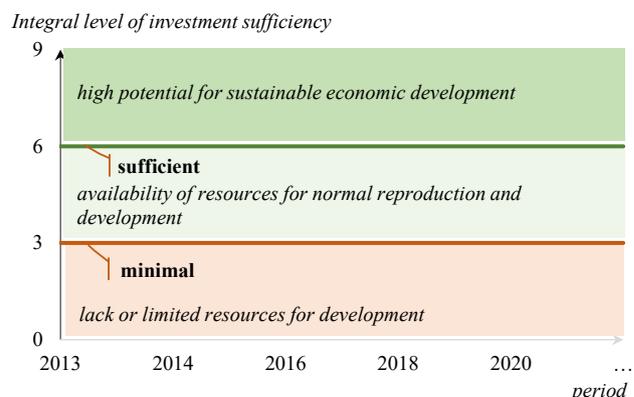


Fig. 1. Ranges of the level of the integral investment adequacy indicator

That would make it possible to get three ranges for the integral indicator:

1) less than the minimum level – the actual value in this range will indicate the absence or significant limitation of resources for development in the enterprise;

2) between the minimum and sufficient levels – the actual value in this range will demonstrate the availability of

resources for the normal reproduction and development of the enterprise;

3) above a sufficient level – the actual value in this range will demonstrate a high potential for sustainable development of the enterprise.

Taking into consideration the second component of the methodological approach to assessing the state and readiness of enterprises for development – a balanced level of the cost of activity – involves determining the level of material cost, the calculation of which is proposed to be carried out as follows [15]:

$$CL_t = \frac{MC_t + OC_t}{I_t} * 100\%, \tag{2}$$

where CL_t is the level of material consumption in the t -period;

MC_t is the volume of material costs and costs of paying for services used in production in the t -period;

OC_t is the volumes of other operating expenses in the t -period;

I_t is the total amount of income from all activities in the enterprise in the t -period.

Thus, the level of material costs is the ratio of material and other operating costs to the total amount of income of the enterprise. As with the first component, it is possible to apply only the minimum target standard or the use of several ranges (Fig. 2).

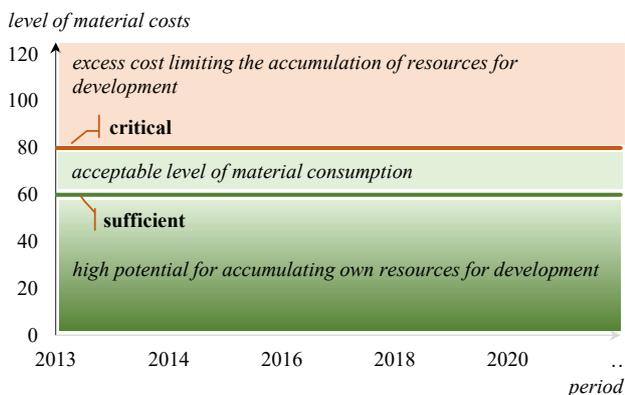


Fig. 2. Ranges of the level of material consumption

Thus, the actual values of the level of material cost less than 50 % show the presence of a high potential for the formation of own development resources in the enterprise. Values at the level of 50–75 % show the permissible level of material consumption, and above 75 % – critical level and excessive cost, which limits the formation of sufficient development resources in the enterprise.

The information base for calculating the level of material consumption is the data of the report on the financial results of enterprises [18]. The sources of initial data for the application of assessment of the state and readiness of enterprises for development are given in Table 2.

A certain problem for assessing the state and readiness of enterprises for economic development for external experts and researchers is the data on investments in general, and in particular, capital investments, that are rather veiled in the financial statements of enterprises. On the one hand,

such data are sufficiently confidential and require proper protection of commercial interests.

Table 2

Initial data for assessing the state and readiness of enterprises for development

No.	Indicator	Report format	Line code
1.	An integral indicator of investment adequacy		
1.1	Capital Investments	Notes to reporting	–
1.2	Depreciation deductions	Report on financial results (form 2)	2515
1.3	Profit before taxation		2290/2295
1.4	Non-current assets	Balance sheet of the enterprise	1095
1.5	Equity		1495
1.6	Long-term loan capital		1595
2	The level of material consumption		
2.1	Material costs and costs for payment of services	Report on financial results (form 2)	2500
2.2	Other operating expenses		2520
2.3	Net income from the sale of products (goods, works, services)		2000
2.4	Other income from operating activities		2105, 2110, 2111, 2112, 2120, 2121, 2130, 2180
2.5	Income from financial activities		2200, 2220
2.6	Other income		2240

5.2. Approbation of the proposed two-component methodical approach to assessing the readiness of enterprises for development

The verification of the methodical approach showed a low resource capacity of enterprises. Thus, the dynamics of the integral indicator of investment sufficiency showed that, in general, for enterprises engaged in road freight transportation, its level is much lower than the target regulatory value.

In particular, in 2013 it was 2.1 points with a minimum level of 3 points. And during 2015–2020, its value fluctuated on average at the level of 1.2–1.7, that is, it was in the range of lack or limited resources for economic development [17].

This confirms the widespread practice of domestic enterprises, in general, to rely on internal resources for financing investments. In particular, in 2020, only 9.4 % of capital investments in the field of land and pipeline transport were financed through bank loans and other loans, and in general, this source of capital investment amounted to only 6.6 % of the economy [17].

The calculation of the second component of assessing the state and readiness of enterprises for development according to aggregated data for road freight transport enterprises in Ukraine showed the following. The total level of material expenditure of this type of economic activity is quite moderate and during 2013–2020 did not exceed 40 %: its lowest level was in 2016 (30.4 %), and the maximum was in 2015 (38.1 %). At the same time, there is a slow-growing trend of material consumption in 2014–2020 (Fig. 3).

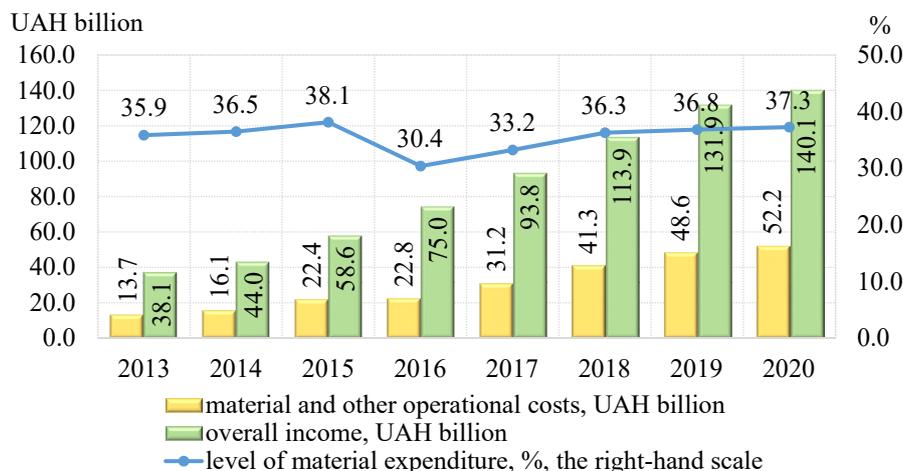


Fig. 3. Dynamics of volumes and level of material consumption for road freight enterprises in Ukraine in 2013–2020, a.u. (USD/UAH exchange rate 27.5) and %
 Source: compiled by Authors based on [17]

This confirms the potential to ensure the efficiency and profitability of providing freight transportation services by road. At the same time, the application of the developed approach to the reporting of individual motor transport enterprises shows different results from industry-wide calculations.

The calculations were carried out according to the data from three motor transport enterprises in different regions of Ukraine with different potentials: “Kyiv Production Company “Rapid”, PJSC “ATP 11263”, the city of Dnipro, PJSC “Chernihivske motor transport enterprise 17462”. The calculation of the integral indicator of investment sufficiency showed, in particular, that in 2020 two of the studied enterprises exceeded the target regulatory level. For the third enterprise, the actual level is close enough to the target and amounted to 2.5 points (Table 3).

In addition, more powerful enterprises from Kyiv and Dnipro generally have a higher level of investment sufficiency indicator, which confirms the feasibility of increasing potential and investment opportunities. Analysis of the integral indicator of investment sufficiency for individual components in the context of the studied enterprises shows significant differences in their business models and ability to implement development strategies (Fig. 4–6).

Table 3

The level of indicators for assessing the state and readiness for development for individual enterprises in 2018–2020

Indicators/enterprises	2018	2019	2020
An integral indicator of investment adequacy	Regulatory level >3		
PJSC «Kyiv Rapid Production Company», Kyiv	2.7	1.9	2.5
PJSC «Chernihiv Motor Vehicle Enterprise 17462»	1.6	0.0	4.5
PJSC «ATP 11263», Dnipro	2.9	1.9	3.2
The level of material expenditure of the enterprise	Regulatory level <60		
PJSC «Kyiv Rapid Production Company», Kyiv	67.0	64.2	60.6
PJSC «Chernihiv Motor Vehicle Enterprise 17462»	50.9	58.4	54.2
PJSC «ATP 11263», Dnipro	76.2	73.3	73.5

Source: compiled by Authors based on [18]

Thus, PJSC “Kyiv Rapid Production Company” in 2018–2020 had a high level of depreciation sufficiency, which was achieved primarily through active investment activities. The company, while maintaining, traditionally for the industry, a low share of depreciation in the structure of operating expenses, directs resources to capital investments that are several times higher than the annual depreciation of fixed assets. In addition, the company uses long-term loan resources more actively, although their volumes are somewhat lower than capital investments.

The greatest influence on the formation of an integral indicator of investment adequacy for PJSC “ATP 11263” exerted production adequacy and equity adequacy. In particular,

exceeding the target standard for equity adequacy was achieved for all three years of the study period. Likely, the company takes seriously the issue of maintaining an adequate level of financial autonomy and minimizing the risks associated with obligations to creditors. And the level of production adequacy in 2018 and 2020 was twice the minimum target standard. At the same time, the company attracted small amounts of long-term loan capital only in 2020. The scale of investment is insufficient to cover the existing depreciation of fixed assets, which affects the reduction of the integral indicator of investment adequacy of ensuring the economic development of this enterprise.

Analysis of the financial statements of transport enterprises showed that most of them do not provide open data on their capital investments, which complicates the analysis of their activities by external experts. Therefore, their investment activity may be evidenced by data on the renewal of fixed assets, cash flows from investment and financial activities, etc.

For PJSC “Chernihiv Motor Transport Enterprise 17462”, the results of assessments of the integral indicator of investment sufficiency by components are largely comparable with the studied enterprise from the city of Dnipro. In general, it should be noted that an important aspect of the application of the developed methodological approach is a sufficient information base, first of all, regarding the volume of capital investments or another aggregated indicator of investment volumes.

The assessment of the studied enterprises showed that the problem of excessive cost is quite relevant. Thus, the level of material consumption for enterprises is almost twice as high as that calculated for the road freight industry as a whole. In particular, for PJSC “ATP 11263”, it is almost 75 %, that is, the cost of fuel, spare parts, and other material costs is almost 3/4 of the total income of the enterprise. The minimum target standard of the level of material consumption for PJSC “Kyiv Rapid Production Company” is not observed. And only PJSC “Chernihiv Motor Transport”.

Enterprise 17462” has a level of material consumption that is lower than 60 % but also significantly exceeds the industry average level.

The calculation of the integral indicator of investment sufficiency and the level of material consumption for individual enterprises under study confirms the findings about their weak investment readiness to implement ambitious strategies

for economic development in the freight market. This increases the risks of further technological lag of enterprises in the industry, maintaining non-equivalent exchange and pressure of the transport sector on all other related sectors of the economy and markets, limiting the resource base for budgeting at different levels.

6. Discussion of results of the introduction of a two-component methodological approach to assessing the readiness of enterprises for development

The methodical approach to assessing the stability of enterprises based on a two-component assessment is substantiated, which involves, on the one hand, determining a sufficient level of investment for development, and on the other hand, a balanced level of cost of the enterprise.

For the first component (1), it is proposed to use an integral indicator of investment sufficiency. The method of its calculation is based on a combination of dependences between the volume of capital investments and other parameters of activity (depreciation, long-term loan capital, non-current assets, equity, etc.). The normative minimum level of the integral indicator of investment sufficiency will depend on the specified parameters of its components, which allows for multivariate calculations. One of the options for the standard level of the integral indicator is given in Table 1. The calculation was carried out on the basis of four components, such as depreciation adequacy, long-term loan capital adequacy, production adequacy, and equity adequacy. Under such conditions, the integral indicator of investment adequacy is determined at 3.0.

The ranges of the level of the integral indicator of investment sufficiency have been proposed: minimum, sufficient, and high (Fig. 1).

The second component (2) reflects the ratio of material and other operating expenses to the total income of the enterprise. It is possible to apply the minimum (critical) target standard, which is set at a rate of 60 %, or use several ranges (Fig. 2): sufficient, permissible, and critical.

The dynamics of volumes and the level of material consumption for road freight enterprises in Ukraine were assessed (Fig. 3), according to the results of which it can be concluded that during 2013–2020, the level of material consumption did not exceed 40 %. This confirms the potential to ensure the efficiency and profitability of the provision of freight transportation services by road. At the same time, the application of the developed approach to the reporting of individual motor transport enterprises shows different results from industry-wide calculations.

The sustainability of motor transport enterprises was monitored on

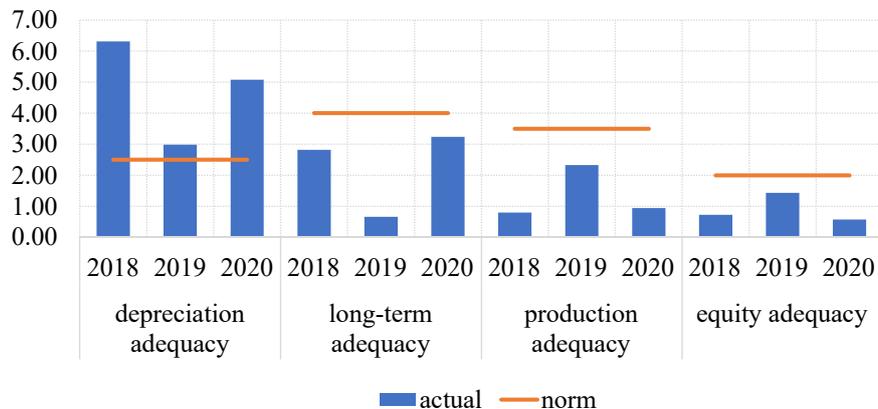


Fig. 4. Assessment of compliance with the regulatory level of individual components of the integral indicator of investment adequacy for PJSC "Kyiv Rapid Production Company"
Source: compiled by Authors based on reports from enterprises [18]

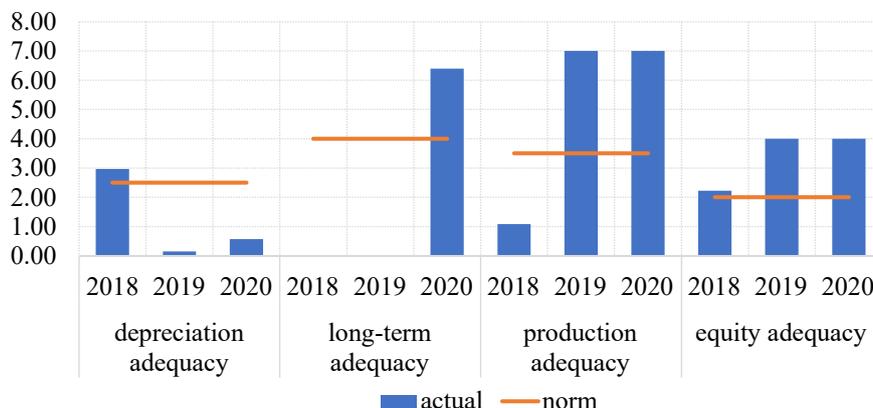


Fig. 5. Assessment of compliance with the regulatory level of individual components of the integral indicator of investment sufficiency for PJSC "Chernihiv Motor Transport Enterprise 17462"
Source: compiled by Authors based on reports from enterprises [18]

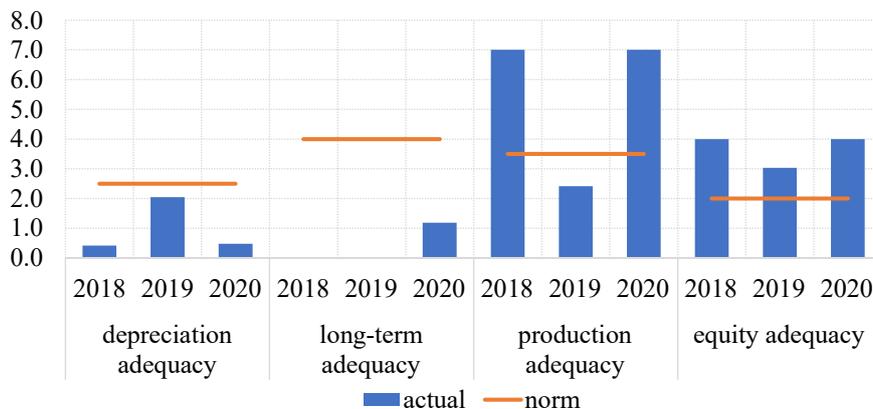


Fig. 6. Assessment of compliance with the regulatory level of individual components of the integral indicator of investment adequacy for PJSC "ATP 11263"
Source: compiled by Authors based on reports from enterprises [18]

the basis of consistency of key economic indicators with the level of investment and achievement of target parameters of the structural balance of its costs. It has been established that the majority of motor transport enterprises have weak financial stability.

Three motor transport enterprises from different regions of Ukraine and with different potentials were selected for the study: PJSC “Kyiv Rapid Production Company”, Kyiv; PJSC “ATP 11263”, Dnipro; PJSC “Chernihivske Motor Transport Enterprise 17462”.

The verification of the proposed two-component assessment of the state and readiness of enterprises for development showed their low resource capacity and the presence of problems related to excessive cost (Table 3). Thus, the level of material costs for enterprises is almost twice as high as that calculated for the road freight industry as a whole.

Assessment of compliance with the regulatory level of individual components of the integral indicator of investment adequacy for the studied motor transport enterprises in 2018–2020 is shown in Fig. 4–6. The calculation of the integral indicator of investment sufficiency revealed, in particular, that in 2020 two of the studied enterprises exceeded the target regulatory level (Table 3).

The dynamics of the integral indicator of investment sufficiency showed that, in general, for enterprises engaged in road freight transportation, its level is much lower than the standard value. This indicates the dominance among enterprises of survival strategies, not development, and a weak state policy, which does not stimulate investment activity in a legal transparent environment.

It is proposed to take into consideration the developed approach in the implementation of state support for enterprises that actively invest, increase legal turnover, income, and labor costs. Benefits may be introduced for enterprises that have higher than the regulatory values of the developed indicators and will comply with such conditions for a long period. In particular, if they are implemented within three or more years, such enterprises may be exempted from paying income tax if it is invested in development.

The developed two-component methodological approach makes it possible to optimize the assessment of the readiness of motor transport enterprises for economic development. Based on the interpretation of economic development as a transition to a new qualitative state and new opportunities for the functioning of the enterprise, the basis for its implementation is a sufficient level of investment and the availability of sources of their financing. And the necessary result of the success of such investments should be a more balanced structure of operating expenses, which will confirm the systemic, long-term, and durability of the changes.

The limitations of the developed methodological approach include the impossibility of including in the integral assessment of the sufficiency of profitability as the main internal resource for financing the development of the enterprise. This component quite organically corresponds to the task of assessing

the integral indicator of investment sufficiency. However, its practical application is complicated by the possible losses of the enterprise or the minimum values of profit. This is a fairly typical situation for many motor transport enterprises, which will actually lead to excessive values of this ratio and distortion of the obtained results. Therefore, its application requires the availability of adequate data on the profits of enterprises and their proper calibration.

The disadvantages include the fact that the problem for assessing the readiness of enterprises for development for external experts is fairly veiled data in the financial statements regarding investments in general, and in particular, capital investments.

The development of research using the proposed methodological approach is that its use will rationalize the mechanism of management of economic development and more clearly identify the compliance of current and projected performance indicators of both domestic and foreign enterprises with the goals of their development.

7. Conclusions

1. As a result of our study, a two-component methodological approach was developed, which makes it possible to optimize the assessment of the readiness of enterprises for development based on the calculation of the integral indicator of investment adequacy and the level of material costs. The integral indicator of investment adequacy was calculated based on the comparison of depreciation deductions, equity, long-term loan capital, non-current assets with the size of capital investments. The level of material costs was determined based on the comparison of material and other operating costs with the company's income.

2. The verification of the proposed methodical approach was carried out, which showed the low resource capacity of enterprises. The dynamics of the integral indicator of investment sufficiency proved that, in general, for enterprises engaged in road freight transportation, its level is significantly lower than the normative value. This testifies to the dominance among motor transport companies of strategies of survival, not development, and a weak state policy that does not stimulate investment activity in a legal environment. The advantage of the developed methodological approach is the possibility of using different components for each component, the establishment of different weights in the integral assessment, and the possibility of adjusting the target ranges.

Conflict of interest

The authors declare that they have no conflict of interest in relation to this research, whether financial, personal, authorship or otherwise, that could affect the research and its results presented in this paper.

References

1. Alkema, V. G., Darushyn, O. V., Vorkut, T. A., Bilonog, O. Ye., Tretinichenko, Y. O. (2020). Theoretical base of modeling the project team with a service technical systems by simulation. *International Journal of Management (IJM)*, 11 (4), 453–465. Available at: http://iaeme.com/MasterAdmin/Journal_uploads/IJM/VOLUME_11_ISSUE_4/IJM_11_04_044.pdf
2. Vorkut, T. A., Lushchai, Yu. V., Kharuta, V. (2021). Conceptual model of precedent formation of a portfolio of logistics service providers in logistics outsourcing projects. *World Science*, 5 (66). doi: https://doi.org/10.31435/rsglobal_ws/30052021/7586

3. Vorkut, T., Volynets, L., Bilonog, O., Sopotsko, O., Levchenko, I. (2019). The model to optimize deliveries of perishable food products in supply chains. *Eastern-European Journal of Enterprise Technologies*, 5 (3 (101)), 43–50. doi: <https://doi.org/10.15587/1729-4061.2019.177903>
4. Gurnak, V., Volynets, L., Khalatska, I. (2019). Intellectualization of logistic supply chains on the basis of forecasting volumes of cargo transportation. *MATEC Web of Conferences*, 294, 04013. doi: <https://doi.org/10.1051/mateconf/201929404013>
5. Volynets, L., Sopotsko, O., Sevostianova, A., Levchenko, I., Khrutba, Y., (2021). Optimization of international road transportation of cargoes in the management of enterprises of agricultural sector and road transport enterprises. *Eastern-European Journal of Enterprise Technologies*, 6 (3 (114)), 57–63. doi: <https://doi.org/10.15587/1729-4061.2021.248191>
6. Stepanov, V. (2016). State regulation of transport sphere. *Bulletin of the National University of Civil Protection of Ukraine. Series: Public Administration*, 1, 97–103.
7. Gorobinska, I. (2022). Creation of a motivational environment as a prerequisite for the development of motor transport enterprises. *Collection of theses of scientific and methodical reports of scientific and pedagogical internship*. Bala Mare, 68–71.
8. Volynets, L., Gorobinska, I. (2021). Means of implementation of the economic mechanism of regulation of activity of transport enterprises. *Věda a perspektivy*, 1 (1), 328–335. doi: [https://doi.org/10.52058/2695-1592-2021-1\(1\)-328-335](https://doi.org/10.52058/2695-1592-2021-1(1)-328-335)
9. Milani, L., Mohr, D., Sandri, N. (2021). Built to last: Making sustainability a priority in transport infrastructure. McKinsey & Company. Available at: <https://www.mckinsey.com/industries/travel-logistics-and-infrastructure/our-insights/built-to-last-making-sustainability-a-priority-in-transport-infrastructure>
10. The future of the EU transport sector (2021-2024) – four trends. Available at: <https://dr2consultants.eu/the-future-of-the-eu-transport-sector-2021-2024-four-trends/>
11. Rozporiadzhennia KМУ «Pro zatverdzhennia planu zakhodiv z realizatsiyi Natsionalnoi transportnoi stratehiyi Ukrainy na period do 2030 roku» vid 07 kvitnia 2021 r. No. 321-r. Available at: <https://www.kmu.gov.ua/npas/pro-zatverdzhennya-planu-zahodiv-z-realizatsiyi-nacionalnoyi-transportnoyi-strategiyi-ukrayini-na-period-do-2030-roku-321-070421>
12. Marynenko, N. Yu. (2016). Approaches to the enterprises' development: a methodological analysis. *Ekonomika i Suspilstvo*, 4, 164–170. Available at: https://economyandsociety.in.ua/journals/4_ukr/26.pdf
13. Yankovyi, O. H. (Ed.) (2013). *Konkurentospromozhnist pidpriemstva: otsinkarivnia ta napriamypidvyshchennia*. Odessa: Atlant, 470. Available at: http://oneu.edu.ua/wp-content/uploads/2018/01/monografiya_ep_2013.pdf
14. Yemelianov, O. Yu. (2020). Pryntsyppy ta metody otsiniuvannia potentsialu ekonomichnoho rozvytku pidpriemstv. *Naukovyi prostir: aktualni pytannia, dosiahnennia ta innovatsiyi*, 1, 32–34. Available at: <https://ojs.ukrlogos.in.ua/index.php/mcnd/article/view/4798/4752>
15. Dorofiev, O. V. (2018). Modern directions for the provision of economic development of agri-manufacturing subjects. *Ukrainian Journal of Applied Economics*, 3 (3), 195–200. Available at: <http://ujae.wunu.edu.ua/index.php/ujae/article/view/304/298>
16. Markova, S. (2020). Strategic vectors of life support management of the enterprise activity in a changing environment. *Economic Analysis*, 30 (3), 276–283. Available at: <https://www.econa.org.ua/index.php/econa/article/view/1943/>
17. State Statistics Service of Ukraine. Available at: <https://ukrstat.gov.ua/>
18. YouControl. Available at: <https://youcontrol.com.ua/>