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DIRECTIONS FOR ENHANCING METHODOLOGY OF ASSESSING RISKS OF ECONOMIC ACTIVITY OF MOTOR TRANSPORT ENTERPRISE

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Abstract. The article reviews advanced methods for determining the riskiness of the enterprise. The authors' approach to assess the risk of economic activity of motor transport enterprises in conditions of uncertainty, characterized by a clear and balanced group of factors, manifested in indicative indices, reflecting the impact of domestic and external environment on the level of riskiness of economic activity of a MTE is proposed. The methodology of a comprehensive indicator of the risk of MTE has been improved. Proceeding from the generalizations, there have been formed conclusions and practical recommendations for evaluating the risk of economic activity of a motor transport enterprise.

Key words: uncertainty; risk; rating method, comprehensive risk indicator; risk zones.

Introduction

The profound system of crisis, in what economy of Ukraine currently is, has a great effect on the negative changes in the financial situation of both individual enterprises and entire branches of the economy of the country. Striving to balance the economic situation, the managers of motor transport enterprises, begin to pay more and more attention to financial planning in conditions of uncertainty of the economic situation to maximize profits or, in extreme cases to avoid losses and insolvency.

Formulation of problem

The modern economic theory of uncertainty is an indicator of risk. And if the management of the enterprise is generally not able to influence the uncertainty, it is obliged to estimate the risks for making managerial decisions in the future. Thus, in the absence of full information and impossibility to predict accurately, risk management problem becomes extremely urgent.

In particular it concerns the system of risk assessment indicators, as well as factors that influence it, and the development of practical recommendations on risk reduction and minimization, along with the improvement of risk assessment methods and the implementation of risk management strategies in the economic activity of road transport enterprises.

Analysis of recent research results

Theoretical and practical aspects related to economic risks of enterprises across various sectors of the economy have been studied by both foreign and domestic scientists. M.S. Beasley, R. Clune, D.R. Hermanson [8] S.V. Gutsiylyuk [1], O.N. Zagurskiy [2], I.V. Krivov'yazuk, S.F. Smerichevsky, Y.M. Kulik [5], L.A. Ostankova, N.Y. Shevchenko [6], I.M. Posokhov [7], Sprčić D. M., Kožul A., Pecina E. [11], S.P. Williams, V. Hausman [12], etc. The riskiness in the transport industry has been directly reviewed by A. Conca, C. Ridella, E. Sapori [10], O.M. Zagurskiy [13] and other scientists.

Purpose of research

The purpose is a scientific-theoretical substantiation for the need to enhance the methodology of risk evaluation of business operations of motor transportation industry, influencing the development and implementation of its development policies, conforming to the circumstances and trends of the "uncertain" market economy.

Research results

The modern interpretation of risk is not only about losses that can be suffered in the realization of an economic decision, but also about the opportunity to deflect from the objectives behind the decision [4, p. 12]. In other words, today's risk is identified by a lack of expected positive results, rather than by losses, that necessarily reduces the financial sustainability and stability of the enterprise. The financial literature determines the stability of the enterprise as the stability of the economic environment and the internal state of the enterprise [5, p. 148].

Meanwhile, in order to successfully confront the

dynamism and variability of the external environment, the sophistication and speed of decision-making must match the complexity and rapidity of the changes taking place. This means that it i leads to uncertainty risks because of the lack of complete information and the inability to predict accurately. But risk, in contrast to uncertainty, is a measurable value as a quantitative measure of the probability of an adverse outcome. Such probabilities can be determined either on the basis of statistical data or on the grounds of expert evaluations. Let us note that today a number of mathematical theories are also used to formalize uncertain information and measure risk, these are: multivalued logic; probability theory; error theory (interval models); theory of interval averages; theory of subjective probabilities; theory of fuzzy sets and so forth.

Nevertheless, regardless of the availability of already developed methodologies, there are prospects for the development of new and improvement adaptation of established methodologies. In fact, some methodologies for determining risk don't consist of a considerable number (5-7) of indicators, but another ones are burdened with mathematical functions and proportions, which require complex calculations on the contrary.

We believe that it is advisable to expand the number of risk zones to 5, since the vast majority of groups are formed of an odd number of them and to form the following risk zones to improve the existing methods for assessing the risk of economic activity of the road transport enterprise:

- a risk-free zone;
- minimum risk zone;
- an acceptable risk zone;
- a critical risk zone;
- an unacceptable risk zone.

It is necessary to develop compliance of this scale with the point system, as well as to determine the range of each interval - the order of rank of this or that interval, considering the current riskiness of the economic activity of the motor transport enterprise (table 1):

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Table 1. Interval rank

Interval scale	Indicator target rank value	Interval of the company aggregate rank
A risk-free zone	2	[12; 20]
Minimum risk zone	1	[4; 12]
An acceptable risk zone	0	[-4; 4]
A critical risk zone	-1	[-12; -4]
An unacceptable risk zone	-2	[-20; -12]

Source: made by the author

In order to simplify the calculations, the assessment of the risk of economic activity of the company according to our opinion should be conducted in the most vital areas:

1. Assessment of enterprise riskiness according to its legal form (R 1);
2. Assessment of the enterprise's riskiness by the time of its existence (R 2)
3. Evaluation of the enterprise's riskiness according to its property status (R 3);
4. Assessment of enterprise riskiness by availability and level of enterprise profit (R 4);
5. Estimation of riskiness of the enterprise according to the level of admissibility of material losses (R 5);
6. Assessment of operational risks (R 6);
7. Assessment of riskiness of the enterprise for staff turnover (R 7);
8. Assessment of enterprise riskiness by enterprise business reputation (R 8);
9. Assessment of enterprise riskiness by inflation rate (R 9);
10. Assessment of enterprise riskiness by the level of development of market institutions (R 10);

Thus, we identified the first direction riskiness of the enterprise organizational-legal form of management:

- corporation, consortium, concern - "2" points
- joint venture, open joint-stock company - "1" point
- closed joint-stock company, additional responsibility company - "0" points;
- collective enterprise, leased enterprise, peasant (farmer) economy, limited liability company - "-1" point
- individual enterprise, family business, private enterprise, entrepreneur - "2" points.

For the second direction of assessing the riskiness of an enterprise, we will conduct a time of its existence:

- more than 10 years - "2" points
- 5 - 10 years - "1" point
- 3 - 5 years - "0" points;
- 1 - 3 years - "1" point
- up to 1 year - "-2" points.

The third direction for assessing the riskiness of the enterprise is the level of the current property situation. Three basic financial indicators are used for determination of the enterprise's property situation (table 2).

The fourth direction to evaluate the riskiness of the enterprise is defined as the production risk by us. It is identified by the availability and income level of the enterprises for the preceding and accounting periods:

- availability of company profit by the results of the previous and reporting periods - "2" points
- availability of profit by the results obtained only in the reporting period - "1" point
- the financial result is zero, i.e. there is no profit and losses - "0" points;
- existing losses of the enterprise following the results of the accounting period - "-1" point
- the existence of enterprises losses based on the results of the previous and reporting periods - "2" points.

The fifth area of the enterprise's riskiness assessment is a material risk. Such risks indicate the cumulative

adverse influence on the quantitative and / or qualitative integrity of the cargo.

Table 2. The determination of the comprehensive index of asset risk

Financial ratios	Interval value of the coefficient across risk zones				
	A risk-free zone	Minimum risk zone;	An acceptable risk zone;	A critical risk zone;	An unacceptable risk zone.
Current liquidity ratio	(2.50; ∞)	(2.00; 2.50)	(1.50; 2.00)	(1.00; 1.50)	(-∞; 1.00)
Autonomy ratio	(0.65; ∞)	(0.50; 0.65)	(0.35; 0.50)	(0.20; 0.35)	(-∞; 0.20)
Financial stability ratio	(0.90; ∞)	(0.75; 0.90)	(0.60; 0.75)	(0.35; 0.60)	(-∞; 0.35)
Score	2	1	0	-1	-2

Source: made by the author

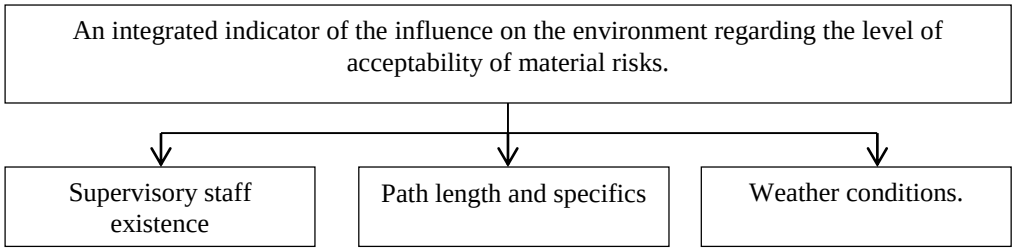

Fig. 1. Integrated index of the the environmental impact on the level of acceptability of material risks.
Source: made by the author

These risks are influenced by the following factors:

1. The existence of supervisory staff. Specially trained stuff is able to respond in a timely way to violations of the conditions of perishable goods contribute transportations to a significant reduction in the potential damage and the probability of the implementation of the risk situation. The influence of this factor has an inverse effect on the level of risk. The degree of influence of this factor can be assessed using the following indicators:

a. number of controlling personnel. Units of measure are people. It is measured statistically. The increase in this indicator leads to an increase in the influence of the factor.

b. qualification of the supervising personnel. Units of measurement are points. Measured by experts. The increase of this indicator leads to an increase in the influence of the factor.

2. length and specificity of the route. With increasing track length, a probability of quantitative and/or qualitative damage to cargo increases significantly. An impact of this factor has a direct character by the level of risk. This factor's degree of influence can be assessed using the following indicators:

a. cumulative path length. The unit of measure is km. It is measured statistically. More of this indicator leads to an increase in the influence of the factor.

b. number of road accidents committed on the way in the last 2 years according to the statistics of the Ministry of Internal Affairs. The unit of measure is pcs. Measured statistically. A multiplication of this indicator leads to an increase in the influence of the factor.

3. The weather conditions. Any deterioration of weather can lead both to violations of the integrity of the transport package and to a deterioration in the ability to control the transport process. The impact of this factor is inverse in terms of the level of risk. The extent of the influence from this factor can be assessed with the help of an indicator:

a. qualitative assessment of weather forecast results. Fr / m-5. The measuring unit is a score. Its measured expertly. Increasing of this indicator leads to decreasing of the influence of the factor.

The sixth direction of assessing the riskiness of the enterprise is operational risks. They describe the cumulative adverse impact of external and internal environment factors on the process of operation of cargo automobile rolling stock. The implementation of these risks can lead to the realization of environmental risks. At the same time, these risks are largely technical by their nature.

The following factors affecting the level of operational risks can be identified:

1. Wear and tear of the rolling stock. This factor is decisive in terms of ensuring the continuity of the transportation process. The influence of this factor has a direct character in terms of the level of risk. The degree of influence of this factor can be estimated by using the following indicators:

a. ratio of depreciation of rolling stock. This indicator is calculated as the accumulated depreciation to the original cost of rolling stock. Units of measurement is%. It is measured statistically. An increase in this indicator leads to an increase in the influence of the factor.

b. share of the normative time elapsed since the last scheduled maintenance of the rolling stock. This indicator is calculated as the ratio of the time remaining to the next planned maintenance and the normative time between the planned maintenance. Unit of measure is %. Measured

statistically. Reducing this index leads to an increase in the influence of the factor.

2. Load on the roadway. This factor is purely technical in nature. Its influence has a well-defined vector and direct character by the level of risk. The degree of influence of this factor can be assessed by the following indicators:

a. exceeding the permissible level of axle load. Calculation of this indicator is carried out by dividing the current level of load on the axle to its normative value. The unit of measurement is%. It is measured statistically. An increase in this indicator leads to an increase in the influence of the factor.

b. exceeding the permissible load level per 1 meter of road surface. Units of Measure is %. Measured statistically. The increase of this indicator leads to an increase in the influence of the factor.

3. Wear and tear of the road surface. This factor is exclusively external to the transport enterprise. The influence of this factor has a direct character on the level of risk. The degree of influence of this factor can be estimated by using the following indicator:

a. the proportion of normative time elapsed since the road was repaired. This indicator is calculated as the ratio of the time remaining to the next scheduled maintenance and the normative time between scheduled maintenance. The unit of measure is %. Measured statistically. Decrease of this index leads to increase of influence of the factor.

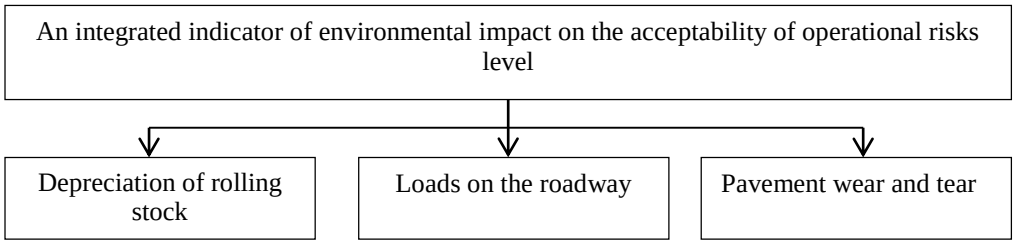

Fig. 2. Integrated indicator of the influence of environment upon the level of admissibility of operational risks
Source: made by the author

The seventh direction of assessment of riskiness of the enterprise – ssessment of staff turnover at the enterprise during the year. These risks combine a set of adverse events, the source of which is the "human factor". The realization of social risks can lead to operational risks, that in turn can lead to environmental risks.

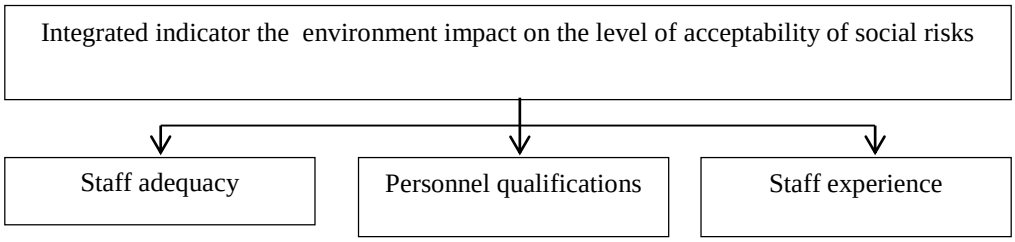

Fig. 3. Integrated indicator of environmental influence on the level of social tolerance risks.
Source: made by the author

The factors affecting the level of these risks can be identified as the following:

1. Staff sufficiency. This factor is decisive in terms of social risk tolerance. The impact of this factor is direct in terms of risk level. The extent of influence of this factor can be estimated by means of the following indicator:

a. staffing of the enterprise. The given indicator is calculated as a ratio of the personnel available at the enterprise in the quantity necessary for performance of tasks. Units of measurement are %. It is measured statistically. A decrease in this indicator leads to an increase in the influence of the factor.

2. Staff qualification. The effect of this factor is the inverse of the level of risk. The extent of the influence of this factor can be assessed using the following indicator:

a. average level of staff qualification. Estimated as a ratio of the sum of qualification assessments (expressed in points) and the total number of assessed personnel. The measurement units are score/person. It is measured by experts. An increase in this indicator leads to an increase in the influence of the factor.

3. staff working experience. Cumulative experience of work permits to form employee's practical skills in algorithms of elimination of consequences at realization of risk. However, the influence of this factor on the integral result is comparable to the nature of the previous factor. The extent of influence of the given factor can be evaluated by means of the following indicator:

a. average work experience of the staff involved. The calculation of this indicator is similar to the previous one. Measurement unit is score / person. This indicator is measured statistically. Rise of this indicator increases the influence of the factor.

The eighth area of estimation of the enterprise riskiness will be carried out according to the level of business reputation according to the enterprise:

- a well-known trademark (brand) presence - "2" points
- quality of products and services - "1" point;
- quality of management - "0" points;
- low-known enterprise - "-1" point;
- negative reputation - "2" points.

The ninth area of risk assessment of the enterprise determined as a financial (speculative) risk by us, considered as a risk of inflation and the resulting increase due to rising prices for raw materials, semi-finished products, components, changes in the growth rate of wages and so on.

- no inflation - "2" points
- moderate inflation - "1" score
- rampant inflation - "0" score;
- hyperinflation - "1" point;
- superinflation - "2" points.

The final tenth direction in evaluating risks of a motor transport enterprise is institutional risks that are characterized by the level of development of market institutions, availability of legal norms, rules and procedures, level of access to information and securing market transactions and contracts.

- a high level of development of institutions guaranteeing the stability, prudence and transparency of market rules and regulations - "2" points
- properly executed and efficiently used rights, fair and impartial judicial system - "-1" point
- shortage of institutions, unsatisfactory access to information and asymmetry of entrepreneurs - "0" points
- incoherence of formal and informal institutions, blurred property rights, excessive regulation of entrepreneurial activity - "1" score
- contradictory set of institutions, lack of clear legal norms, structuring the activity of enterprises, focusing on the pseudo-market rules of behavior by institutions, availability of raiding procedures and a high level of corruption - "2" points.

Considering each of the directions of riskiness assessment to be equivalent, a comprehensive riskiness score of the enterprise can be calculated by the formula:

$$Z = \sum_{i=1}^{n} R_i \ . \qquad (1)$$

After comparing the value of the obtained comprehensive riskiness index with the intervals of the aggregate riskiness rank, we define the overall level of riskiness of the road transport enterprise.

Conclusions

1. The risk is a complex, multifaceted and immense phenomenon. Analyzing a methodological approaches to assessing the level of risk of economic activity has shown that all of them are mainly aimed at improving, expanding and adapting the system of characteristics and indicators of the activities of enterprises. The characteristics by which the risks of economic activity of the road transport enterprise are assessed can be both financial and non-financial. Nevertheless, they must necessarily manifest, be identified, assessed and optimized regardless of the origin of risk characteristics and attributes. And the earlier they will be revealed, the more time the MTE management will have for collecting the necessary information and developing the strategy of preventing the crisis situation at the enterprise.

2. Taking into account the accumulated experience of risk management, each motor transport enterprise should introduce an effective system of risk management in order to achieve success in solving its tasks. This system should include:

- development of a procedure for identifying, monitoring and controlling risks;
- the introduction of existing and development of independent (and individual for each company) risk assessment models;
- training of qualified specialists in risk management;
- a set of measures, mechanisms and tools for minimizing risks (risk avoidance, risk prevention, risk acceptance, risk diversification, risk insurance, risk hedging, risk limitation).

3. The author's approach to the assessment of the risk of economic activity of motor transport enterprises in conditions of uncertainty is characterized by a clear and weighed system of factors, expressed in indicative indices, reflecting the influence of internal and external environment on the level of riskiness of economic activity of motor transport enterprises. Based on a indicator system, a clearly-multiple model for assessing the level of current riskiness of the economic activity of the road transport enterprise have been formed.

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НАПРЯМИ УДОСКОНАЛЕННЯ МЕТОДИКИ ОЦІНКИ РИЗИКІВ ГОСПОДАРСЬКОЇ ДІЯЛЬНОСТІ АВТОТРАНСПОРТНИХ ПІДПРИЄМСТВ

О. М. Загурський

Анотація. У статті розглянуто сучасні методики визначення ризиковості підприємства. Запропоновано авторський підхід щодо оцінки ризику господарської діяльності автотранспортних підприємства в умовах невизначеності, який характеризується чіткою і зваженою системою факторів, виражених в індикативних показниках, що відображають вплив внутрішнього і зовнішнього середовища на рівень ризиковості господарської діяльності АТП. Удосконалено методику оцінки комплексного показника ризику автотранспортного підприємства. На основі узагальнень сформовані висновки та практичні рекомендації щодо оцінки ризику господарської діяльності автотранспортного підприємства.

Ключові слова: невизначеність, ризик, рейтинговий метод, комплексний показник ризику, зони ризику.

НАПРАВЛЕНИЯ СОВЕРШЕНСТВОВАНИЯ МЕТОДИКИ ОЦЕНКИ РИСКОВ ХОЗЯЙСТВЕННОЙ ДЕЯТЕЛЬНОСТИ АВТОТРАНСПОРТНЫХ ПРЕДПРИЯТИЙ

О. М. Загурский

Аннотация. В статье рассмотрены современные методики определения рискованности деятельности предприятия. Предложен авторский подход к оценке риска хозяйственной деятельности автотранспортных предприятия в условиях неопределенности, который характеризуется четкой и взвешенной системой факторов, выраженных в индикативных показателях, отражающих влияние внутренней и внешней среды на уровень рискованности хозяйственной деятельности АТП.

Усовершенствована методика оценки комплексного показателя риска автотранспортного предприятия.

На основе обобщений сформированы выводы и практические рекомендации по оценке риска хозяйственной деятельности автотранспортного предприятия.

Ключевые слова: неопределенность; риск; рейтинговый метод, комплексный показатель риска; зоны риска.

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