

Identification And Assessment Of External Risks Of The Enterprise's Foreign Economic Activity

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Abstract: Recommendations on identification and assessment of external risks of foreign economic activity of the enterprise are developed in the article, namely, the algorithm of sequence of risk management is proposed, recommendations for identification of external risks of foreign economic activity of the enterprise are developed, namely the use of three-dimensional model of identification of risks of foreign economic activity, tabular description of enterprise; for the qualitative and quantitative evaluation of the enterprise the algorithm of integrated risk assessment of the FEA of the enterprise is proposed; to simplify the calculation, it is recommended to develop a software product for the calculation of the integrated risk index of FEA. Thus, the recommendations offered in the article allow the enterprise to identify and evaluate the external risks of the FEA in a timely manner, and also make it possible to conduct the activity of the enterprise as a whole more effectively.

Index Terms: MAAssessment, Enterprise, External Risks, Identification, Foreign Economic Activity, Risk, Risk Management.

1 INTRODUCTION

Any enterprise carries risks associated with its business activities, because risk is an integral characteristic of market economy, which is of particular importance in the context of the dynamic and volatile environment. External economic risks (FEA) are higher than the risks of the enterprise in the domestic market, because the influence of environmental factors is added, so their timely identification and effective management is a priority factor in conducting foreign economic activities [1-2]. The need to improve the efficiency of the enterprise's external economic risk management process necessitates a qualitative risk analysis, which involves identifying external and internal risk factors, identifying all possible risks associated with the external economic activity of the enterprise, and identifying risk groups [3].

2 COMMON METHODS FOR MANAGING EXTERNAL RISKS OF FOREIGN ECONOMIC ACTIVITY

The complexity of identifying risks in the external market lies in the instability of the economic and socio-political processes of partner countries, the limited information base and the specific nature of each foreign economic operation. Generations of economists and managers have developed a common algorithm for the process of managing economic risks, including in the area of FEA. The main elements of this scheme, ie the stages of risk management, are: risk identification, analysis and evaluation, development and implementation of specific risk management measures.

For the operation and development of specific enterprises, it is advisable to identify the following stages of risk management [4-10]:

Step 1. Risk identification and analysis. Risk identification and analysis means the identification of risks, their specificity, due to the nature or other characteristic features of risks, the identification of features of their implementation (including the study of the amount of economic loss, as well as changes in risks over time, the degree of relationship between them and the study of influencing factors on them). Without such research, it is impossible to carry out the risk management process effectively and purposefully.

Step 2. Analysis of alternative risk management methods. The main purpose of this stage is to explore those tools that can help prevent the realization of risk and the impact of its negative effects on the business of the firm. An analysis of the main approaches to minimizing the adverse effects of accidental events and their financial consequences allows us to identify a number of common risk management procedures. These include: deviation from risk (rejection of risk); reduction of risk (reduction of the frequency of loss or prevention of loss; reduction of the size of losses; risk sharing - differentiation and duplication); risk transfer (risk outsourcing, etc.).

Step 3. Choosing risk management methods. This phase is intended to shape the firm's risk and uncertainty policy. When choosing methods, it is advisable to consider different criteria, such as: financial, economic, technical, social, etc.

Step 4. Execute the selected management method. The peculiarities of the procedures at this stage are manifested in the specifics of the decisions made, not in how they are implemented.

Step 5. Monitoring the results and improving the risk management system. At this stage, the risk information is updated and updated, which is an important condition for risk analysis in the first stage. It provides feedback on the specified system. On this basis, the effectiveness of the activities is evaluated. The proposed steps are not necessarily implemented sequentially. The diagram (Fig. 1) provides logical links between stages of risk management.

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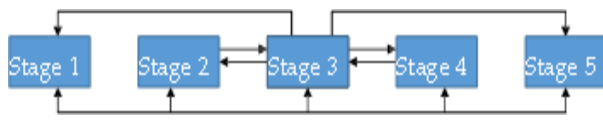


Fig. 1. Relationships between stages of risk management.

An algorithm for the risk management process is presented in Figure 2. The components of the process proposed here are appropriate to be divided into two groups - risk analysis and measures to eliminate and minimize it.

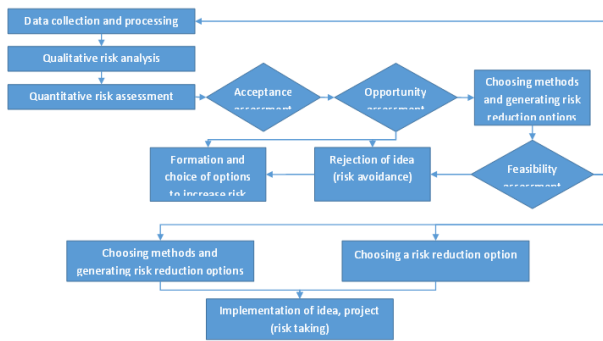


Fig. 2. Risk management process algorithm.

The first group includes the collection and processing of data on various aspects of risk, qualitative and quantitative analysis.

The second group contains:

- selection and justification of maximum permissible levels of risk;
- selection of risk mitigation methods;
- formation of options for venture capital investment;
- estimation of their optimality on the basis of comparison of expected return (income, profit, dividends, etc.) and magnitude of risk.

The collection and processing of data on risk aspects consists in the selection of reliable, high-quality, complete and timely information. Moreover, in the process of dealing with information on risk aspects, one must strive to achieve the optimal balance between its completeness and quality, on the one hand, and the cost of obtaining this information, on the other. In some cases, it is more economically feasible to deal with incomplete information than to collect virtually complete, but too expensive, information that also requires unacceptable investment of time. To do this, one should compare the possible costs of incomplete information with the cost of obtaining additional information within a reasonable time. Expenses are defined as the difference between the expected results of an economic activity in circumstances where there is additional information and without it. The essence of risk management as a management process is reflected in Fig. 3. In the scheme for simplification, the collection and processing of information on risk aspects is presented in the first stage. But in reality, this work is carried out throughout the decision-making period. As you move from one stage to another, the need for additional information may be clarified. The enterprise risk management system is a scientific and methodological complex of measures concerning enterprise management aimed at identifying and assessing risk, using specific

techniques and methods to create conditions for the sustainable functioning of the enterprise, meeting customer needs, meeting the requirements of partners and ensuring profitable activities. It should be noted that risk management is effective only in a comprehensive, systematic approach to identifying and minimizing risks.

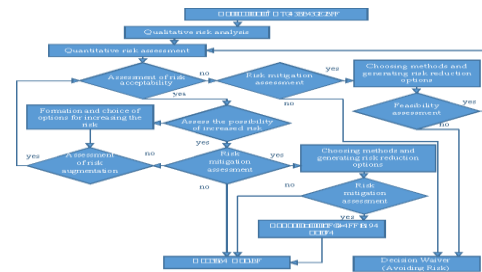


Fig. 3. Risk management as a management process

The risk management system should include the decision-making process, the further monitoring of risk positions, the order of interaction of the entities that contribute to the financial stability of the enterprise and control over the risks taken. When analyzing the effectiveness of the enterprise risk management system, it is advisable to use a systematic approach as the main methodological tool - it is a comprehensive approach that focuses attention not only on the enterprise under study, but also on its environment. The central notion of a systemic approach is the concept of "system", which is a set of elements that are in interaction, relationships, relationships, and thus are holistic. Systematicity can be said to be a new quality of risk management, which arises from the links in the system that transfer the properties of each element of the system to all other elements. These links are called integral or system connections. The effectiveness of the systematic approach in the formation of risk management provisions is the effective interaction between parts of the system.

3 METHODOLOGY

The figure 4 shows the general sequence of management of external risks of foreign economic activity of the enterprise. At the stage of risk identification, the task of the risk management service is the systematic identification of sources of risks of international activities, their classification and preliminary assessment of risk factors. Risk detection must be continuous. After identifying the risk factors that are specific to a particular foreign trade operation, they compile a preliminary list, which becomes the basis for risk analysis and assessment.



Fig. 4. The algorithm of sequence of risk management of foreign economic activity of the enterprise

Analyze the risks in the following order:

- identifying internal and external factors that increase or decrease the degree of a particular type of risk;
- assessment of the impact of identified factors on the degree of risk;
- determination of economic feasibility of foreign economic activity;
- establishment of a tolerable degree of risk;
- analysis of individual operations for the selected degree of risk.

Risk analysis is divided into two complementary types: qualitative and quantitative. Qualitative analysis is the most complex and requires thorough knowledge, experience and intuition in this area of economic activity. Its main purpose is to identify risk factors, risk areas of tourism activities. Quantitative risk analysis is a quantitative (numerical) determination of the extent of individual risks. Depending on the available information about the past period of management, information about financial indicators, balance of the enterprise, existence of analogies, it is advisable to use the following methods of quantitative risk assessment: statistical, analogies, expert assessments, financial stability, decision tree, normative. Depending on the results of the identification, analysis and assessment of risks, decisions are made regarding the application of the appropriate method of overcoming them.

When choosing a risk mitigation strategy and techniques, the following should be considered:

- a) types of risk of international activity.
- b) methods of risk management.
- c) the amount of damages that may be repaid at its own expense. Depending on this, appropriate risk mitigation techniques are chosen.

In international activities, it is advisable to use the following risk mitigation techniques:

- a) Risk transfer - transfer of risk through the conclusion of service contracts, leases, transportation.
- b) Insurance - use of a complex of types of insurance (property, personal, liability).
- c) Limitation - setting the limits on costs, sales, credit, etc. The system of such norms for an enterprise may include the maximum volume of commercial transactions with one counterparty, the maximum term of payment for services, the minimum amount of current assets in highly liquid form, the maximum amount of borrowed funds in circulation, etc.
- d) Diversification - the division of effort and capital between different activities. This method helps to reduce production and commercial risks. It is advisable for the company to use diversification of product range, diversification of counterparties, etc.
- e) Provisioning - creation of an insurance fund against unforeseen situations. The recommended size of such a fund is 1-5% of the volume of sales of products and services.

The risk mitigation program must be approved by the management of the enterprise and used in planning. When implementing the program, the risk management service

should analyze the effectiveness of the decisions made, and make appropriate changes as necessary. It is recommended to accumulate information about bugs and weaknesses of the program, to allow the development of the following programs at the highest level.

4 APPLICATION OF A FRAGMENT OF THE PROPOSED METHOD.

Enterprise A buys products abroad for \$ 15 for a "set" and sells for \$ 25 in their own country. The products have seasonality: for each of the 40 days of the season, it sells a different number of sets. This is due to the randomness of demand for this product. The trader noted that the demand for 4 sets was observed for 4 days, 5 sets - 8 days, 6 - 16 days, 7 - 10 days, 8 - 2 days. To determine the optimal quantity of goods that must be purchased by the company in order to get the maximum profit under the given conditions of demand for goods (according to the Bayes-Laplace criterion), we will use the proposed methodology. The best solution is considered to provide the highest mathematical expectation of a random variable. Variants of decisions will be the amount of the number of sets, which should be purchased at a single time from the seller from the peasants. The economic environment is characterized by demand for goods. It is clear that it is inappropriate for a seller to buy less than four or more than 8 sets. Financial results of the seller (profit), which he will have on various options for his possible solutions and demand, is given in the table.

TABLE 1
Financial results of the seller (profit)

Solution (number of purchased sets)	The state of the economic system (demand in the sets)				
	Q1 (4 sets)	Q2 (5 sets)	Q3 (6 sets)	Q4 (7 sets)	Q5 (8 sets)
4	$4 * 25 -$ $- 4 * 15 =$ 40	$4 * 25 -$ $- 4 * 15 =$ 40	$4 * 25 -$ $- 4 * 15 =$ 40	$4 * 25 -$ $- 4 * 15 =$ 40	$4 * 25 -$ $- 4 * 15 =$ 40
5	$4 * 25 -$ $- 5 * 15 =$ 25	$5 * 25 -$ $- 5 * 15 =$ 50	$5 * 25 -$ $- 5 * 15 =$ 50	$5 * 25 -$ $- 5 * 15 =$ 50	$5 * 25 -$ $- 5 * 15 =$ 50
6	$4 * 25 -$ $- 6 * 15 =$ 10	$5 * 25 -$ $- 6 * 15 =$ 35	$6 * 25 -$ $- 6 * 15 =$ 60	$6 * 25 -$ $- 6 * 15 =$ 60	$6 * 25 -$ $- 6 * 15 =$ 60
7	$4 * 25 -$ $- 7 * 15 =$ -5	$5 * 25 -$ $- 7 * 15 =$ 20	$6 * 25 -$ $- 7 * 15 =$ 45	$7 * 25 -$ $- 7 * 15 =$ 70	$7 * 25 -$ $- 7 * 15 =$ 70
8	$4 * 25 -$ $- 8 * 15 =$ -20	$5 * 25 -$ $- 8 * 15 =$ 5	$6 * 25 -$ $- 8 * 15 =$ 30	$7 * 25 -$ $- 8 * 15 =$ 55	$8 * 25 -$ $- 8 * 15 =$ 80

The table can be interpreted as follows: if the seller of goods purchases 7 sets, and the demand for raspberries does not exceed 5 sets, he will receive only \$ 20. At the same time, he will be able to get the greatest profit when demand for raspberries equals 7 sets. He will only be able to rely on maximum profits when he buys 8 sets for 8 sets purchases. However, in this case for other states of demand - 5, 6, 7 sets - he will only profit accordingly \$ 5, 30, 55. If the demand is only 4 sets, the seller will suffer losses, as half of the product will not be sold. According to the frequency of onset for 40 days of the season of different variants of demand for goods, we calculate the probability of their offensive:

$$\begin{aligned}
 p_1(Q_1) &= 4/40 = 0,1; \\
 p_2(Q_2) &= 8/40 = 0,2; \\
 p_3(Q_3) &= 16/40 = 0,4; \\
 p_4(Q_4) &= 10/40 = 0,25; \\
 p_5(Q_5) &= 2/40 = 0,05.
 \end{aligned}$$

The most probable profit of the seller from the decision can be calculated as the mathematical expectation of a random variable (its financial results) by the formula 1:

$$E = \sum_{i=1}^n p_i * X_i \quad \square \square \square$$

Calculate the profit of the seller if he decides to buy only 4 sets:

$$M(4) = 0,1 \cdot 40 + 0,2 \cdot 40 + 0,4 \cdot 40 + 0,25 \cdot 40 + 0,05 \cdot 40 = \$ 40.$$

Calculate the profit of the seller if he decides to buy only 5 sets:

$$M(5) = 0,1 \cdot 25 + 0,2 \cdot 50 + 0,4 \cdot 50 + 0,25 \cdot 50 + 0,05 \cdot 50 = \$ 47,5.$$

Calculate the profit of the seller if he decides to buy only 6 sets:

$$M(6) = 0,1 \cdot 10 + 0,2 \cdot 35 + 0,4 \cdot 60 + 0,25 \cdot 60 + 0,05 \cdot 60 = \$ 50.$$

Calculate the profit of the seller if he decides to buy only 7 sets:

$$M(7) = 0,1 \cdot (-5) + 0,2 \cdot 20 + 0,4 \cdot 45 + 0,25 \cdot 70 + 0,05 \cdot 70 = \$ 42,5.$$

Calculate the profit of the seller if he decides to buy only 8 sets:

$$M(8) = 0,1 \cdot (-20) + 0,2 \cdot 5 + 0,4 \cdot 30 + 0,25 \cdot 55 + 0,05 \cdot 80 = \$ 28,75.$$

Thus, under these conditions of demand for goods seller should buy 6 sets. Such a solution will ensure that it receives the maximum possible profit for the given conditions of demand for goods – \$ 50.

Determine the optimal seller's strategy according to Wald's criterion.

According to Wald's criterion, the seller's optimal strategy:

$$W = \max_i \min_j a_{ij} = \max (40; 25; 10; -5; -20) = 40 \quad \square \square \square$$

Thus, the best strategy of the seller of raspberries will be the purchase of 4 sets of goods, then for any demand for goods, he will have a guaranteed income of \$ 40. Let's determine the optimal seller's strategy according to Sevgias criterion. Make a matrix of risks. In this matrix, each element is calculated by the formula $r_{ij} = c_i - a_{ij}$, where $c_j = \max a_{ij}$ (the maximum value in column j), that is, gain A in the optimal variant. We represent the risk matrix in Table 2.

TABLE 2
The matrix of risks

Solution (number of purchased sets)	The state of the economic system (demand in the sets)				
	Q1 (4 sets)	Q2 (5 sets)	Q3 (6 sets)	Q4 (7 sets)	Q5 (8 sets)
4	0	10	20	30	40
5	15	0	10	20	30
6	30	15	0	10	20
7	45	30	15	0	10
8	60	45	30	15	0

According to the criterion of Sevgih, the optimal strategy will be:

$$S = \min_j \max_i r_{ij} = \min (40; 30; 30; 45; 60) = 30 \quad \square \square \square$$

It should be noted that the seller will have the minimum risks (losses) for both the second and the third strategy, that is, buying 5 and 6 sets.

5 CONCLUSION

It should be noted that systematic and comprehensiveness is the key to sustainable management of any processes in the enterprise. An important stage of enterprise risk management is the creation of a risk management service. It is necessary to determine the place of service in the organizational structure of the enterprise, the rights and responsibilities of its staff. Depending on the current goals of the enterprise, the risk

management function may initially be performed by the risk manager, the financial manager, but in the future it is advisable to create the appropriate apparatus, for example, the risk management department.

The risk management service should perform the following functions:

- monitoring of the enterprise activity;
- gathering and analyzing information on risk factors;
- determining the level of risk;
- developing a risk management strategy;
- developing risk mitigation recommendations and monitoring their implementation;
- realization of insurance activity.

Prospective directions are the development of recommendations on the choice of risk management methodology and the control over the implementation of risk management procedures.

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