

Chapter 3

USE OF INNOVATIONS IN THE INTERNATIONAL FINANCIAL MARKET

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**THE OVERVIEW-ANALYTICAL
DOCUMENT OF EXISTING
DOMESTIC AND MODERN
WORLD-WIDE METHODS FOR
IDENTIFYING RISK, ITS
ESTIMATION AND
MINIMIZATION OF NEGATIVE
INFLUENCE**

Unbalance, uncertainty, multicriteria are typical signs of a market economy that is always accompanied by risks. Entrepreneurship and risk are organically interconnected phenomena in a market economy [1].

In most works of these scientists, some aspects of the essence of identifying the risk, its estimation and minimization of negative influence are investigated.

The purpose of this work is to combine the experience of leading scientists in the field of detection, risk assessment and minimization of its negative impact on the construction of a unified methodology, which will be based on the latest research by leading foreign scientists, but, in turn, take into account the features of the domestic economy, existing subjective and objective problems.

Most foreign and domestic scholars tend to the Standard AS/NZS Risk Management Standard 4360:1999

According to this standard it is necessary:

- establish the context of risk;
- identify and analyze risk factors;
- assess the likelihood and consequences of the risk factors;
- to develop measures of influence on risks;
- monitor and share information about the risk management process.

Various approaches have been proposed in the foreign literature to try to meet the challenges of complex system risk analysis. Some of the

most interesting are two theories [2]:

- Functional Resonance Accident Model/Functional Resonance Analysis Method (FRAM);
- System Theoretic Accident Model and Processes (STAMP).

The key elements of *FRAM* used for risk analysis are [3]:

1. Identify and describe essential system functions
2. Assess variability for each function
3. Assess how the variability of multiple functions can be coupled and lead to non-linear outcomes (what is referred to as functional resonance).
4. Identify countermeasures *STPA* analysis has the following structure (based on Leveson [4], and Leveson et al. [5]):
 1. Identify the accidents to be considered, the system level hazards, safety constraints and functional requirements.
 2. Create a model of the functional control structure for the system in question.
 3. Identify the potential unsafe control actions (unsafe control of the system).
 4. Determine how each potentially hazardous control action from step 3 could occur, i.e. the scenarios leading to unsafe control.

Methods of identifying of risk

Each individual risk should be analyzed from the point of view of how it affects the company. The management of the company should identify the company's goals and the most important risks that prevent them from achieving through the following measures, methods and techniques:

- working meetings and interviews;
- brain storm;
- questionnaires;
- a graphic representation of cost-creation processes, including the definition and representation of business processes and cost-creation chains, as well as external and internal factors affecting them;
- comparison with other organizations;
- discussion with management [6].

There are many methods, each of which helps to obtain information on the characteristics of individual risks inherent in certain activities. Therefore, it is advisable to use a set of methods to solve a task.

Some methods are based on the analysis of statistical, financial, managerial and other accounting documents of the enterprise, others

require direct inspection of sources of danger. There are methods that are more suitable for post-event than for pre-existing situations. Some risk detection methods are based on quantitative analysis, while others use only qualitative approaches. However, all of them are aimed at one – to identify and describe the risks that exist in the organization.

So, to the basic methods of obtaining the source information:

- standardized questionnaire;
- consideration and analysis of primary documents of management and financial reporting;
- analysis of quarterly and annual financial statements;
- drawing up and analyzing the chart of the organizational structure of the enterprise;
- compilation and analysis of the technological flows of production processes;
- inspection visits to production units;
- consultations of specialists in a certain technical field [7];
- examination of documentation by specialized consulting firms;
- SWOT analysis (external threats and opportunities).

Table 3.1 and fig. 3.1 show an example of the identification of risk by NNEGC "Energoatom" [8].

Methods of estimation of risk

As soon as risk factors are identified, the possible consequences of these events and the probability that they will occur will be assessed. At the planning stage, it is necessary to decide in advance how to assess the implications and probability (ie, what scale to use).

Consequences. An assessment of the potential consequences of a particular event may be hampered by the fact that the consequences vary widely, or the event itself occurs several times over a period of time.

Such difficulties should be taken into account and developed in an appropriate way that takes them into account: for example, consider the worst case scenario over, let's say, 12 months.

An assessment of the impact of an event on an organization should take into account the financial implications, the impact on organizational sustainability and the goals of the company, the impact on the political and regional situation of the organization (on an example of Odessa cable plant: fig. 3.2 – 3.4) [9].

In general, the probability of an event is estimated, not taking into account the measures that the company can take in order to reduce this probability.

Table 3.1

An example of risk identification by NNEGC "Energoatom"

No.	The type of risk	Description of risk	Consequences	Probability	Losses
1	2	3	4	5	6
1	Financial risks	The fall of the hryvnia exchange rate	Increase in the cost of nuclear fuel in national currency	High	Medium
2	Credit risks	Low level of payments	High level of loans	Medium	High
3	Financial risks	High inflation	Increased costs for equipment and services due to higher prices	Medium	Medium
4	Strategic risks	Fuel shortage for nuclear power plants	Loss of marketable products. Reduced Company Income	Medium	High
5	Strategic risks	No prolongation of the operation of NPPs in the project period.	Loss of generating capacity. Loss of marketable products. Reduced revenue for the company. Increased costs due to decommissioning	Low	High
6	Strategic risks	Fuel shortage for nuclear power plants	Loss of marketable products. Reduced Company Income	Medium	High
7	Strategic risks	Non-fulfillment of 3 packages – Corporatization.	Political dependence on the ruling power. Slow development or its absence; Low investment attractiveness of the Company.	High	Medium

Table 3.1 (continued)

1	2	3	4	5	6
8	Strategic risks	Change the course of the company	Change the development vector of the Company. Loss of development rates	High	Low
9	Operational risks	Low wages for highly skilled personnel	Outflow of personnel	Medium	Medium
10	Technogenic risks	Decrease in production due to hardware failure affects load, personnel errors	Loss of marketable products. Reduced Company Income	High	Medium
11	Strategic risks	The degradation of the education system	Economic losses of the Company	High	High
12	Financial risks	Reduced creditworthiness	The impossibility to pay on time and in full its obligations.	Medium	Medium
...	Strategic risks	Long-term process of coordination of investment projects of the Company	Lowering your investment performance	High	Medium
25	Other risks	Reduced living standards in satellite cities	Demotivation of personnel. Staff outflow with critical competencies	Medium	Medium

In the pure form, the probability is estimated, taking into account that all possible measures will be taken to avoid the risk or reduce its likelihood.

Target approach means that certain risk factors are set for probabilities that reflect the company's management's view. If the net probability and target differ, then it is worth looking at the risk profile.

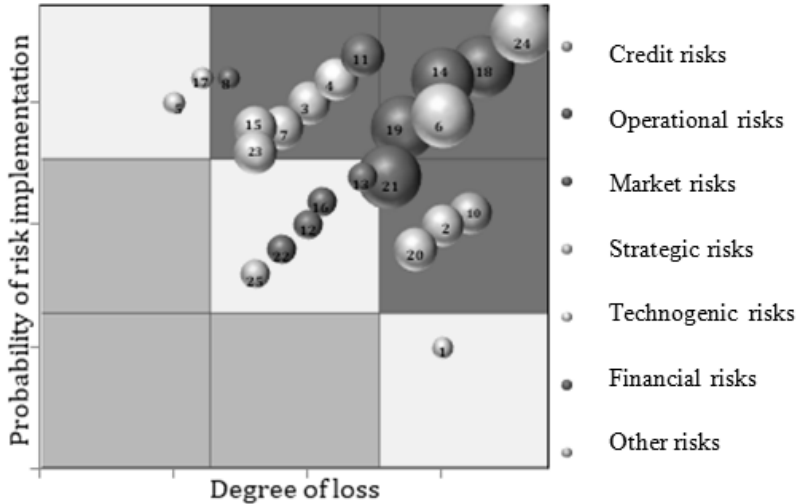


Figure 3.1. Map risks based on the results of the identification and evaluation

RISK PASSPORT № PR-02/FinDir
(an identification number)

Name of risk Operational risks

Division Financial Director
(the unit that identified the risk)

The risk owner The financial director ...
(position, surname, initials, signature)

Responsible person ...
(responsible supplier of information on risk, surname, initials, signature)

Sources of risk

Number	Name
1	Unforeseen losses of the enterprise due to technical errors and failures, deliberate and accidental errors of personnel.

The passport was made by Financial Director ...
(position, surname, initials, signature)

Figure 3.2. Illustration of risk passport, which uses the leading enterprise of the production of communication cables in Ukraine and one of the leading cable plants in the CIS countries – Odessa cable plant (page 1)

EVALUATION OF RISK SOURCES

Source of risk number № 1

Name of source of risk: **Unforeseen losses of the enterprise due to technical errors and failures, deliberate and accidental errors of personnel.**

Evaluation of risk sources

Date of evaluation **August 21, 2017.**

Probability of occurrence (Pq), point					The magnitude of the loss (Iq), point				
1	2	3	4	5	1	2	3	4	5
Weakly probable	Little probable	Probable	Very likely	Almost possible	Minimum	Low	Medium	High	maximal

Risk index $(R=P_q \cdot I_q)$ 3 point (s)

Degree of impact of the source of risk					Level of source of risk		
$1 \leq R \leq 4$	$5 \leq R \leq 8$	$9 \leq R \leq 10$	$12 \leq R \leq 16$	$20 \leq R \leq 25$	$1 \leq R \leq 4$	$5 \leq R \leq 10$	$12 \leq R \leq 25$
Ignorable	Slight	Moderate	Essential	Critical	Acceptable	Justified	Unacceptable

Treatment of the source of risk based on the evaluation results

Decrease Adoption Avoid Transfer Other

Figure 3.3. Illustration of risk passport (page 2a)

Measures for managing the source of risk

Name of event	Responsible	Timing	Resources
1. Carrying out of personnel training in the part of working with primary data and evidence of the achieved results (records), as well as for ensuring interchangeability	Financial Director Responsible person	According to the training plan	–
2. Testing of staff	Financial Director	1 time per year	
3. Assessment of the competence of staff	Financial Director	1 time per year	

Monitoring results

Monitoring date **November 30, 2017.**

Probability of occurrence (Pq), point					The magnitude of the loss (Iq), point				
1	2	3	4	5	1	2	3	4	5
Weakly probable	Little probable	Probable	Very likely	Almost possible	Minimum	Low	Medium	High	maximal

Risk index $(R=P_q \cdot I_q)$ 2 point (s)

Degree of impact of the source of risk					Level of source of risk		
$1 \leq R \leq 4$	$5 \leq R \leq 8$	$9 \leq R \leq 10$	$12 \leq R \leq 16$	$20 \leq R \leq 25$	$1 \leq R \leq 4$	$5 \leq R \leq 10$	$12 \leq R \leq 25$
Ignorable	Slight	Moderate	Essential	Critical	Acceptable	Justified	Unacceptable

Treatment of the source of risk based on monitoring results

Decrease Adoption Avoid Transfer Other

Figure 3.4. Illustration of risk passport (page 2b)

Methods of minimization of risks negative influence

The most common methods of risk management to minimize its impact are [6; 7]:

- avoiding or rejecting risks;
- taking risks for yourself;
- prevention of damage;
- reduction of losses;
- insurance;
- self-insurance;
- transfer of risks (other than insurance).

Avoiding or rejecting risks – the choice of an alternative with the lowest risk level. Refusal to implement a project or enter a new market.

Taking risks for yourself – coverage of losses due to the company's own financial resources. This can be about planned risk taking and unplanned. In the latter case, the risk manager is uncertain whether there is any kind of risk at all or he could not detect it.

Prevention of damage – carrying out measures aimed at reducing their probability.

Reduction of losses – impact on risk by reducing the likelihood of risk realization and / or reducing negative consequences in case of future risk.

Insurance – reducing the participation of the firm itself in compensating the damage by transferring it (insured) to the insurance company (insurer) of liability.

Self-insurance – creation of own insurance funds intended to cover losses, such as funds of insurance and reinsurance companies.

Transfer of risks (other than insurance) – transfer or partial transfer of risk to the other party, allowing to reduce the negative impact on the achievement of the company's objectives. It should be borne in mind that reputation risk cannot always be transferred.

Methods of transferring risk are different from insurance. This group includes hedging, leasing, guarantee.

Hedge – is an investment to reduce the risk of adverse price movements in an asset. Normally, a hedge consists of taking an offsetting position in a related security, such as a futures contract [10].

The lease allows the lessee to transfer the risk of becoming an outdated property leased to its owner. An example of a risk transfer method other than insurance is also the so-called guarantee agreement.

Conclusion

The main goal of risk management is to eliminate or minimize its negative impact on the results of the enterprise's economic activity, based on forecasting a risk event and implementing risk management measures.

It is important that risk management is an integral part of the processes of continuous planning and business management. The strategy of an enterprise should identify the main risks, their possible impact on the activities of the enterprise, the probability of occurrence of risks and appropriate management tools.

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**Mechanisms of interaction
between competitiveness and
innovation in modern
international economic
relations**

**Collective monograph edited by
M. Bezpatochnyi**

ISMA University
Riga (Latvia) 2017

**Konkurētspēju un inovāciju
mijiedarbības mehānismi
mūsdienu starptautiskajās
ekonomikas attiecībās**

**Kolektīva monogrāfija
M. Bezpartochnyi zinātniskajā redakcijā**

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Mechanisms of interaction between competitiveness and innovation in modern international economic relations: collective monograph / edited by M. Bezpartochnyi, in 4 Vol. / ISMA University. – Riga: «Landmark» SIA, 2017. – Vol. 3. – 248 p.

The authors of the book have come to the conclusion that it is necessary to effectively use the management approaches to regulate modern international economic relations, methodological tools for analyzing international competitiveness and innovation. Basic research focuses on assessing the effectiveness formation of competitive advantages, study of social capital and human potential, analysis of marketing environment and development of exhibition-fair activities, formation of real estate market, risk assessment, use of electronic instruments on the financial market. The research results have been implemented in the different models of financial potential management, use of crowdfunding, formation of a transport strategy, development of border regions, formation of a new industrial policy, introduction of innovations in building, health, agriculture, sector of high technologies, development of the Latvian-Ukrainian economic cooperation. The results of the study can be used in decision-making at the level of international business, ministries and departments that regulate international relations, ensuring security and overcoming risks. The results can also be used by students and young scientists in modern concepts of the formation of international economic relations in the context of ensuring the competitive advantages of actors and improving innovation policy.

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Verkhoglyadova N., Kononova O., Ivanytska T.

Analysis of condition, development and solutions delivery of the management decisions effectiveness of a construction company ... 91

Chapter 2

JUSTIFICATION MECHANISMS FOR THE DEVELOPMENT OF INTERNATIONAL TRADE 101

Salun M., Zaslavska K.

The perspectives for Latvian-Ukrainian economic cooperation 101

Vdovichena O.

Management of development of exhibition-fair activities of border regions in conditions of international cooperation and European integration 109

Chapter 3

USE OF INNOVATIONS IN THE INTERNATIONAL FINANCIAL MARKET 126

Bashynska I.

The overview-analytical document of existing domestic and modern world-wide methods for identifying risk, its estimation and minimization of negative influence 126

Hryhoruk P., Prystupa L.

Crowdfunding as an innovative technology for financing and promoting business projects 135

Iaroshevska O.

Capital formation through optimization modeling of financial market electronic instruments 144

Yevtushenko N., Malyshko V., Tsaruk A., Puchko A.

A new industrial policy aimed at globalisation 154

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