

## METHODS FOR MANAGEMENT OF INNOVATION ACTIVITY RISKS IN THE CURRENT CONDITIONS

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The article considers theoretical foundations of management of innovation activity risks. Relevance of the selected topic of research in connection with both volatile external environment and crisis developments in the country's economy has been substantiated. A semantic analysis of the concept of «risk» has been done, showing the presence of both positive and negative sides of risk situations. A scheme for enterprise management in the light of implementing innovation activity has been elaborated. An improved classification of innovation activity has been provided, creating the opportunity to focus on identifying risks in the process of allocating a specific direction of innovation activity. The main stages of identification and analysis of risks of innovation activity has been allocated. Methods for management of innovation activity risks in the current conditions have been developed. A concept of «system for management of innovation activity risks» has been formulated, its major features for enterprise has been outlined. The main requirements for a system for management of innovation activity risks have been allocated.

**Keywords:** risk, innovation activity, system for management of innovation activity risks, risk management methods, risks map.

**Fig.:** 3. **Tabl.:** 1. **Bibl.:** 8.

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**Письмак В. О. Методика управління ризиками інноваційної діяльності в сучасних умовах**

У статті розглядаються теоретичні засади управління ризиками інноваційної діяльності. Підтверджена актуальність вибраної тематики дослідження у зв'язку з мінливим зовнішнім середовищем та кризовими явищами в економіці країни. Проведено семантичний аналіз поняття «ризик», який показав наявність позитивних і негативних сторін ризикових ситуацій. Розроблена схема управління підприємством з урахуванням здійснення інноваційної діяльності. Наведено вдосконалену класифікацію інноваційної діяльності, яка надає можливість зосередитися на виявленні ризиків у процесі виділення конкретного напрямку інноваційної діяльності. Виокремлено основні етапи ідентифікації та аналізу ризиків інноваційної діяльності. Розроблено методику управління ризиками інноваційної діяльності в сучасних умовах. Сформовано поняття «система управління ризиками інноваційної діяльності», зазначено його основні особливості для підприємства. Виділені основні вимоги до системи управління ризиками інноваційної діяльності.

**Ключові слова:** ризик, інноваційна діяльність, система управління ризиками інноваційної діяльності, методика управління ризиками, карта ризиків.

**Рис.:** 3. **Табл.:** 1. **Бібл.:** 8.

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**Письмак В. А. Методика управления рисками инновационной деятельности в современных условиях**

В статье рассматриваются теоретические основы управления рисками инновационной деятельности. Подтверждена актуальность выбранной тематики исследования в связи с изменчивой внешней средой и кризисными явлениями в экономике страны. Проведен семантический анализ понятия «риск», который показал наличие положительных и отрицательных сторон рискованных ситуаций. Разработана схема управления предприятием с учетом осуществления инновационной деятельности. Приведена усовершенствованная классификация инновационной деятельности, которая дает возможность сосредоточиться на выявлении рисков в процессе выделения конкретного направления инновационной деятельности. Выделены основные этапы идентификации и анализа рисков инновационной деятельности. Разработана методика управления рисками инновационной деятельности в современных условиях. Сформировано понятие «система управления рисками инновационной деятельности», обозначены его основные особенности для предприятия. Выделены основные требования к системе управления рисками инновационной деятельности.

**Ключевые слова:** риск, инновационная деятельность, система управления рисками инновационной деятельности, методика управления рисками, карта рисков.

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Nowadays the fact that the use of innovations in any field is one of the most effective means of business survival in the modern world is of no doubt. Particularly noteworthy are enterprises of the transition economy, which develop slowly or do not develop at all. Under conditions of the global economic crisis the development of anti-crisis innovations, which allow the enterprise to develop a policy of conversion, find new markets and expand its client base, is a relevant issue.

Being aware of positive aspects of innovation activity, it should be noted that any innovation process has an element of risk in its composition. But in practice the majority of enterprises do not pay sufficient attention to the process

of risk analysis and management more often due to the lack of a unified approach to problems of risk management. In turn, issues of evaluating risks of innovation activity are studied insufficiently because the results are rarely implemented in practice.

An important fact is that neglecting the problem of risk management significantly affects competitiveness of enterprises and their ability to adapt to the rapidly changing environment. The process of innovation management under modern conditions can be successful only providing the availability and activity of creative staff, so it should be implemented not from the “top” or “bottom” but in the dialogue of the enterprise as a client ordering innovation and

creative class. In this connection, in the presence of the creative thinking approach there required an extensive support on the part of the anti-crisis management. In addition, major problems at modern domestic enterprises, which aggravate the impact of the changing conditions, are: moral and physical depreciation of equipment, lack of motivation and discipline of workers, inadequate modern technologies used in the manufacturing process, decrease in demand for their products resulting from the crisis in the country economy, etc. All of these phenomena bear a risk situation but in real practice the processes that are not associated with risk are completely absent. So the issue is relevant for consideration under modern conditions.

Risk studies are being carried out very intensively by scientists all around the world. A significant contribution to the development of the conceptual apparatus of the risk theory was made by C. A. Williams, J. Keynes, I. Ansoff, L. A. Kosolapov, M. Hammer, A. Morgenstern, J. Neumann, B. A. Rayzberg, J. Say and others.

Research in the field of influence of innovative activity on economic processes were conducted by such scientists as I. T. Balabanov, P. Drucker, S. Mendell, R. Nelson, B. Santo, B. Tviss, J. Schumpeter, O. M. Yastremska and others.

**R**isk from a standpoint of the economic theory is considered as having a particular opportunity and at the same time as a threat to a certain activity and occasion. A more detailed semantic analysis of risk is presented in *Table 1*.

Thus, risk presents a comprehensive concept, which, on the one hand, is an opportunity for development, gaining excess profits and more advantages in the market, on the other hand, is additional losses and threats to leave the enterprise with no property. Key aspects of the given definitions are used to form a scheme of enterprise management, which involves innovation activity.

Innovation management is recommended to be carried out in two main directions: strategic and crisis one.

Thus, the foregoing management scheme implies two management directions in a process of innovative activity: anti-crisis and strategic management. The result of the implementation of successful management is correct management decision-making (*Fig. 1*).

**T**he concept of innovation risks arises in connection with the emerging in innovation activity of situations that go beyond the planned context. At the same time, the main objectives in management of risks remain their timely recognition, identification, evaluation and minimization [1]. Thus, innovation as a result of activity of certain groups of people can be of different types, with this regard a number of risks of innovation activity can be identified. The main classification criteria of innovations found in modern scientific literature are: significance, place in the manufacturing process, location of implementation, degree of satisfying the needs of the target audience, field of application, degree of novelty, scale of distribution, time of entering the market, etc. Considering classifications of innovations (innovation activity) it is necessary to draw attention to the fact that generalizing the classification criteria in order to create a new classification is of practical significance because such a classification has a potential capacity for creating a future idea of an innovation or innovation product [2]. This, in turn, is necessary for analyzing potential threats and strengths of innovation activity and performance of an effective support of innovations by enterprises and the state. The most convenient and effective to be used in risk analysis of a modern industrial enterprise, according to the author, is an additional classification of criteria by sphere of implementation shown in *Fig. 2*.

Such classification criteria provide timely identification of the sphere, in which risk situations are being formed, and, therefore, qualitative management of such situations.

When considering risk management from a standpoint of the owner or head of the enterprise, i.e., the person interested in preserving the enterprise vital activity, the object and subject of the study will be presented by basic stages of identification and analysis of risks of innovation activity, including:

1. Determining the place of the enterprise activity on the life cycle curve.
2. Performing a SWOT-analysis of the enterprise aimed at a clear definition of key forces, weaknesses, threats and opportunities. Innovation should be considered separately as part of a particular block.
3. Building a scenario of a negative impact of the innovation on the enterprise.

**Table 1**

**The semantic analysis of the concept of "risk"**

Risk is...				
Losses, damages	Possibilities	Reality	Overcoming uncertainty	Deviation
Losses (damages), the probability of which is related to the presence of uncertainty (lack or unreliability of information) as well as benefits and profits, which can only be received through the actions associated with risk	Recognizing a probability of a threat of unforeseen losses of expected profit, property, money in resulting from random changes in the conditions of economic activity, adverse circumstances	The objective reality, which must be taken into account during the planning of the future activity	An activity associated with overcoming uncertainty of a situation of inevitable choice, in which there is a possibility for quantitative and qualitatively evaluation of a probability of achieving the intended result, failures and deviations from the goal	A probability of deviation from the predetermined goal, for the sake of which the chosen alternative is implemented

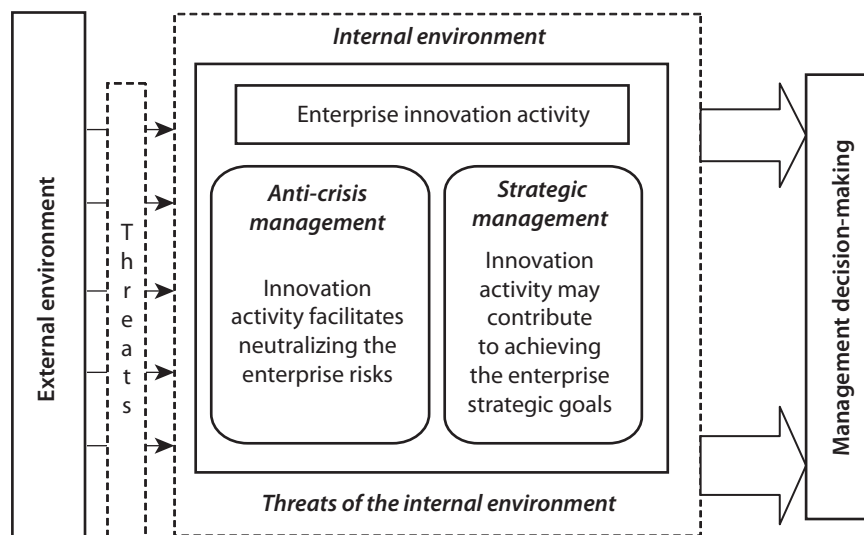


Fig. 1. The scheme of enterprise management with respect to innovation activity

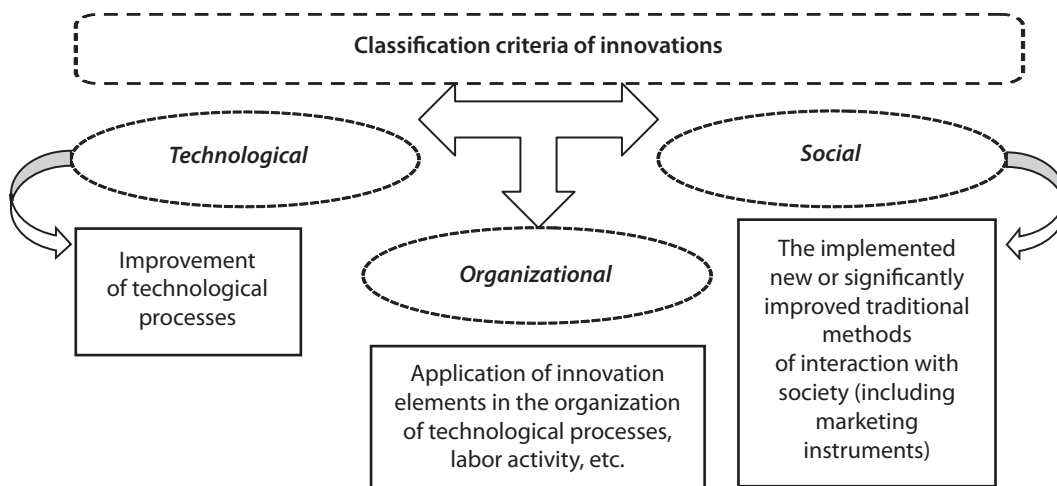


Fig. 2. The classification of innovation activity by sphere of application

4. Building a balanced scorecard of risk management of innovation activity.

5. Simulating the process of impact of threats on the enterprise.

6. Obtaining a risk map, i.e., such a representation that shows causal relationships between an innovation and the result of its interaction with the internal and external environment in view of possible risk situations.

Let us consider each stage in detail. Risks of innovation activity are directly associated with the enterprise life-cycle, as each stage of the life cycle is characterized by certain strengths and weaknesses, and, therefore, risks. In this connection the enterprise must constantly evolve and move through its life cycle stages enhancing economic performance and, therefore, apply innovative technologies. At the initial stage of considering risks of the enterprise innovation activity, it is necessary, first of all, to determine, which period of the life cycle the external and internal threats to the enterprise correspond to. This stage is closely connected with the second stage — performing a SWOT-analysis of the enterprise. But it should be emphasized that the SWOT-analysis matrix is unique and can be quite different for one or another enterprise.

To build a scenario of a negative impact, the presence of a clear set of values and mission of the enterprise is required both at the level of management and at the level of individual employee, i.e., all the enterprise personnel should be aware of the scale of activity, difference from competitors, desired results, etc. Insufficient attention to the process of setting goals can cause a considerable damage to the enterprise. Developing a scenario of a negative impact alternatively can be done by building a “goal tree”, which was first proposed by C. Churchman and R. Ackoff in 1957. The main advantage of this method is a close relationship of long-term goals and specific objectives of the enterprise at each level of the hierarchical system. The method of “goal tree” represents a structured hierarchical sequence of goals of a particular economic system [3].

After building the “goal tree” it is advisable to go to the next stage — developing a Balanced Scorecard for managing risks of innovation activity [4], with the results of the previous method being a rough design for its creation. This system makes it possible to transform the enterprise’s mission into specific goals and objectives as well as indicators that will determine an extent to which these goals are achieved within four main aspects:

- ✦ the financial consequences, i.e., imaginary goals of the enterprise within its financial performance;
- ✦ interaction with customers;
- ✦ strategic resources, i.e., determining the amount of financial, labor, information and other types of resources for the enterprise development;
- ✦ improving business processes.

### Simulating the impact of threats.

The formation of a correct system for managing risks of innovation activity will directly provide for making a full analysis of methods for risk identification and minimization. Thus, by the system for managing risks of innovation activity (SMRIA) there meant a set of interconnected elements aimed at ensuring maximum efficiency of the enterprise operation considering the use of innovation activity within the implementation of its core activities. In managing risk of innovation activity it is necessary to form basic requirements for SMRIA. These are as follows:

1. It is appropriate to perform risk analysis only in the context of the overall enterprise business strategy.
2. In view of the fact that in many cases the identification of risks takes place under conditions of uncertainty, it should be taken in consideration that determining the state of the business, at which the innovation is being implemented, is based on a fuzzy-logic model.
3. SMRIA must meet Ukrainian and international standards in risk management and ensure an acceptable risk level.
4. The system must not allow significant costs and shortage of resources.

Thus, the system for managing risks of innovation activity should be a standardized method for identifying and minimizing risk situations, which take place at the implementation of innovation activity.

In the presence of a clear idea of SMRIA, the next step in the research is to develop a methodology for managing risks of innovation activity. This methodology should include all main stages of managing risks in modern management and at the same time take into account peculiarities of innovation activity. The main stages of the methodology are presented in Fig. 3.

It should be noted that in the analysis and identification of risks in innovative activity there formed understanding of the place of the enterprise on the curve of the life cycle, identification of possible threats with respect to directions of innovation activities [5]. The development of mechanisms for enterprise horizontal management allows qualified managers to implement an intensive creative innovation activity simultaneously controlling the process of the functioning of risky situations involves understanding the place of the enterprise on the curve of the life cycle, identification of possible threats. The formation of a plan and planned results allows setting the enterprise main goals. Balancing available resources and planned results as a stage of the methodology of risk management enables restoring the picture of the innovation process and understanding what elements of the business process are missing for achievement of positive results.

Adjustment of approaches to developing innovation projects after receiving results of the activity implementation is a very important stage, the neglecting of which makes it impossible to evolve further and improve conditions for implementation of innovation activity [6].

General recommendations on improvement of the process of managing innovation risks are:

1. *Strategic thinking*, i. e., effective risk management, should be holistic and integrated. The enterprise that provides strategic management process has a possibility to plan risk management, while the lack of strategic planning can lead to a conflict between costs and risks.
2. *Expansion of cooperation*. Experts in innovation activity and risk management are regularly working closely with their colleagues from other departments. Solving matters related to the reduction of complex risks requires deeper cooperation [7].
3. *Developing optimal balance of risks*. It is necessary to imagine the costs and risks as two variables in the continuum: reducing one component often occurs due to an increase in the other.
4. *Taking into account the risks that can not be evaluated quantitatively*. Today most enterprises do not have appropriate risk evaluation methods, often a statistical basis being missing. The management of various risks is carried out independently, regardless of interaction between risks [8].

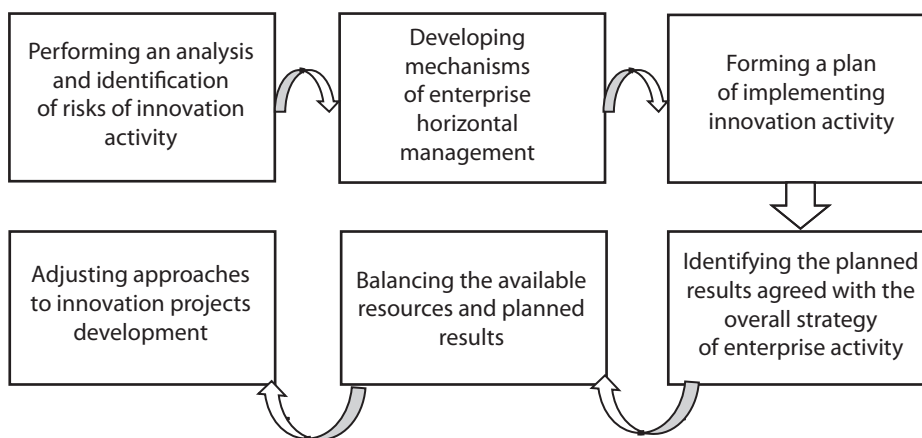


Fig. 3. The methodology of risk management of enterprise innovation activity



Thus, the result of the study is the semantic analysis of the concept of “risk”, which showed that risk is not only costs but also, provided its successful management, can cause a positive result. Formation of the system for managing risks of enterprise innovation activity in conformance of all requirements provides a possibility of a correct implementation of innovation projects and their further improvement. The given methodology for managing risks of enterprise innovation activity outlines main stages of interaction with risks arising from the use of innovation activity. The issue of developing mechanisms for enterprise horizontal management in the process of innovation activity requires further research. ■

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