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RISKS IN THE INNOVATIVE ACTIVITY OF ENTERPRISES

РИЗИКИ В ІННОВАЦІЙНІЙ ДІЯЛЬНОСТІ ПІДПРИЄМСТВ

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The need for new conceptual approaches to risk management is due to the high level of riskiness of innovation processes and the unpredictability of changes in the external economic environment. Innovative risks are associated with the innovation itself and its features, its originality and exceptionalness, with the enterprise technological potential and the set objectives. Therefore, the research of the risks nature, the study of characteristics and situations in which these risks arise is relevant. The effectiveness of management decisions in the field of innovation is determined by the results of the implementation of risk management models for innovative projects, taking into account the decrease in the probability of their occurrence and possible losses. The proposed management strategy allows the enterprise to determine ways to reduce innovative risks and choose the most acceptable scenario for organizing risk-management.

Keywords: enterprise, strategy, innovation, innovative processes, innovative risks, innovative project, risk management models, risk-management.

Аналіз сучасних проблем інноваційної діяльності підприємств, розгляд питань щодо ефективності управління ризиками інноваційних проектів та умов зниження ризиків завжди є темою дискурсу і метою наукових досліджень. Інноваційний розвиток підприємства найчастіше характеризується високим рівнем ризику, а управління ризиками залишається маловивченою областю стратегічного менеджменту. Висока ризикованість інноваційних процесів обумовлена невизначеністю їх внутрішніх параметрів, а непередбачуваність змін зовнішнього економічного середовища вимагає нових концептуальних підходів до управління ризиками. Дослідження природи ризиків, вивчення їх характеристик і ситуацій, при яких вони виникають, є актуальним, оскільки ризики пов'язані із самою інновацією, її особливостями, оригінальністю та ексклюзивністю, а також з рівнем технологічного потенціалу підприємства і поставленими цілями. В інноваційному менеджменті проблема виникнення ризиків особливо висока, оскільки в інноваційному процесі невизначеність ринку зростає на величину інноваційної невизначеності, пов'язаною з реалізацією інновації. Забезпечення ефективної реалізації сформованої стратегії інноваційного розвитку підприємств викликає необхідність застосування нових методів та моделей управління ризиками. При вивченні теоретичних аспектів інноваційної діяльності підприємств важливим є розгляд ризик-менеджменту, як єдиної системи управління ризиками, що дає змогу забезпечити високу ефективність прийняття управлінських рішень для досягнення стратегічних і тактичних цілей підприємства. Представлена модель (технологія) управління ризиком передбачає виконання таких послідовних етапів: аналіз, оцінка і ідентифікація усіх можливих ризиків, визначення майбутніх втрат і збитків; вибір способів скорочення і утримання ризиків; визначення джерел покриття збитків; диверсифікація ризиків; розробка рекомендацій до змін гранично допустимих значень ризику в майбутньому. Запропонована стратегія управління дозволяє підприємству визначати шляхи зниження інноваційних ризиків та вибирати найбільш сприятливий сценарій організації ризик-менеджменту.

Ключові слова: підприємство, стратегія, інновація, інноваційні процеси, інноваційні ризики, інноваційний проект, моделі управління ризиками, ризик-менеджмент.

Необхідність нових концептуальних підходів к управленію ризиками обусловлена высоким уровнем рискованности инновационных процессов и непредсказуемостью изменений внешней экономической среды. Инновационные риски связаны с самой инновацией и ее особенностями, оригинальностью и эксклюзивностью, с технологическим потенциалом предприятия и поставленными целями, поэтому исследование природы рисков, изучение их характеристик и ситуаций при которых они возникают, является актуальным. Эффективность управленческих решений в сфере инноваций определяется результатами внедрения моделей управления ризиками инновационных проектов с учетом снижении вероятности их возникновения и

возможных потерь. Предложенная стратегия управления позволяет предприятию определять пути снижения инновационных рисков и выбирать наиболее приемлемый сценарий организации риск-менеджмента.

Ключевые слова: предприятие, стратегия, инновация, инновационные процессы, инновационные риски, инновационный проект, модели управления рисками, риск-менеджмент.

General problem organization and its connection with scientific and practical objectives. Innovative activity is an important and necessary condition for the successful enterprise development, as well as the basis for achieving the sustainable competitive advantages under conditions of the global market environment, that is why its fulfilment is accompanied by the manifestation of specific innovation risks, the research of their nature being actual. Risk is a constant accompanying factor of any innovative activity and it cannot be avoided in practical activity of the enterprises. Ensuring the efficiency of innovation activities of enterprises is to take due account of all measures aimed at preventing risk and reducing its consequences. An important element of the impact on innovation and the condition of innovation risk management of enterprises is the implementation and application of a set of strategic and tactical measures, as well as adequate risk management models.

Analysis of recent research and publications. The domestic and foreign economic literature has accumulated considerable experience in researching scientific problems related to innovation risk management at the enterprise. Among them are the works of such scientists as I. Ansoff, T. Barton, F. Rogers, T. Saati, F. Knight, A. Marshall, A. Pigou, O. Grigoriev, O. Korobeynikov, I. A. Korshunov, V. Medinsky, S. Sviridov, V. Vitlinsky, M. Denisenko, P. Pererva, I. Ivchenko, S. Ilyashenko, N. Mashina, V. Cherkasov, M. Grachev, O. Zborovskaya. Theoretical and applied principles of risk management are covered in the works of many economists, including I. Bereza, V. Bocharnikov, V. Vitlinsky, V. Grinyov, K. Zakharov, M. Limitovsky, P. Pererva, S. Petrov, O. Pushkar, S. Reletsky, O. Yas-tremsky and others.

Despite of the great variety of treatment of scientific problems related to innovation, some aspects are still insufficiently studied and have not received the appropriate theoretical development. In particular, they need a more profound study of the nature and characteristics of risks and consideration of technology for innovation risk management of enterprises.

Formulation of the article purposes (objectives setting). The purpose of the study is to consider current problems of risk management

in innovation activities of enterprises and to identify real opportunities for the implementation of risk management models of innovative projects and provide ways to reduce risk and minimize it.

The main research material mentioning justification of the scientific results obtained.

The development of the economy in Ukraine and other countries allows us to conclude that under the conditions of market relations the development of enterprises should be carried out mainly on the basis of dynamically developed and implemented innovations. This is due to the fact that ensuring the competitiveness of organizations in the long term is based primarily on the involvement of new knowledge in the process of their functioning. However, the innovative development of enterprises is inevitably associated with a higher risk compared to the implementation of strategic programs aimed at intensifying and simply expanding the business.

Implementation of innovative activities has two main aspects. The first is new risks and uncertainties that need to be identified in time, quantitatively characterized and further minimized using management procedures. In case of ignoring emerging of new threats or ineffective risk analysis and management, the entrepreneur may suffer material damage or even go broke. The second is effective and efficient management of new risks and minimization of uncertainties, which will allow getting advantages over other companies in the form of «innovation rent», that is, additional profits obtained through the implementation of innovative projects and will increase the competitiveness of an entrepreneur [1].

The high riskiness of innovation processes, caused by the uncertainty of their internal parameters, is enhanced by the unpredictable dynamics of the external economic environment. Statistics show that no more than 15% of product innovations are successful, about half of technological innovations do not bring the expected effect, and organizational and managerial innovations are rarely completed on schedule and in compliance with the allocated budgets [2].

The specificity of innovative development requires new conceptual approaches to risk management to ensure the effective implementation of the formed strategy of innovative development of organizations. Risk is the possibility

of an unfavourable situation or an unsuccessful result in the implementation of the organization's innovative development strategy, which manifests itself in the form of not achieving or not fully achieving the set strategic goals and objectives. However, despite the fact that the innovative development of an organization is characterized by a high level of risk, the issues of its management remain a poorly studied area of strategic management [2; 3].

The process of innovative development requires a comprehensive account of all aspects of the functioning of a business, a combination of approaches to risk management. The risk arises due to the uncertainty of the conditions and forms of innovation processes. The main task of risk management is to determine possible alternatives for the development of events in the process of innovation, to assess the possibility and consequences of their occurrence. Anticipating risks is one of the most important stages in the formation of strategies for the innovative development of an organization and is considered to be a key success factor in any business [2].

In general, the risk in innovation is defined as the probability of losses arising from the search, development and implementation of innovations for the main investment of funds and resources, the search for sales markets and products buyers [4; 5].

Judgment of risk as a possibility of danger or failure is quite common in literature, i. e. in the general case, risk is understood as the possibility that a certain undesirable event will occur, the occurrence of which is not always possible to predict. In economic activity, risk is usually identified with the possibility of losing a part of its resources by an enterprise, with the decrease in planned revenues or the emergence of additional costs as a result of certain production and financial activities [6].

In economic theory, risk is understood as the probability (threat) of loss of part of the resources, lack of income receipt or the appearance of additional costs, or the possibility of obtaining significant benefits (income) as a result of the innovative project implementation. Risk can also be defined as a generalized subjective characteristic of a decision-making situation under conditions of uncertainty, reflecting the possibility of occurrence and significance for the subject of decision-making of damage as a result of consequences of making a decision [7].

The essence of the concept of innovation risk can be formulated as follows: innovation risk is a promising probabilistic category of the possibility of reducing the overall economic result (effi-

ciency) of the enterprise innovation activity, which arises under the influence of micro- and macro-environment of its activities and can constructively change not only the innovation process, but also to create negative preconditions and consequences from the implementation of a certain innovative product of innovative development [8].

Today, most scientific works are staged and do not fully reflect the essential characteristics of innovation risks. Summarizing the existing approaches to the definition of the studied economic category contained in the publications, we note that they all boil down to the following: it is an event that is probabilistic and consists in partial or complete loss of income or not receiving the whole income as a result of certain management decisions, related to any type of innovation activity, or the selection and implementation of any innovation projects, etc. [9].

Innovation risk arises in the following situations:

a) introduction of a cheaper method of producing a product or providing a service in comparison with those already used. Such investments will bring a company temporary extra profits, as long as such a company is the sole owner of this technology. In this situation, the firm is faced with only one type of risk – a possible incorrect assessment of the demand for the product being produced;

b) creation of a new product or a service provision using old equipment. In this case, the risk of a discrepancy in the level of quality of a product or service due to the use of equipment that does not allow ensuring the required quality is added to the risk of an incorrect assessment of the demand for a new product or service;

c) production of a new product or the provision of a service using new equipment and technology. In this situation, innovation risk includes: the risk that a new product or service may not find a buyer; the risk of non-compliance of new equipment and technology with the requirements necessary for the production of a new product; the risk of impossibility of selling the created equipment, since it does not correspond to the technical level required for the production of new goods [10].

Let us consider the types and characteristics of risks. There are the following types of risks: industrial, environmental, investment, credit, technical, entrepreneurial, financial, commercial (Table 1) [11].

When studying theoretical aspects of innovative activities of enterprises, it is important to substantiate risk management as a unified risk management system. Risk management should include a program of control over the implementation of the assigned tasks, an assessment of the efficiency of measures taken, as well as a system

Table 1

Risk profile		
№	Risk type	Risk characteristics
1	Industrial (production) risks	Risk of damage to the company due to interruptions in the normal operation of the production process
2	Environmental risk	The probability of civil liability for damage to the environment, as well as the life and health of people
3	Investment risks	The probability of reinvestment or loss of profit when implementing investment projects
4	Credit risks	The probability of non-return of the loan amount and interest on it
5	Technical risk (construction, installation and operational risks)	Accompanying the construction of new facilities and their further operation
6	Entrepreneurial risks	Caused by negative external circumstances and the inability of entrepreneurs to organize the production and sale of products
7	Financial risks (currency, interest, portfolio)	Arise in the process of managing the finances of an enterprise
8	Commercial risks	Associated with conducting trading operations

of incentives at all levels of the organization of the management activities of an enterprise.

The key structural elements of the risk management process at an enterprise include: defining the concept of risk management; development and adoption of a risk management scheme; participation of senior management in risk management; establishment of those responsible for the implementation and organization of risk management at an enterprise; risk identification; risk analysis; risk assessment; making and implementing a risky decision; monitoring the risk management process. Scientifically sound organization of the formation of risk management system allows ensuring high efficiency of management decisions to achieve strategic and tactical goals of the enterprise [12].

Innovation risk management should be understood as a set of strategic, tactical and operational measures aimed at the innovation process and aimed at reducing possible risks to zero or minimizing their negative impact on the end result of innovation in case of impossibility to avoid complete risk [13].

The risk management model (technology) is the implementation of the following sequential stages:

- analysis of factors and conditions affecting the probability of risk;
- analysis of possible risks: establishment of potential risk areas and identification of all possible risks;
- assessment (measurement) of certain types of risk and risk of the project as a whole: determination of the size of losses and damage;

- setting standards for maximum risk levels;
- choice of ways to reduce and retain risks, identify sources of damage coverage;
- redistribution (diversification) of risks;
- creation and maintenance of a database on the risks of innovative projects:
 - accumulation and processing of retrospective information about risk situations and consequences of risk manifestation in the past;
 - development of recommendations for changes in the maximum permissible (normative) risk values in the future (Figure 1) [14].

If the model of innovation risk management does not ensure its reduction to an acceptable level, the company should abandon the implementation of such an innovative project, thereby preventing losses and the probability of reducing its innovation potential.

When forming methods and models, as well as developing a risk management strategy, the following forms of protection against increased risks can be distinguished. These are methods of leveling and avoiding risk, that is, simply avoiding decisions that are clearly associated with large risks. These are models of risk retention within the investor's capabilities. This is the transfer of risk to another organization, such as an insurance company. This is risk reduction through marketing and motivational tools. This is a decrease in the probability and reduction of the volume of losses due to the differentiation of risks [3].

In innovation, it is important to clearly understand the ways to reduce risk and minimize it (Table 2) [4].

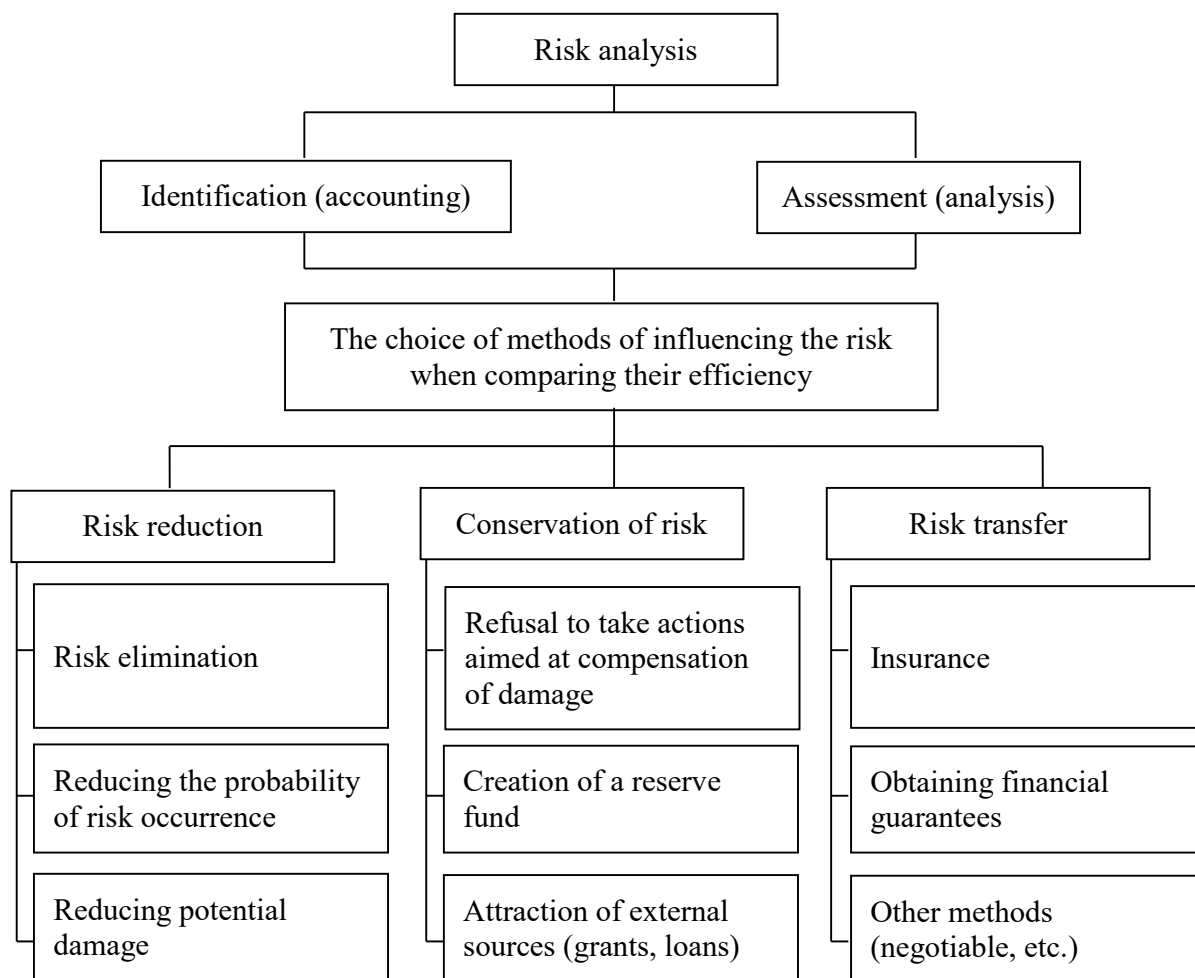


Figure 1. Risk management model

Table 2

Ways to reduce the risks of innovation

Ways to reduce risks	Essence and impact on risks
Distribution of risk among participants	Diversification of types, activities, sales, investment loans
Reservation	Refusal from risky projects; from unreliable partners; search for guarantors
Insurance	To minimize property, political, credit, commercial and industrial risks, but the risks of partners' dishonesty are not subject to insurance
Diversification of innovation	Expansion, distribution of the efforts of developers (researchers) and capital investments between different innovative projects that are not directly related to each other
Contractual risk transfer	Entering into contracts with other organizations
Hedging	Formation and proposal of counter production, scientific and technical, commercial, currency requirements and obligations
Improving the quality of risk management	Improving the competence of management personnel, methods and developments of planning and forecasting innovative activities; effective marketing; analysis and examination of an innovative project; selection of the best partners for an innovative project; formation of stocks and reserves of financial and material resources, control of the time of project implementation; selection of qualified personnel, project team
Localization	Creation of venture organizations based on venture financing, special units for the implementation of risky projects
Organization of protection of commercial secrets	Competitor control and containment methods, protection of technical, financial and commercial information

Thus, the introduction of innovative risk management technology allows developing risk management programs and strategies, formation of a system for protecting the enterprise from the most acute risk situations of the implementation of innovative projects, relying on the methods of guaranteed support for business structures.

Conclusions of the research and prospects for further development. The results of the analysis of innovation risks are the basis for deciding on the choice of risk management

method in order to ensure its implementation in production and increase the innovative potential of the enterprise. Prospects for the development of Ukraine's innovative economy are quite favourable provided new approaches to the perception of reality and the choice of optimal models of risk management of innovative activities of enterprises, as well as the introduction of sound risk management system, which allows for high efficiency management decisions to achieve strategic and tactical goals of an enterprise.

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