



Andrey Nechaev
D.Sc. (Economics), Professor,
Irkutsk State Technical University, Russia
83 Lermontov Str., Irkutsk, 664074, Russia
n-a-s@mail.ru

UDC 338.2.001.76



Anna Prokopyeva
Post-Graduate Student,
Irkutsk State Technical University, Russia
83 Lermontov Str., Irkutsk, 664074, Russia
anna1900000@mail.ru

IDENTIFICATION AND MANAGEMENT OF THE ENTERPRISES INNOVATIVE ACTIVITY RISKS

Abstract. On the basis of the carried out analysis of the innovative activity risks the authors' definitions are concluded in the article as follows: «risks in innovative activity», «efficiency of innovations considering a risk component», «life cycle of an innovation in the existence of risk». The uniform classification of the enterprises innovative activity risks is offered. The matrix of the enterprises innovative activity risks minimization and neutralization for the purpose of the optimal risks reduction definition or exception is developed. The innovative technique based at the productivity coefficients of the effective resource factors usage of labor, administrative, infrastructural, economic, financial and industrial potentials of the enterprise is created and approved. The algorithm of the identification and management of the enterprises innovative activity risks is developed. It allows estimating the enterprise's potential and to use effectively the methods of the risks identification and management in a complex.

Keywords: risks; innovations; classification; matrix; technique; algorithm.

JEL Classification: O31, O32

A. С. Нечаев

доктор економічних наук, професор кафедри управління промисловими підприємствами, ФГБОУ ВПО «Іркутський державний технічний університет», Росія

A. В. Прокопьева

аспірантка кафедри управління промисловими підприємствами, ФГБОУ ВПО «Іркутський державний технічний університет», Росія

ИДЕНТИФИКАЦИЯ И УПРАВЛЕНИЕ РИСКАМИ ИННОВАЦИОННОЙ ДЕЯТЕЛЬНОСТИ ПРЕДПРИЯТИЙ

Аннотация. В статье на основе проведенного анализа рисков инновационной деятельности обоснованы и приведены такие авторские определения: «риски в инновационной деятельности», «эффективность инноваций с учетом рисков составляющей», «жизненный цикл инновации при наличии риска». Предложена единая классификация рисков инновационной деятельности предприятий. Разработана матрица минимизации и нейтрализации рисков инновационной деятельности предприятий с целью определения наиболее оптимальных способов уменьшения или исключения рисков. Создана и апробирована инновационная методика, основанная на коэффициентах продуктивности использования ресурсов трудового, управленческого, инфраструктурного, экономического, финансового и производственного потенциалов предприятия. Разработан алгоритм процесса идентификации и управления рисками инновационной деятельности предприятий, позволяющий комплексно оценить потенциал предприятия и эффективно использовать методы идентификации и управления рисками.

Ключевые слова: риски, инновации, классификация, матрица, методика, алгоритм.

A. С. Нечаев

доктор економічних наук, професор кафедри управління промисловими підприємствами, Іркутський державний технічний університет, Росія

A. В. Прокоп'єва

аспірантка кафедри управління промисловими підприємствами, Іркутський державний технічний університет, Росія

ИДЕНТИФИКАЦИЯ ТА УПРАВЛІННЯ РИЗИКАМИ ІННОВАЦІЙНОЇ ДІЯЛЬНОСТІ ПІДПРИЄМСТВ

Анотація. У статті на основі проведеного аналізу ризиків інноваційної діяльності обґрунтовано і наведено такі авторські визначення: «ризик в інноваційній діяльності», «ефективність інновацій з урахуванням ризикової складової», «життєвий цикл інновації за наявності ризику». Запропоновано єдину класифікацію ризиків інноваційної діяльності підприємств. Розроблено матрицю мінімізації та нейтралізації ризиків інноваційної діяльності підприємств із метою визначення найбільш оптимальних способів зменшення або унеможливлення ризиків. Створено й апробовано інноваційну методику, засновану на коефіцієнтах продуктивності використання ресурсів трудового, управлінського, інфраструктурного, економічного, фінансового і виробничого потенціалів підприємства. Розроблено алгоритм процесу ідентифікації та управління ризиками інноваційної діяльності підприємств, що дозволяє комплексно оцінити потенціал підприємства й ефективно використовувати методи ідентифікації і управління ризиками.

Ключові слова: ризики, інновації, класифікація, матриця, методика, алгоритм.

Introduction. As a rule, the risks in innovative activity are investigated in a context of different conceptual approaches that causes occurrence of the economic risks essence different characteristics. The absence of their uniform classification leads to the risks definition specificity, appearance of their variety, properties, connections and dependences, what also impedes to use more effective way of the risks management [1].

Besides, it is necessary to notice that there is no uniform technique for estimation of the risks influence degree to the enterprises innovative activity now. Each company applies the independently developed methods of a comprehensible risk calculation created on their general model developing on the relation of the expenses connected with risks to the duration of a one. It leads to the cost estimation errors of the revealed risks

and their negative consequences and their management efficiency decreasing as consequence [2].

The estimation of the innovative activity risks and the definition of their influence degree to an economic situation of the enterprises is a difficult multipurpose process. The existing matrixes of a risks minimization do not give possibility to allocate the most dangerous risks to make the effective administrative decisions promptly. There is no algorithm of a risks management promoting to make the actions directed on minimization and neutralization of the enterprises innovative activity risks consistently.

Thus, the search of the new mechanisms promoting the minimization of risks, the attraction of the additional resources into the innovative sphere, the decision of a problem of the enterprises innovative activity risks management is rather actual and well-timed.

Brief Literature Review. Risk management in innovative activity in our days, serious attention from the scientific community. A significant contribution to scientific development of separate theoretical, organizational, economic aspects of identification and risk management has been made in the works of such Russian authors as: Balabanova E. T., Sasuhina O. V., Sinova V. G., Ilyenkov S. D., Dwarf A. U., Kartasheva C. B., Kachalova P. M., Lapina H. E., Leontiev B. B., Luzhanska B. E., Okrepilov C. C., Pervuchina C. A., Platonov V. V., Postnikova A. B., Rogova E. M., Rodionova L. N., Rummyantsev A. A., Sevrak V. T., Titova A. B., Yakovets U. V.

Among foreign researchers may be noted: Barker A., Barcella D., Biermann W., Bruce E., Drucker P., Kotler P., Markovich Y., Malone M., Sakya S., Santa B., Sharpe U. and others.

At the same time, the analysis of the modern economic literature shows that at present, in domestic and foreign theory and practice is no uniform approach to risk management innovative activity of enterprises. It should be noted that well-developed risk management program allows senior executives and risk managers reduce economic losses and increase the efficiency of innovation activity of enterprises [3].

The purpose of the research is to improve the process of identification and risk management of innovative activity of enterprises.

Results. The analysis of the economic literature concerning innovative activity of the enterprises considering a risk component showed that nowadays there is no uniform interpretation of such concepts as the innovative activity risks, the efficiency of innovations considering the risks, the life cycle of innovations in the presence of a risk. In its turn, it does not allow defining more effective ways of the enterprises innovative activity risks management for the purpose of their minimization and neutralization, and directed to the improvement of the economic stability of the enterprises engaged in an innovative activity as a whole. Under the circumstances we offer the following definitions [4].

Risks in innovative activity – the process of the innovations transformation accompanied by risks or the danger of increase in losses, a profit or an income reduction in connection with the casual change of the economic activities conditions, in the new or advanced product introduced in the market; the new or advanced technological process used in the practical activities or in the new approach to the social services.

Efficiency of the innovation considering a risk component is the result leading to savings of the labor, material or natural resources, to savings of time and money counting for a unit of all the necessary and prospective useful effects of the created products, the technical systems; or allowing to increase the production means, consumer goods and the services receiving a cost estimation considering the concrete mechanisms of the risk factors revealing and methods of their minimization at the estimation of the innovative projects efficiency.

Life cycle of the innovations in presence of risk is a set of the incorporated processes and stages connected with the danger of the unforeseen losses risks occurrence, the profit or income short-receptions in connection with casual change of economic activities conditions or the adverse circumstances from the emergence of an idea up to the removal of the innov-

ative product from manufacture realized on its basis during which the innovation possesses an active vital force and brings to the manufacturer or the seller a profit or other real benefit [5].

Thus, the offered definitions allow revealing the essence of the considered processes. And the development of their integrated classification is necessary for the effective ways definition of the identification and management of the enterprise innovative activity risks.

At the same time the development of the uniform risks classification of the enterprises innovative activity is necessary for the definition of essence and specificity of risks and more effective ways of management of them for the purpose of their minimization and neutralization allowing to reveal every possible kinds of risks at the enterprise (Table 1).

Thus, we developed the uniform classification of the enterprises innovative activity risks (Table 1) allowing to define the specificity of the risks, their variety, their general and specific properties and by means of it to penetrate into their essence.

In the developed classification all kinds of the enterprises innovative activity risks arising in the course of their identification and management are grouped according to their potentials: labor, administrative, financial, industrial, infrastructural and economic [6]. The groups of risks are allocated for each potential in each there are types and subtypes.

Besides, the classification of the enterprises innovative activity risks is intended to their purposeful analysis and a conclusions formulation about the realization success of the projects and the efficiency of applied measures on their management. The analysis of the modern economic literature gives the bases to ascertain that both in the domestic and foreign theory as well as in the practice there is no uniform approach to the management of the enterprise innovative activity risks now. The considerable part of the researches concerns separate methods of the risk level estimation in various spheres (financial, investment, etc.) [7].

In addition, the number of the basic ways of minimization and neutralization of the enterprise innovative activity risks for the types of the potentials is presented in Figure 1.

The matrix and the schematic image of the basic and specific ways of minimization and neutralization of the enterprise innovative activity risks allow operationally and possibly qualitatively neutralizing the risks distributed among the potentials of the enterprise due to the offered specific and general ways. The minimization and neutralization matrix of the enterprises innovative activity can remove the uncertainty most part, to foresee the occurrence of adverse factors in a production cycle, to anticipate an enterprise positions weakening in its market sector, to identify a profile of risks and to develop a complex of compensating actions in advance.

First, our technique allows calculating in advance the possible risks of innovative activity, to neutralize them and to create such industrial and economical conditions in which the chance of the innovative risk occurrence will be minimized further. Second, it allows applying a risk calculation way consisting of the expenses sum relation for a risk of a certain type in the innovative activity connected with duration of the definite risk. Third, it allows applying the universal coverage connected with losses for a counted period of time. Fourth, the situations management sum connected with the risk occurrence is calculated while planning the enterprise budget.

As a whole, the developed factors allow to calculate the sum necessary for the situations connected with the occurrence of the unforeseen losses risks danger, the profit or income short-reception in connection with the casual change of the economic activities conditions or adverse circumstances from the start up of an idea up to the removal off the manufacture the innovative product or innovative service made on its basis.

First, the developed technique allows calculating in advance the means sum for the cancellation the risks which are typical for the enterprise administrative, labor, financial infrastructural, industrial, economic potentials in the course of the innovative activity realization. Second, it allows to save time on the risks management stage and to start the risks neutralization or minimization of this or that enterprise potential operationally.

Table: Uniform classification of the enterprises innovative activity

LABOUR POTENTIAL			ADMINISTRATIVE POTENTIAL		
Group	Type	Subtype	Group	Type	Subtype
SOCIAL	Personnel	Difficulties with qualified personnel selection	BUSINESS	Legislative	Legal
		Low level of wages			Risk of legal inadequacy
		Variability of personnel structure			Risk of possible loss
		Competitive		Risk of information inadequacy	Risk of distortion of information in the transition to a tactical plan of the project
		Labor misconduct		Risk of originality	Risk of that original technologies will be not claimed by a potential segment of the market
		Variability of personnel policy		Constant	Risk connected with adverse short-term fluctuation of the international currencies
	Personal	Risks connected with the relation of employees to interests of the enterprise		Risk of payments of penal sanctions	Risk of non-payment in area with imperfect legal system
		Individual	RISKS OF BUSINESS UNCONTROL-LIABILITY	Risk of a difference of investor ultimate goals	
		Personal	RISKS OF UNCONTROL-LIABILITY THE PROJECT	Risk of decrease in profitableness	
				Risk of weak detalization of the project	
		Risk connected with social and psychological adaptation of the person	SPECIFIC	Not qualified financial management	Risk of market condition change
				Territorial	Risk of inefficient structure of actives and the capital
				Political	
FINANCIAL POTENTIAL			ECONOMIC POTENTIAL		
THE CURRENCY	The advance	Risk of preservation of actives	COMMERCIAL	Situational	Risk of change of the general economic situation in area or the country
	Risk of venture operations			Competitive	Risk of decrease in profitableness
	Risk of transaction				Risk in connection with functioning of object of the enterprise
	Risk of a deal			Marketing	Risk of not demanded production
SPECULATIVE	Base	Structural	COUNTRY	Logistical	Risk connected with transportation of the goods (transport)
	Operational	Risk of the operational control			Risk of force majeure circumstances
	Risk of decrease in profitableness	Risk of systems			Risk of a delay of performance by partners of current treaty obligations
	Risk of economic activities	Factoring		International	Risk of foreign trade activities
	Depository	Percentage	INVESTMENT	Risk of investment portfolio	Diversification (private)
	Tax				Undiversifiable risk (fundamental)
	Extra-legal				Risk arising at a preparatory stage
	Accounting				Risk connected with creation of object
	Total				Capital
Risk of forfeiting		Selective			
RISK OF INSOLVENCY	Risk of the emitter			Risk of imbalance	
	Risk of bankruptcy			Risk of undemanding	
CALCULATIVE	Trade	Risk of definition of a market price	COMMERCIAL	Risk of objects of investment	Risk of unbalanced liquidity
		Risk of a choice of the counterpart			Risk of excessive concentration
		Risk of monetary calculations			Country
		Risk of delivery of securities			Macroeconomic
		Risk of change of a market price			Branch
	Risk of discrepancy in time of payments	Risk of currency transactions			
		Risk of safety of actives			

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Continuation of Table

FINANCIAL AND ECONOMICAL	Risk of direct financial losses	Risk of observance of the rights given by securities			Risk connected with acceptance of the goods (services) by the buyer
		cumulative			
		Risk of bankruptcy credit			
	Exchange	Risk connected with solvency of the buyer			
deflationary					
		inflationary			
INFRASTRUCTURAL POTENTIAL			INDUSTRIAL POTENTIAL		
PROPERTY	Risk of loss of property	Risk of loss of property as a result of acts of nature	DESIGN	Risk arising at a preparatory stage of the project	
		Risk of loss of property owing to actions of malefactors		Risk of the sponsor of the project	
	Risk connected with loss of property as a result of theft	Risk connected with plunder of property by workers of the enterprise	RISK OF OCCURRENCE OF UNFORESEEN EXPENSES FOR MANUFACTURE	Risk of pollution by an environment product company	
		Risk connected with plunder of property by the third parties		Risk of non-realized profile technology of the enterprise	
	Risk connected with loss of property as a result of emergencies on manufacture	Risk of necessity of payments of penal sanctions and arbitration legal cost	INDUSTRIAL	Undemanding of made production	Risk of refusal of the partner from the conclusion of the contract after carrying out of negotiations
	Risk connected with alienation of property	Force majeure risk			Risk of refusal of the buyer from production received by it (return), switching on other kind of production or other supplier
		Risk of alienation of property, in connection with ground area withdrawal			Risk of drawing of a damage to the third parties
		Risk of the repayment of ownerless containing cultural values			Risk of the contracts conclusion
	RISK OF EMERGENCY CONDITIONS	natural		Risk connected with branch of manufacture	industrial
		technogenic		Risk connected with acceptance of the goods by the buyer	
mixed			Risk connected with transportation of the goods	technical	
OPERATIONAL	Risk of the basic manufacture		Risk of low discipline of deliveries, faults with fuel and the electric power		
	Risk of modelling		Risk connected with increase of the expense of material inputs because of the over expenditure of materials, raw materials, fuel		
INNOVATIVE	Risk of destruction or impossibility of the further operation		TECHNOLOGICAL	Risk of low discipline of deliveries, faults with fuel and the electric power	
	Risk of the accelerated obsolescence of object of the transaction			Risk of technological inadequacy	
RISKS CONNECTED WITH A REPAIR ECONOMY	Construction	Risk of discrepancy of labor productivity and expenses of resources			
	Risk connected with certification of equipment			Risk of negative research results	
ENTREPRENEURIAL	Risk interfaced to absence of commercial success		INNOVATIVE	Risk connected with technical parameters	
	Risk connected with incapacity of firm key workers			Low technological possibilities of manufacture	
				Probability of losses as a result of occurrence at use of new technologies	
				Failures and equipment breakages	
			Risk of increase of rejected production		

Source: Own research

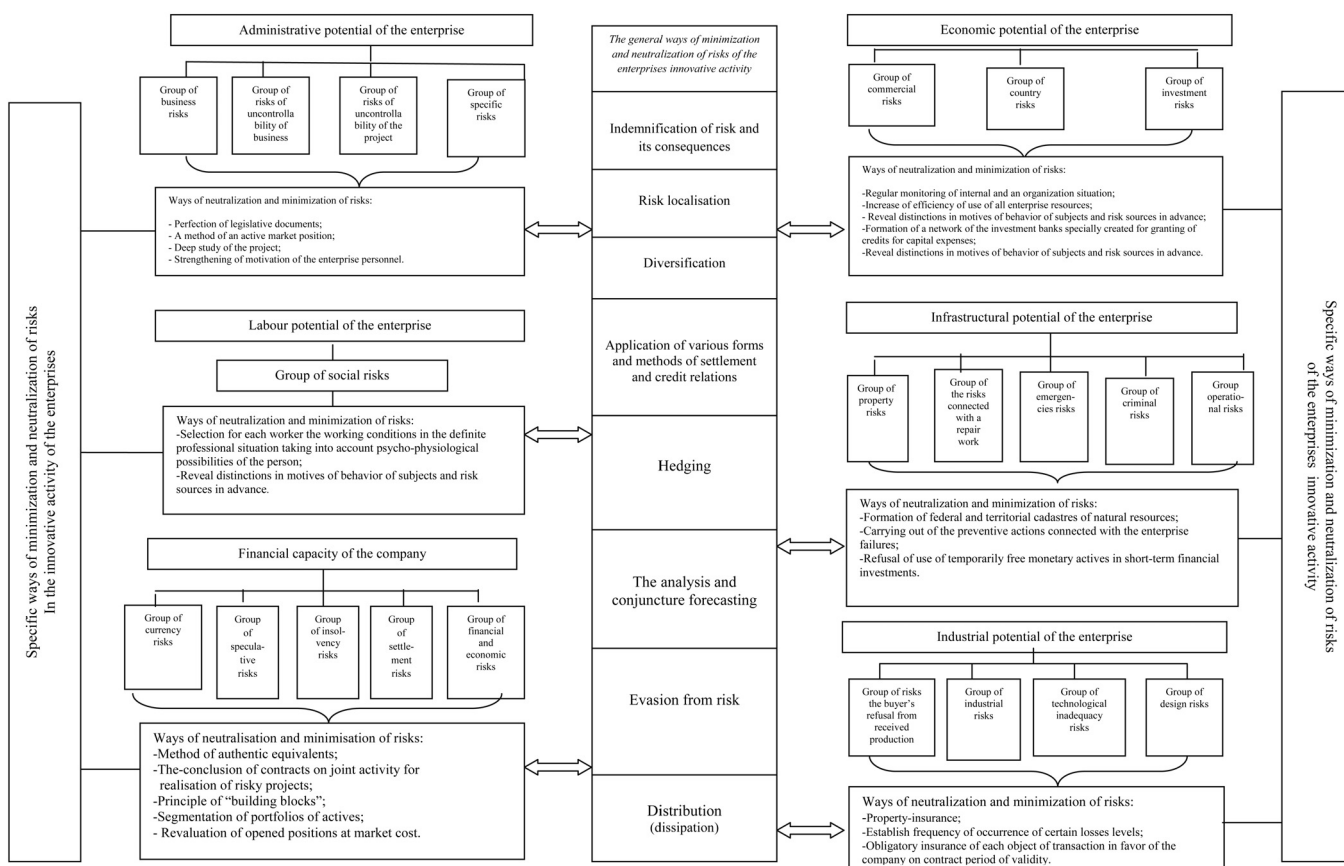


Fig. 1: Basic and specific ways of minimization and neutralization of the enterprises innovative activity risks

Source: Own research

Considering the fact that the innovative activity basic source is the enterprise own means and as a rule the innovative projects are rather risky actions, the formation of the new approaches to the problem of the innovative activity risks management of the enterprise is necessary. For the problem decision we developed the algorithm of the risks management process of the enterprises innovative activity (Figure 2).

Conclusion. The developed algorithm allows involving in the risks management of the innovative activity the most significant stages of the risks management process control and to lower the innovative activity risks as much as possible. The novelty of this algorithm is the consecutive involving of the risks management methods in the enterprise innovative activity.

The study on the problem of improving the risk management innovation allows companies formulating a set of generalizations, conclusions and proposals.

The analysis was conducted concerning:

- Domestic and foreign experience of risk management in the present conditions, will highlight the problems in this area;
- Sources and methods of innovation risk management for the enterprises.

The authors developed:

- matrix of enterprises innovation risks minimization and mitigation, which allows for the identified risk types in innovation determination the best ways to reduce or eliminate them;
- integrated algorithm for the identification and risk management of innovation activities of enterprises to significantly reduce the possible matches rice, reduce the time needed to create innovation and contributing to consistently carry out actions aimed at neutralizing the risks of innovation.

The authors offered:

- to identify the risks in innovation, the effect of innovation considering risk component, lifecycle innovation at the risk, allowing more clearly understand the complex process of transformation of innovative ideas in the face of uncertainty and the risk of losses, lost profits or revenue;

- summative risk classification of enterprise innovations, reflecting composite views of risks and their subtypes, as well as on the ground of risk grouping, which allows determination the specificity of risks, their diversity, properties, relationships and dependencies, general and specific, and through this understanding their essence;
- the methodology based on productivity factor of innovative utilization, labor, management, infrastructure, economic, financial and industrial potentials of the enterprise that helps to reduce errors in the valuation of the risks, identify their negative effects and, consequently, increase the effectiveness of efforts to stabilize the innovation enterprise in conditions of risk.

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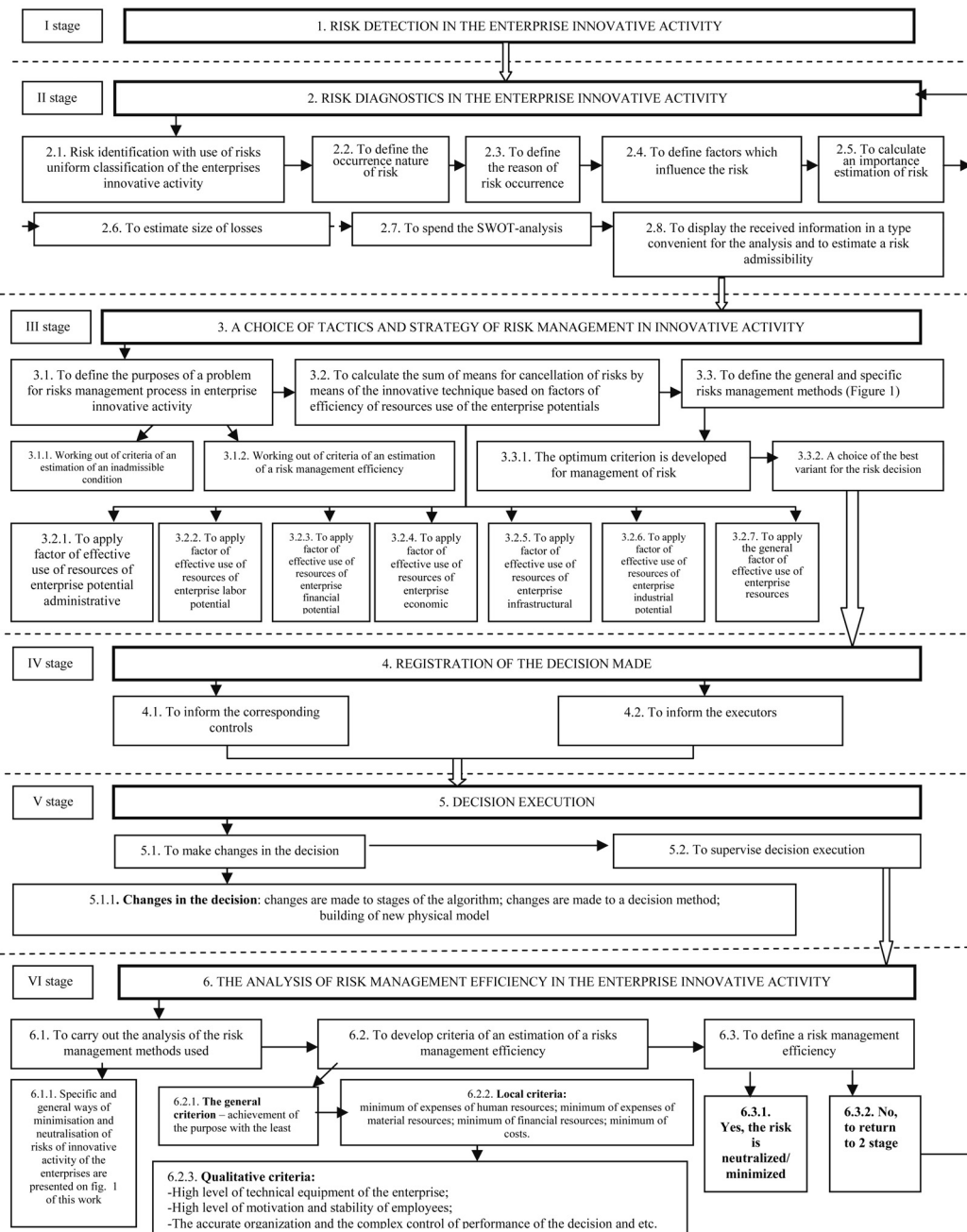


Fig. 2: The algorithm of the risks management process in the innovative activity

Source: Own research

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