DOI 10.34132/pard2025.28.11

Отримано: 7 жовтня 2024
Змінено: 3 лютого 2025
Прийнято: 27 лютого 2025
Опубліковано:
30 червня 2025

Received: 7 October 2024
Revised: 3 February 2025
Accepted: 27 February 2025
Published:
30 June 2025

Wang Hong

FEATURES OF RISKS CLASSIFICATION AND METHODS OF THEIR ASSESSMENT

The article examines the features of risk classification as an important task for understanding the essence of this category, its depth, multifacetedness and the choice of appropriate instruments of influence. The study of theoretical issues related to risk management is a relevant scientific and practical task. At the same time, along with the study of the essence, main characteristics and functions of risks, the classification of risks and the analysis of the causes of their occurrence are of great importance. It is emphasized that it is the distribution of risks by types with different degrees of aggregation, importance, and characteristics that allows us to better determine the further methodology of analysis and assessment, to make decisions within the framework of the risk management policy style. The presence of a significant number of features of classification and division of risks, the dilatability of attributing certain risks to different subspecies once again emphasize the importance and necessity of in-depth research of this category. It has been established that the classification of risks can be carried out according to various criteria, such as the nature of the consequences, the scope of occurrence, the cause of occurrence, the degree of controllability, the level of occurrence, and others. Risks can be divided into pure (can cause only losses), speculative (can cause both losses and profits), financial, operational, strategic, and others. Risk classification is an important stage of risk management, which allows for more effective risk assessment

and development of strategies for their minimization or prevention. It has been proven that despite active research, there is still no effective and universal risk classifier, which leads to independent categorization of risks in accordance with the main areas of activity for identifying, analyzing, and minimizing risks. It is also worth considering that in each specific case, the basis of risk classification contains a clearly defined applied purpose: to form transparent and analytically analyzed material for an effective description of risks with the subsequent construction of a risk management system.

Keywords: *risk, risk classification, risk assessment, assessment methods, analysis methods, risk factors.*

Statement of the problem in a general form. The current conditions of the functioning of most spheres are characterized by the presence of a fairly high level of various risks, due to the incompleteness and unpredictability of the results of most socio-economic, political, managerial reforms, uncertainty and instability of the surrounding economic and legal environment. All of the above together determine the objective nature of the emergence of risk-forming factors; complicate the process of adaptation to changes and processes taking place. As a result, a necessary condition for the effectiveness of management decisions in the existing risky conditions of functioning is precisely the consideration of the peculiarities of the functioning of various spheres, the construction of a rational risk management system for their effective activity. This state of affairs is explained, first of all, by the fact that, on the one hand, «there is an underestimation of the importance of risk management, which can lead to very serious consequences», and on the other hand, «the use of opportunities allows us to significantly improve stability and competitiveness, both in the short term and in the long term» [25]. It is worth agreeing that the source of external risks is the external environment. The source of internal risks is the field of activity itself. These risks arise in the case of «management inefficiency, erroneous marketing policy, as well as a result of various abuses within the field of any activity» [25]. We can argue that any activity is accompanied by risks. As a result, the possibility of classifying risks will

 DOI 10.34132/pard2025.28.11

allow them to be separated into homogeneous categories based on certain characteristics, which will facilitate the use of specific methods of analysis, assessment and risk management.

Results and Discussion. The need to classify risks is interconnected with the fact that by understanding what we are dealing with, we will be able to use the appropriate set of methods for managing and eliminating risks and their consequences. Risks can be classified based on various characteristics (tab. 1) [35]. It is worth mentioning the results of the study by H. Hudat and H. Rashidi, in which the authors emphasize that «the main purpose of risk classification is to identify the largest risks and factors that require increased attention from managers» [34]. According to the researchers, risk classification involves conducting an economic analysis of risks and their causes by grouping similar risks into appropriate classes. The basis of the classification proposed by these authors is the approach to dividing risks into internal and external, where the latter are the least controllable and predictable. The next important feature, according to the authors, is «the division of risks into design, commercial and technical risks» [34]. In addition, productivity risks and loss risks are distinguished, as well as, depending on the environment: development, production and implementation risks. The classification of risks in each individual case should be oriented towards the main object of research, the direction and type of activity, the area that will be affected by the relevant management decisions.

Table 1.

Risk Classification

Criterion	Types of risks
nature of occurrence	objective subjective
decision-making stage	decision-making decision implementation
decision-making level	individual firm (microeconomic) state (macroeconomic) interstate

continuation of the table 1

sources of occurrence	sectoral (determined by a certain field of activity) state (characteristic for a certain country as a whole) internal risk (determined by the action of characteristic factors)
activity	financial legal commercial innovative related to the production of products, services, etc.
controllability	managed unmanaged
time between decision-making and its consequences	short-term medium-term long-term
permissibility	minimal increased critical unacceptable

Source: formed by the author based on [35]

It is worth mentioning that today in science «there are about fifty different risk classification criteria and more than two hundred types of risks, therefore in the scientific literature there is no single understanding of the essence of this category and generally accepted approaches to classification» [9]. We note that the classification of risks by the level of predictability, preliminary estimates of the probability of occurrence of risky adverse events, possible losses in terms of cost is widespread in foreign practice. Under such approaches, risks are divided into classes that «are recommended to be formed based on individual characteristics of activity and needs, and from time to time to be revised in order to remain relevant in accordance with current requirements and changes» [36].

However, the most important elements that form the basis of risk classification can be attributed to:

 DOI 10.34132/pard2025.28.11

– time of occurrence;
– main factors of occurrence;
– nature of accounting;
– nature of consequences;
– sphere of occurrence, etc. [36].

It is worth agreeing with some researchers that the basis of any risk lies in ineffective management. In addition, ineffective management should be attributed to internal risks and considered the main source of risk, since «successful management must be prepared for almost all types of risks, have a reliable system for their detection, measurement, assessment, prediction and selection of appropriate response measures» [24].

So, taking into account the above elements, today it is most often customary to distinguish the following types of risks:

– risks interconnected with the influence of the external environment;
– risks interconnected with economic activity;
– commercial risks;
– financial risks;
– property risks;
– personnel risks [3; 7; 15; 23].

External risks mostly include risks that arise in the external environment of a particular organization or field of activity. For the most part, the emergence of external risks is interconnected with a certain action of objective factors that do not depend on the will of the management or owner of the organization, which determines the main problems of managing them. It is worth noting that risks are encountered at any stage of activity, and, usually, there are many different reasons for the emergence of a specific risk situation. Note that the cause of such a risk is understood to be some condition that causes uncertainty about the outcome of the situation.

The main causes of external risks are:

– instability of the international and domestic political situation;
– economic crises;
– exchange rate fluctuations;

– unforeseen changes in the structure of demand and supply;
– scientific and technological revolutions;
– natural disasters and environmental disasters, etc. [36].

External risks, interconnected with the organization's environment, can be macroeconomic and microeconomic, which are influenced by certain factors, namely:

1) direct influence − legislative regulation; arbitrariness of the authorities, tax system, relations with partners, competition, corruption, etc.;

2) indirect influence − political and economic situation in the country, economic state of the industry, natural disaster, international events, etc.

Today, there are several main types of external risks (political, commercial, financial, industry and structural, innovative, environmental, and logistical) and methods of managing them.

As for the risks related to economic activity, they are associated with the following main losses: «material, labor, financial, time losses and special types of losses» [27]. Material losses are reflected in additional costs or direct losses of equipment, property, products, raw materials, energy, etc. Material losses are measured in those units in which the quantity of this type of material resources is measured, that is, in physical units of weight, volume, area, etc., as well as in value terms, in monetary units. For this, losses in physical terms are converted into value by multiplying them by the price of a unit of the corresponding material specie. For the required number of material resources, the cost of which is known in advance, losses can be immediately estimated in monetary units. Labor losses are losses of working time caused by random, unforeseen circumstances. Labor losses are measured in man-hours, man-days or simply by accounting for working time. The conversion of labor losses into a value, monetary coefficient is carried out by multiplying by the corresponding hour of working time. Financial losses are direct monetary damage associated with unforeseen payments, payment of fines, payment of additional taxes, loss of funds and securities, non-repayment of debts, non-payment by the buyer of the value of the products delivered to him. Temporary financial losses can be caused by freezing of accounts, untimely payment of funds, postponement of payment of debts, change

 DOI 10.34132/pard2025.28.11

in the exchange rate, inflation, etc. Time losses exist when the process of economic activity proceeds more slowly than planned. Direct assessment of such losses is carried out in hours, days, weeks, and months of delay in obtaining the intended result. In order to translate the assessment of time losses into a value measurement, it is necessary to «establish what loss of profit is caused by accidental loss of working time» [17]. Special types of losses are manifested in the form of harm to the health and life of people, the environment, the prestige of the enterprise, as well as in the form of other adverse social and moral and psychological consequences, most often they are extremely difficult to determine in quantitative terms and even more so in cost terms. In addition to the above, there are also accidental losses, directly unpredictable and therefore unaccounted for, caused by the incompetence of persons who form business plans; dishonesty, natural disasters, theft, racketeering, etc.

By the level of occurrence, risks can be classified as follows:

– risks that arise at the micro level, that is, risks of an individual firm;

– risks of industry origin, associated with the specifics of the industry in which enterprises operate;

– risks of inter-industry origin, the presence of which is due to the influence and dependence of individual industries and spheres of economic activity on each other;

– regional risks that may arise due to the specifics of development in certain regions of the country;

– state risks that affect all economic entities of this country;

– global risks that arise in the economy of several countries or the entire world community [30].

Commercial risk is understood as a risk «associated with entrepreneurial activity aimed at obtaining maximum profit and authority in the process of selling goods and services produced or purchased by the enterprise» [1]. The causes of commercial risk include:

– decrease in sales volumes as a result of changes in the market situation;

– increase in the purchase price of goods;

– unexpected decrease in the volume of purchases;

– loss of goods in the process of circulation;
– increase in circulation costs, etc. [2].

Considering the causes of occurrence, it is worth indicating the possible types of commercial risks, in particular:

– informational, represented by a certain deficit of information about buyers and purchase motives, market requirements for goods, market conditions, opportunities for a trading enterprise and its competitiveness;

– commodity, regarding the risk of product quality, opportunities and consequences of crediting, etc.;

– special relationships with suppliers, which are of an economic nature and represented by risks of failure to meet the established or desired terms and volumes of supply, completeness and nomenclature of supplies, etc.;

– risks related to the organization of sales of goods, represented by the possibility of choosing appropriate sales methods, conducting advertising campaigns, promotions, etc.;

– risks related to the loss of image among one's own partners, consumers, employees, etc. [2].

We emphasize that it is commercial risk that is «an integral and mandatory component of any entrepreneurial activity in any field» [16]. And it is the high objective significance of commercial risk, as well as the complexity and specificity of the formation and functioning of modern enterprises in market conditions that cause «the extreme urgency of the problem of improving the management of commercial risks, as one of the most important types of entrepreneurial risk» [26]. Financial risks are risks «associated with the probability of loss of financial resources (cash), which are divided into risks associated with the purchasing power of money and risks associated with investing capital (investment risks, credit risks, risks of direct financial losses [39])» [29].

Among the reasons for the emergence of financial risks, we can name:

– weak and unstable economy of the country;
– economic crisis;
– high level of inflation;

 DOI 10.34132/pard2025.28.11

– ineffective state financial policy;
– ineffective state regulation of the financial sector;
– increased level of competition;
– lower prices on the world market;
– political factors, etc. [5].

The above reasons can be both external and internal. In addition, they can lead to the emergence of one or another type of financial risk, in particular:

1) credit risk, which is usually considered as the risk of non-repayment of a loan and non-payment of interest on it;

2) interest rate risk, which arises as a result of changes in interest rates on provided credit resources;

3) currency risk, possible in the event of changes in established exchange rates, as well as the political situation, when such rates are unchanged, and the possibilities of free circulation of currencies are limited. These risks are interrelated with the revaluation of balance sheet items of foreign branches in the national currency and in reverse transactions;

4) industry risk, interrelated with the specifics of individual industries, which manifests itself in a change in the investment quality and exchange rate value of securities and the corresponding losses of investors;

5) liquidity and capital structure, i.e. the risk interrelated with the possibility of losses during the sale of a security due to a change in the assessment of its quality;

6) operational risk, interrelated with errors or improper organization, irrational choice of methods for conducting financial transactions. This type of risk also includes possible errors of managers;

7) country risk, i.e. the set of political, economic and transfer risks [6; 37], interrelated with the actual and expected political and economic conditions in the country and the impact of these conditions on the ability of the government, individual corporations and specific individuals to fulfill obligations regarding external debt [31].

In addition, by type of loss, financial risks are divided into liabilities, that is, the risk of losses due to the fault of competitors, employees or

partners in connection with changes in the terms of performance of obligations. However, it is worth agreeing with some researchers that financial risks are usually «associated with changes in the financial market and changes in the economy» [31]. Property risks are risks that are «characterized by the possibility of property loss for various reasons: theft, sabotage, negligence, overvoltage of technical and technological systems, damage, etc.» [14]. Personnel risks are directly related to «the life, health and working capacity of the enterprise's employees, as well as their personal characteristics and working conditions» [33].

It should be noted that there are two more groups of risks: statistical (pure) and dynamic (speculative) [28]. The peculiarity of statistical risks is that they almost always entail losses for business activities. According to the causes of losses, statistical risks can be divided into the following groups of probable losses:

– as a result of the negative impact on the assets of the business structure of natural disasters;

– as a result of criminal acts;

– as a result of the adoption of unfavorable legislation for the business structure;

– as a result of the threat to the property of third parties, which leads to the forced termination of the activities of the main supplier or consumer;

– as a result of the death or incapacity of key employees of the enterprise or the main owner of the business structure [28].

Unlike statistical risk, dynamic risk entails either losses or profits for the business institution. Therefore, dynamic risks are «difficult» to manage. As an economic category, any risky operation can have three outcomes: negative – this is a loss, damage; zero and positive, which means a gain, benefit, profit. The level of risk depends on many factors, including the creation and functioning of organizational and legal forms of business entities, the size of the company (firm, corporation), the subject of their activity, etc. [28].

Therefore, the classification of risks is «an important task for understanding the essence of the specified category, its depth, and the selection of appropriate analysis and assessment tools» [24]. In addition,

 DOI 10.34132/pard2025.28.11

it is worth agreeing with the point of view of certain researchers who believe that «the classification of risks should be carried out in accordance with the solution of a specific task in a particular situation, taking into account the specifics, time and place» [30]. Risk assessment is one of the most important stages, since to manage risk; it must first be analyzed and assessed using one or another method (fig. 1) [9; 36].

There are many definitions of this concept in the scientific literature, but in general, risk assessment is understood as «a systematic process of identifying risk factors and types and their quantitative assessment», that is, «the risk analysis methodology combines complementary quantitative and qualitative approaches» [32].

To determine the sources of risk and its types, it is necessary to have reliable information support. All information on the characteristics of individual risks can be obtained from various sources: one-time and permanent, official and unofficial, reliable and dubious, etc. At the same time, the information must be reliable, qualitatively complete and timely. In addition, the sources of information intended for risk analysis can include:

- accounting statements;
- organizational structure and staffing;
- technological flow maps (technical and production risks);
- agreements and contracts (business and legal risks);
- production cost;
- financial and production plans of the enterprise [13].

Today, it is customary to distinguish two stages of risk assessment: qualitative and quantitative. Qualitative risk assessment is «the identification of risks, their analysis, conditions and sources, causes of occurrence in order to determine the impact on the activities of the enterprise, as well as factors affecting the level of risks when carrying out a certain type of activity» [22].

The task of qualitative risk analysis is to identify sources and causes of risk, stages and works, during the performance of which the risk arises, in particular:

- identification of potential risk zones;
- identification of risks associated with the activities of the enterprise;

– forecasting of practical benefits and possible negative consequences of the manifestation of identified risks [10].

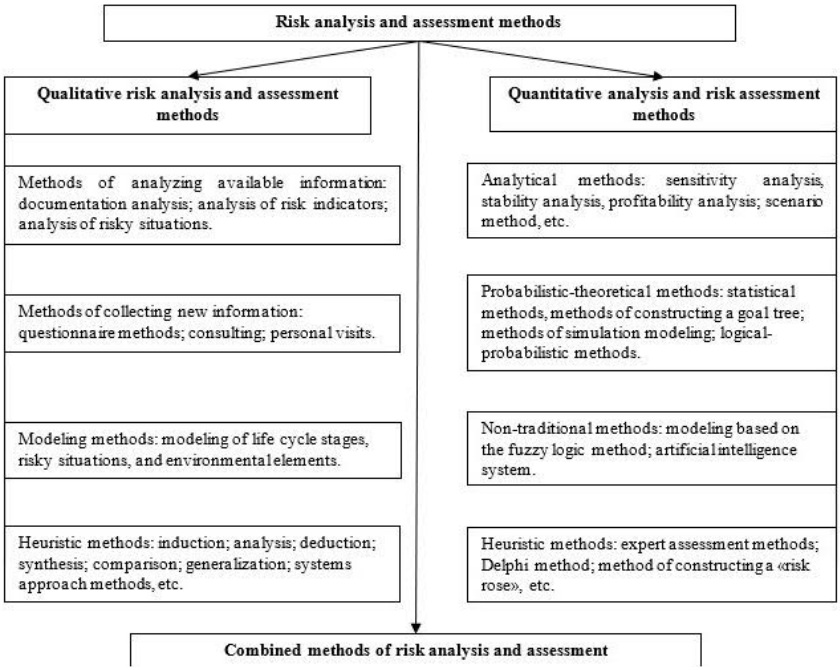

Fig. 1. Classification of risk analysis and assessment methods.
Source: formed by the author based on [9; 36]

The main purpose of this assessment stage is the need to identify the main types of risks that have a significant impact on financial and economic activities. The advantage of this approach is that at the beginning of the analysis, the manager is able to clearly assess the degree of riskiness based on the quantitative composition of risks and at this stage to refuse to implement a certain decision. The final results of qualitative risk analysis, in turn, serve as input information for quantitative analysis, i.e. only those risks that are present during the implementation of a specific operation of the decision-making algorithm are assessed. The most common methods of qualitative analysis are:

 DOI 10.34132/pard2025.28.11

1) methods based on the analysis of available information;
2) methods of collecting new information;
3) methods of modeling the organization's activities;
4) heuristic methods of qualitative analysis [22].

They make it possible to identify types of risks, assess the degree of their danger and factors that affect the level of risks when carrying out a certain type of activity [10].

At the stage of quantitative risk analysis, numerical values of individual risks and the risk of the object as a whole are calculated. Possible damage is also identified and a cost estimate is given for the manifestation of the risk, and finally, the final stage of quantitative assessment is the development of a system of anti-risk measures and the calculation of their cost equivalent [4]. Quantitative analysis can be formalized, for which the tools of probability theory, mathematical statistics, operations research theory, etc. are used [21]. The most common methods of quantitative risk analysis can also include: «statistical, analytical, expert assessment method, analogue method, etc.» [11]. The essence of the statistical method of risk assessment is to determine the probability of loss based on statistical data of the previous period and establish the risk area (region), risk coefficient, etc. Under such conditions, we can use such statistical methods as: «assessment of the probability of execution, analysis of the probable distribution of the flow of payments, decision trees, simulation modeling of risks» [18].

The method of assessing the probability of execution allows «to give a simplified statistical assessment of the probability of execution of any decision by calculating the share of executed and unexecuted decisions in the total amount of decisions made» [8; 12; 19].

Decision trees are usually used to analyze the risks of events that have a reviewable or «reasonable» number of development options. They are especially useful in situations where decisions made at a given time strongly depend on decisions made earlier, and in turn determine scenarios for further development of events. It is worth noting that the "decision tree" can also be used both under risk conditions and under conditions of uncertainty or complete certainty. Under such conditions, the analyst calculates the value of the selected efficiency criterion along

each «branch of the tree», and during risk analysis, also the probability of each value [32].

Analytical methods allow determining the probability of losses based on mathematical models and are used mainly for risk analysis of investment projects: payback period, internal rate of return, profitability index, net present value, etc. By comparing the values of these indicators of alternative projects, the degree of their risk is determined [20]. In addition, with the help of analytical calculations, using data from accounting and management accounting, it is possible to establish the probability of the risk of property loss, insolvency risk, liquidity, etc. It is worth noting that it is possible to use such methods at the same time as: sensitivity analysis, method of adjusting the discount rate taking into account risk, method of equivalents, scenario method, etc.

The scenario method allows you to combine the study of the sensitivity of the resulting indicator with the analysis of probabilistic estimates of its deviations. With the help of this method, you can get a fairly clear picture for different event variants. It is a development of the sensitivity analysis technique, since it includes a simultaneous change in several factors [32]. The method of expert assessments is a complex of logical and mathematical-statistical methods and procedures for processing the results of a survey of a group of experts, with the survey results being the only source of information [32]. The method of analogs uses a database of similar objects to identify common dependencies and transfer them to the object under study [22].

Conclusions. Thus, we can say that risk is a rather complex phenomenon, so a large number of classification criteria can be distinguished. For different tasks and areas of activity, their own essential features of division into the corresponding types, groups, and classes of risks are used. At the same time, it is important that the classification does not become an end in itself, but is useful from a practical point of view, providing opportunities to achieve the ultimate goal – to effectively manage risks based on a correctly selected and used risk assessment method. The presence of a sufficiently detailed classification, of course, allows us to identify more features of risks, but in some cases they are not so important for practical work. Today, there is no effective

 DOI 10.34132/pard2025.28.11

and universal risk classifier, which leads to independent categorization of risks in accordance with the main areas of activity for identifying, analyzing, and minimizing risks. It is also worth considering that in each specific case, the basis of risk classification contains a clearly defined applied purpose: to form transparent and analytically analyzed material for an effective description of risks with the subsequent construction of a risk management system.

ОСОБЛИВОСТІ КЛАСИФІКАЦІЇ РИЗИКІВ ТА МЕТОДИ ЇХ ОЦІНКИ

У статті досліджуються особливості класифікації ризиків як важливого завдання для розуміння сутності даної категорії, її глибини, багатоаспектності та вибору відповідних інструментів впливу. Дослідження теоретичних питань, пов'язаних з управлінням ризиками, є актуальним науковим та практичним завданням. При цьому, поряд з вивченням сутності, основних характеристик та функцій ризиків, велике значення мають класифікація ризиків та аналіз причин їх виникнення.

Наголошено, що саме розподіл ризиків за видами з різним ступенем агрегування, важливістю, ознаками дозволяє краще визначати подальшу методику аналізу і оцінки, приймати рішення в межах стилю політики управління ризиками. Наявність значної кількості ознак класифікації та поділу ризиків, дискусійність віднесення тих чи інших ризиків до різних підвидів ще раз підкреслюють важливість та необхідність поглибленого дослідження даної категорії.

Встановлено, що класифікація ризиків може здійснюватися за різними критеріями, такими як характер наслідків, сфера виникнення, причина виникнення, ступінь контрольованості, рівень виникнення та інші. Ризики можна розділити на чисті (можуть завдати лише збитки), спекулятивні (можуть завдати як збитків, так і прибуток), фінансові, операційні, стратегічні та інші. Класифікація ризиків є важливим етапом управління ризиками, що дозволяє більш ефективно їх оцінювати та розробляти стратегії для їх мінімізації чи запобігання.

Доведено, що незважаючи на активне дослідження все ще відсутній дієвий та універсальний класифікатор ризиків, що призводить до самостійної категоризації ризиків відповідно до основних напрямків діяльності щодо виявлення, аналізу й мінімізації ризиків. Варто також враховувати, що в кожному конкретному випадку в основі класифікації ризиків міститься чітко визначене прикладне призначення: сформувати прозорий і аналітично аналізований матеріал для ефективного опису ризиків з наступною побудовою системи управління ними.

Ключові слова: *ризик, класифікація ризиків, оцінка ризику, методи оцінки, методи аналізу, фактори ризиків.*

Author Contributions: Conceptualization, B.W.A. and L.W.F.; Writing – original draft, B.W.A. and L.W.F.; Writing – review & editing, B.W.A. and L.M.F. Author has read and agreed to the published version of the manuscript.
Funding: This research received no external funding.
Institutional Review Board Statement: Not applicable as study did not include human subjects.
Informed Consent Statement: Not applicable.
Data Availability Statement: Data is contained within the article.
Conflicts of Interest: The author declares no conflict of interest.

References

1. Apopii, V., Babenko, S., & Honcharuk, Ya. (2008). *Komertsiina diialnist [Commercial activity]*. Kyiv, Znannia [in Ukrainian].

2. Bychikova, T., & Lukianova, V. (2010). Komertsiinyi ryzyk diialnosti pidpryiemstva rozdribnoi torhivli [Commercial risk of retail business activity]. *Visnyk Khmelnytskoho natsionalnoho universytetu. Ekonomichni nauky – Bulletin of Khmelnytsky National University. Economic Sciences*, 6, (Vol. 4), (pp. 57-61) [in Ukrainian].

3. Bobyl, V., & Pyvovarova, H. (2020). Klasyfikatsiia ekonomichnykh ryzykiv zaliznychnoho transportu Ukrainy [Classification of economic risks of railway transport of Ukraine]. *Efektyvna ekonomika – Effective economy,* 12. Retrieved from: https://surli.cc/jarsru [in Ukrainian].

4. Vitlinskyi, V., & Nakonechnyi, S. (1996). *Ryzyk u menedzhmenti [Risk in management]*. Kyiv, TOV «Borysfen-M» [in Ukrainian].

5. Horiachyi, Yu., & Andriichenko, Zh. (2018). Sutnist poniattia «finansovyi ryzyk» pidpryiemstva [The essence of the concept of «financial risk» of an enterprise]. Proceedings from SEAIELEULU ’18: *I mizhnarodna mizhhaluzeva konferentsiia Pidtrymka pidpryiemstva ta innovatsiinoi ekonomiky v pravi YeS, Latvii ta Ukrainy – I International interdisciplinary conference Support of an enterprise and innovative economy in the law of the EU, Latvia and Ukraine*. (pp. 82-87). Ryha: Baltijas Starptautiskā akadēmija [in Ukrainian].

6. Hrechko, A., & Herbeda, M. (2012). Vplyv finansovykh ryzykiv na rezultaty diialnosti pidpryiemstva [The impact of financial risks on the results of the enterprise’s activities]. *Efektyvna ekonomika – Effective economy,* 3. Retrieved from: https://surl.lu/zvhapp [in Ukrainian].

7. Hryhorian, R.Kh. (2023). Osoblyvosti proiavu ryzykiv u diialnosti silskohospodarskykh pidpryiemstv v umovakh nevyznachenosti [Peculiarities of the manifestation of risks in the activities of agricultural enterprises under conditions of uncertainty]. *Ekonomika ta upravlinnia APK – Economics and management of the agricultural complex,* 1. Retrieved from: https://surl.gd/mtjwww [in Ukrainian].

8. Hromadska, N., & Andriiash, V. (2020). Efektyvnist pryiniattia derzhavno-upravlinskykh rishen: osoblyvosti vykorystannia politychnoho analizu [The effectiveness of state management decision-making: features of the use of political analysis]. *Publichne upravlinnia ta rehionalnyi rozvytok – Public administration and regional development,* 8. Retrieved from: https://dspace.chmnu.edu.ua/jspui/handle/123456789/1563 [in Ukrainian].

9. Danchenko, O.B., & Zanora, V.O. (2019). *Proektnyi menedzhment: upravlinnia ryzykamy ta zminamy v protsesakh pryiniattia upravlinskykh rishen [Project management: risk and change management in management decision-making processes]*. Cherkasy [in Ukrainian].

10. Dotsenko, I.O. (2012). Yakisni metody otsinky ryzykiv v systemi upravlinniam pidpryiemstvom [Qualitative methods of risk assessment in the enterprise management system]. Proceedings from TFIPMFIPCMT ’12: *Mizhnarodna naukovo-praktychna konferentsiia «Tendentsii upravlinnia finansovymy ta innovatsiinymy protsesamy v umovakh rynkovykh peretvoren» – The International Scientific and Practical Conference «Trends of Financial and Innovative Processes in the Management of Financial and Innovative Processes in Conditions of Market Transformation»*. (pp. 283-285). Vinnytsia [in Ukrainian].

11. Zhyhir, A.A. (2015). Metody kilkisnoi otsinky ryzyku ekonomichnoho rozvytku pidpryiemstva [Methods of quantitative assessment of the risk of economic development of an enterprise]. *Efektyvna ekonomika – Effective Economy*, 10. Retrieved from: https://surli.cc/fqzmvy [in Ukrainian].

12. Ivanova, N., & Rykun, S. (2021). Otsinka ymovirnosti bankrutstva v systemi antykryzovoho menedzhmentu pidpryiemstva [Assessment of the probability of bankruptcy in the system of anti-crisis management of an enterprise]. *Ekonomika ta suspilstvo – Economy and Society,* 34. Retrieved from: https://surli.cc/rvnevn [in Ukrainian].

13. Idobaieva, A.L. (2020). Informatsiine zabezpechennia protsesu upravlinnia ryzykamy promyslovykh pidpryiemstv [Information support for the risk management process of industrial enterprises]. *Efektyvna ekonomika – Effective Economy*, 10. Retrieved from: https://surl.li/mbnjqb [in Ukrainian].

14. Karminska-Bielobrova, M.V., & Ihnatova, M.V. (2014). *Upravlinnia ryzykamy u pidpryiemnytstvi [Risk management in entrepreneurship]*. Kharkiv: «Slovo» [in Ukrainian].

15. Kyrychenko, N.V., & Alieshchenko, L.O. (2021). Teoretychni osnovy ta klasyfikatsiia ryzykiv z vrakhuvanniam osoblyvostei funktsionuvannia pidpryiemstv ahrarnoho sektoru [Theoretical foundations and classification of risks taking into account the peculiarities of the functioning of enterprises in the agricultural sector]. *Ekonomika ta suspilstvo – Economy and Society,* 21. Retrieved from: https://doi.org/10.32782/2524-0072/2021-25-55 [in Ukrainian].

16. Klochkova, N.V. (2025). *Komertsiinyi ryzyk yak vazhlyva skladova pidpryiemnytskoho ryzyku [Commercial risk as an important component of entrepreneurial risk]*. Retrieved from: http://intkonf.org/klochkova-nv-komertsiyniy-rizik-yak-vazhliva-skladova-pidpriemnitskogo-riziku [in Ukrainian].

17. Kolesnyk, A.M., & Litynska, V.A. (2016). Formuvannia kompleksu zakhodiv skorochennia vtrat robochoho chasu v orhanizatsii [Formation of a set of measures to reduce working time losses in the organization]. *Ekonomika ta suspilstvo – Economy and Society,* 6. Retrieved from: https://economyandsociety.in.ua/journals/6_ukr/28.pdf [in Ukrainian].

18. Koretska, O., Khotieieva, N., & Chyzh, L. (2023). Mizhnarodni standarty ta statystychni metody shchodo otsinky ryzykiv u diialnosti mizhnarodnykh orhanizatsii [International standards and statistical methods for assessing risks in the activities of international organizations]. *Ekonomika ta suspilstvo – Economy and Society,* 52. Retrieved from: https://surl.li/zilnwa [in Ukrainian].

19. Malikina, O., Hromadska, N., & Andriiash, V. (2021). Otsiniuvannia derzhavno-upravlinskykh rishen: modeli ta kryterii [Evaluation of public management decisions: models and criteria]. *Derzhavne upravlinnia: udoskonalennia ta rozvytok – State management: improvement and development*, 9. Retrieved from: http://www.dy.nayka.com.ua/?op=1&z=2201 [in Ukrainian].

20. Mykytiuk, P.P. (2006). *Innovatsiinyi menedzhment [Innovative management]*. Ternopil: Ekonomichna dumka [in Ukrainian].

21. Ohirko, O.I., & Halaiko, N.V. (2017). *Teoriia ymovirnostei ta matematychna statystyka [Probability theory and mathematical statistics]*. Lviv: LvDUVS [in Ukrainian].

22. Petrova, N.F. (2015). Metodychne zabezpechennia otsinky ryzykiv pidpryiemstva [Methodological support for enterprise risk assessment]. *Sotsialna ekonomika – Social economy*, 2. Retrieved from: http://nbuv.gov.ua/UJRN/se_2015_2_19 [in Ukrainian].

23. Rachynska, A.V. (2016). Sutnist ta klasyfikatsiia ryzykiv na zaliznychnomu transporti [The essence and classification of risks in railway transport]. *Elektronne naukove fakhove vydannia «Efektyvna ekonomika» – Electronic scientific professional publication «Effective economy»*, 11. Kyiv: Dnipropetrovskyi derzhavnyi ahrarno-ekonomichnyi universytet. Retrieved from: http://www.economy.nayka.com.ua/?op=1&z=5267 [in Ukrainian].

24. Semenova, S.M. (2020). Klasyfikatsiia ryzykiv: systematyzovanyi pidkhid z metoiu upravlinnia [Classification of risks: a systematic approach for the purpose of management]. *Visnyk Khmelnytskoho natsionalnoho universytetu – Bulletin of the Khmelnytsky National University*, 4, (Vol. 2), (pp. 42-51) [in Ukrainian].

25. Semchuk, Zh.V., Protseviat, O.S., & Skrynkovskyi, R.M. (2013). Osoblyvosti strakhuvannia zovnishnoekonomichnoi diialnosti pidpryiemstva [Peculiarities of insurance of foreign economic activity of the enterprise]. *Efektyvna ekonomika – Effective economy*, 10. Retrieved from: http://www.economy.nayka.com.ua/?op=1&z=2382 [in Ukrainian].

26. Sirobaba, S.V. (2025). Upravlinnia katehoriieiu komertsiinykh ryzykiv v konteksti pidpryiemnytskoi diialnosti [Management of the category of commercial risks in the context of entrepreneurial activity]. *dspace.nuft.edu.ua*. Retrieved from: https://surl.lu/lunwfq [in Ukrainian].

27. Steshenko, O.D. (2019). *Ryzykolohiia [Riskology]*. Kharkiv: UkrDUZT [in Ukrainian].

28. Sutnist i osnovni vydy ryzykiv [The essence and main types of risks]. (n.d.). (2025). e-*pidruchniki.com*. Retrieved from: https://surl.li/wqhgbc [in Ukrainian].

29. Taran, O.V. (2004). *Suchasni pytannia problematyky ryzykiv finansovoi sfery diialnosti pidpryiemstv: teoretychni uzahalnennia ta prykladnyi analiz [Modern issues of the problems of risks in the financial sphere of enterprise activity: theoretical generalizations and applied analysis]*. Kharkiv: Konstanta [in Ukrainian].

30. Tarasova, K.I. (2012). Klasyfikatsiia ryzykiv v ekonomichnii teorii [Classification of risks in economic theory]. *Naukovyi visnyk. Odeskyi derzhavnyi ekonomichnyi universytet. Vseukrainska asotsiatsiia molodykh naukovtsiv. Nauky: ekonomika, politolohiia, istoriia – Scientific Bulletin. Odessa State Economic University. All-Ukrainian Association of Young Scientists. Sciences: economics, politics, history*, 1(153). Retrieved from: https://surli.cc/hfayjh [in Ukrainian].

31. Tomashuk, I.V, & Tomashuk, I.O. (2022) Upravlinnia finansovymy ryzykamy pidpryiemstva yak skladova zabezpechennia staloho funktsionuvannia subiekta ekonomiky [Managing the financial risks of an enterprise as a component of ensuring the sustainable functioning of an economic entity]. *Ekonomika ta suspilstvo – Economy and Society*, 39. Retrieved from: https://economyandsociety.in.ua/index.php/journal/article/view/1400/1350 [in Ukrainian].

32. Shurda, K.E. (2020). Metody yakisnoho ta kilkisnoho analizu ryzykiv [Methods of qualitative and quantitative risk analysis]. *Zbalansovane pryrodokorystuvannia – Balanced Use of Resources*, 4, (pp. 64-72) [in Ukrainian].

33. Shcherbak, V., & Puhachov, O. (2013). Kadrovi ryzyky v systemi menedzhmentu personalu [Personnel risks in the personnel management system]. *Rynok pratsi ta zainiatist naselennia – Labor Market and Employment of the Population*, 2, (pp. 12-16) [in Ukrainian].

34. Hoodat, H., & Rashidi, H. (2009). Classification and analysis of risks in software engineering. *World Academy of Science, Engineering and Technology*, 56(32). Retrieved from: https://surl.lu/udrqoj [in English].

35. Kahneman, D., & Tversk, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 47, (pp. 263-291) [in English].

36. On Risk Classification – American Academy of Actuaries. (n.d.). (2011). *www.actuary.org.* Retrieved from: https://surl.lu/ezzdwe [in English].

37. Podolianchuk, O., & Tomashuk, I. (2020). Formation of financial results of activities of agricultural enterprises of Vinnitsa region. *The scientific heritage*, 47, (Vol. 7), (pp. 63-73) [in English].

38. Shurda, K.E. (2020). Basic risk assessment methods. *Annali d'Italia*, 11, (Vol. 2), (pp. 50-53) [in English].

39. Yemelyanov, V., & Andriyash, V. (2024). Derzhavni finansovi systemy zarubizhnykh krain: instytutsiini osoblyvosti [Public financial systems of foreing counries: institutional feature]. *Derzhavne upravlinnia ta rehionalnyi rozvytok – Public Administration and Regional Development*, 24, (pp. 342-367) [in Ukrainian].

Відомості про автора / Information about the Author

Ван Хун, аспірант кафедри публічного управління та адміністрування Навчально-наукового інституту публічного управління та адміністрування, Чорноморського національного університету імені Петра Могили, Миколаїв – Пекін, Україна – Китай. E-mail: 271568446@qq.com,orcid: https://orcid.org/0009-0001-1771-9703.

Wang Hong, PhD-student of the Department of Public Management and Administration, Educational and Scientific Institute of Public Management and Administration, Black Sea National University named after Petro Mohyla, Mykolaiv – Beijing, Ukraine – China. E-mail: 271568446@qq.com, orcid: https://orcid.org/0009-0001-1771-9703.

Hong, W. (2025). Features of risks classification and methods of their assessment. Public Administration and Regional Development, 28, 543-563. https://doi.org/10.34132/pard2025.28.11