

*The research is dedicated to the current issue of improving the accounting and analytical support for enterprise risk management in conditions of a military state. It analyzes the processes of risk identification, assessment, measurement, and representation in financial reporting, taking into account International Accounting Standards and qualitative assessments.*

*A conceptual approach is proposed to enhance the enterprise risk management process through the detailed implementation of three blocks of analytical procedures: research and identification, risk assessment, analysis, and neutralization, which involves its integration into the accounting and analytical support system for enterprise risk management. Based on the analysis of reporting of Ukrainian enterprises, the most common risks arising in modern conditions are identified. A classification of risks by their origin is proposed, allowing for the systematization of various types of reserves, provisions, and funds that are formed to reflect risk events in accordance with accounting standards. The analytical and applied support for risk representation in accounting is improved through the development of an analytical matrix of risk impact on events in reporting. It enables the consolidation of information on the likelihood and significance of risks in a unified format and establishes the appropriateness of reflecting reserves and provisions in accounting. The research results have practical significance and can be utilized by enterprises to enhance their risk management systems and effectively represent risk events in financial reporting, which will contribute to risk reduction and minimizing losses for enterprises in conditions of a military state*

**Keywords:** *enterprise risk management process, accounting and analytical support for enterprise risk management, classification of enterprise risks, analytical and applied support for risk representation in accounting, analytical matrix for risk impact assessment*

UDC 657.01  
DOI: 10.15587/1729-4061.2023.282644

# ACCOUNTING AND ANALYTICAL PROVISION OF ENTERPRISE RISK MANAGEMENT IN THE CONDITIONS OF THE STATE OF WAR: IDENTIFICATION, ASSESSMENT, MEASUREMENT AND DISPLAY OF RISKS

**Maria Karpushenko**

*Corresponding author*

Doctor of Economic Sciences, Associate Professor\*

E-mail: Mariamaria1864@gmail.com

**Tetiana Momot**

Doctor of Economic Sciences, Professor, Head of

Department\*

**Yuliia Mizik**

PhD, Associate Professor\*

**Galyna Shapoval**

PhD, Associate Professor\*

**Oleg Karpushenko**

Postgraduate Student\*

\*Department of Finance, Accounting and Business Security  
O. M. Beketov National University of Urban Economy in Kharkiv  
Marshala Bazhanova str., 17, Kharkiv, Ukraine, 61002

Received date 05.04.2023

Accepted date 16.06.2023

Published date 30.06.2023

**How to Cite:** Karpushenko, M., Momot, T., Mizik, Y., Shapoval, G., Karpushenko, O. (2023). Accounting and analytical provision of enterprise risk management in the conditions of the state of war: identification, assessment, measurement and display of risks. Eastern-European Journal of Enterprise Technologies, 3 (13 (123)), 42–51. doi: <https://doi.org/10.15587/1729-4061.2023.282644>

## 1. Introduction

The formulation of the issue of identification and measurement of entrepreneurial risks is extremely important because under any circumstances, a situation may arise that will have a negative impact on the enterprise and lead to unexpected financial consequences.

A state of war, in particular, can result in property destruction and damage, loss of market share, production stoppages, and supply chain disruptions, as well as staff attrition. In such conditions, the availability of financial resources may decrease, interest rates may increase, and financial losses may occur due to market instability or inflation. Additionally, a state of war can amplify information risks related to cybersecurity, misinformation, internet fraud, breaches of confidentiality, and communication breakdown. These risks

become particularly relevant in the context of dependence on the online environment, which has become even more noticeable during the coronavirus pandemic over the past three years. Enterprises have begun to face unique challenges, such as changes in consumer behavior, cybersecurity threats, increased strain on online infrastructure, and global market instability.

Considering the unique risks that arise in conditions of a state of war, it is important to develop and improve the accounting and analytical support for enterprise risk management. This will help enterprises effectively identify, assess, control, and monitor risks associated with their activities.

Taking into account the fundamental principles of accounting – the principles of continuity and full disclosure of information – significant consequences of risk events should be reflected in the financial reporting of enterprises.

To achieve this, it is necessary to follow a certain risk management system that allows for not only identifying risks but also evaluating them, reflecting them in accounting, and neutralizing them.

The formation of well-founded reserves, funds, and provisions can be an important tool for risk management and reflecting their consequences in the financial reporting of enterprises. Such an approach will ensure stability, reduce losses, and minimize the negative impact on enterprises in conditions of a state of war.

Making decisions regarding the further reflection of the consequences of risk events in accounting can be achieved by combining two components - the probability of the occurrence of a risk event and the materiality of the calculated indicators that characterize the impact of risks. This issue can be resolved by using an analytical matrix of risk impact, which allows users to make informed decisions on whether to reflect the consequences of risk events in accounting.

Therefore, the relevance of improving the accounting and analytical support for risk management lies in the need to adapt to changing conditions and increase the efficiency of managing risks that pose a potential threat.

---

## 2. Literature review and problem statement

---

The concept of "risk" is regarded by most researchers as the likelihood of unfavorable circumstances occurring in an enterprise, which can lead to the loss of assets, money, expected profit, income, or the emergence of additional expenses due to adverse circumstances or events.

In the study [1], it is argued that enterprise risk management involves substantiating the main objectives and methods of risk neutralization, including passive and active strategies. With a passive strategy, the enterprise avoids risk by canceling or reducing risky operations. An active strategy involves engaging in risky operations, but commercial insurance, self-insurance, risk diversification, and hedging prevent the negative impact of risks. Researchers propose certain ways of reflecting risks in financial reporting but do not investigate or provide criteria for reflecting risk events in accounting.

In the study [2], risk causes and risk consequences are distinguished, and a comprehensive scale for assessing the potential consequences of business risks is proposed. The analysis of risk's impact on the valuation of accounting objects is conducted. Significance is given not only to the magnitude of costs but also to the probability of a risk event occurring. It is considered appropriate to reflect only those events with a probability exceeding 50 %, while unforeseen obligations with a low probability of occurrence (10–50 %) are to be reflected off the balance sheet for further monitoring. Risks characterized by minimal probability (0–10 %) are considered genuine uncertainties that are not reflected in the balance sheet. However, the study does not investigate the correlation between significance criteria and the probability of reflecting risks.

Another viewpoint [3] suggests that risk can be discussed when multiple possible outcomes exist, both negative and positive. However, researchers do not specify the procedure for determining numerical risk criteria.

Many studies have focused on the reflection of risks in accounting. For example, in the study [4], attention is given to approaches to understanding risks, and a graphical scale and a set of risk identification indicators in the accounting

system are developed. However, the calculation procedure for risks is not investigated.

The study [5] examines the essence, occurrence conditions, and consequences of entrepreneurial risks, considering specific indicators as a basis for risk assessment. Optimistic and pessimistic scenarios are considered. The analysis of risks assumes the consideration of uncertainties associated with parameter estimates, which are somewhat subjective. It is stated that it is reasonable to reflect only events with a probability exceeding 50 %, while unforeseen obligations with low probability (0–10 %) should be considered true uncertainties not reflected in the balance sheet. However, the study does not address the criteria for recognizing risks.

Some researchers [6, 7] argue that risk consideration has the potential to change the line of responsibility and reporting in organizations, representing a special way of managing personnel and enterprise activities [6, 7]. It is claimed that risk management has moved beyond issues solely related to finance or accounting (financial disclosure, etc.) to management control. However, the study does not provide suggestions regarding specific aspects of risk measurement and reflection in accounting.

In the study [8], risks in creative accounting are determined based on the connection between earnings before tax (EBT) and cash flow (CF) using the CFEBT risk triangle method. However, numerical criteria for reflecting risks in accounting remain unresolved. Research [9, 10] focuses on predicting risks during fair value determination and presenting indicators in financial reporting. They identify aspects of accounting practice and regulatory acts based on human behavior under risk or uncertainty, including the concept of danger or risk dispersion. However, certain important issues related to risk measurement and forecasting remain vague and insufficiently specified.

The study [11] focuses on developing regression models for reflecting risk events in financial reporting, which allow for risk prediction based on predefined criteria. While such developments enable the prediction of certain events and their reflection in financial reporting, attention is not given to the development of methodological foundations for risk management.

In conclusion, the analysis of studies [1–11] on accounting and analytical support for enterprise risk management indicates the relevance and significant attention this topic receives in scientific and practical circles. The research demonstrates various aspects of accounting and analytical support for risk management and proposes different approaches and methodologies for effective risk management in enterprises. Specifically, the studies emphasize the need for risk identification, assessment, and measurement. They explore various methods and models for risk assessment, considering financial, economic, and other aspects. Furthermore, the studies highlight the importance of reflecting risks in financial reporting, investigating the formation of reserves, funds, and provisions to account for risks, as well as additional risk-related information in reporting. Researchers also draw attention to risk management systems that encompass risk management processes, policies, internal control, and risk monitoring. They examine the implementation of such systems in enterprises and evaluate their effectiveness. However, further research is needed to delve into the identification, assessment, measurement, and reflection of entrepreneurial risks in financial reporting, particularly in the context of implementing a state of war.

**3. The aim and objectives of the study**

The aim of the study is to improve the accounting and analytical support for enterprise risk management in conditions of the introduction of a state of war. This will enable adaptation to changing conditions, enhance the effectiveness of risk management as a potential threat, and reflect risk events in accounting.

To achieve this goal, the following objectives were set:

- to detail the process of risk management;
- to investigate the types of existing risks based on the reporting of Ukrainian enterprises;
- to improve the procedures for calculations and disclosure in accounting of provisions, funds, and reserves;
- to develop an analytical matrix of the impact of risks on the reflection of events in financial reporting.

**4. Materials and methods of research**

The object of the research is the process of improving the accounting and analytical support for enterprise risk management in conditions of a state of war. The main hypothesis of the research is that future risk events should be anticipated in advance, taking into account the principles of materiality and probability of their occurrence. This will contribute to reducing losses, ensuring stability, and enhancing the success of enterprises in times of war. The research is based on the works of experts in risk management, accounting, and analytics, as well as International Financial Reporting Standards.

To confirm this hypothesis, general scientific methods such as abstract-logical analysis, theoretical generalization, and systemic analysis were used. The research was conducted using a comprehensive approach to studying the problem. The classification of risks by their origin was carried out using the method of analogy with the use of existing risk classification systems commonly used in financial analysis. The materials for analysis were obtained from information sources published on official company websites and through data obtained from experts with experience in risk management in times of war. A significant source of information for the research on accounting and analytical support for risk management is the experience and reporting of the top 10 largest companies in Ukraine included in the Forbes top 100 ranking, which have faced conditions of a state of war.

**5. Results of the research on theoretical and methodological approaches to assessing enterprise risks in times of war**

**5. 1. Improving the process of enterprise risk management and its integration into the accounting and analytical support system in times of war**

Risk management is a complex process that depends on their types, the direction of enterprise activities, and involves

a procedure of specific actions and the application of methods to assess potential losses. Taking into account previous research [12, 13, 15] and the objectives set for the identification and consideration of risk consequences, it has been proposed to improve the process of enterprise risk management, taking into account the conditions of a state of war, through the implementation of analytical procedures at three levels (Fig. 1).

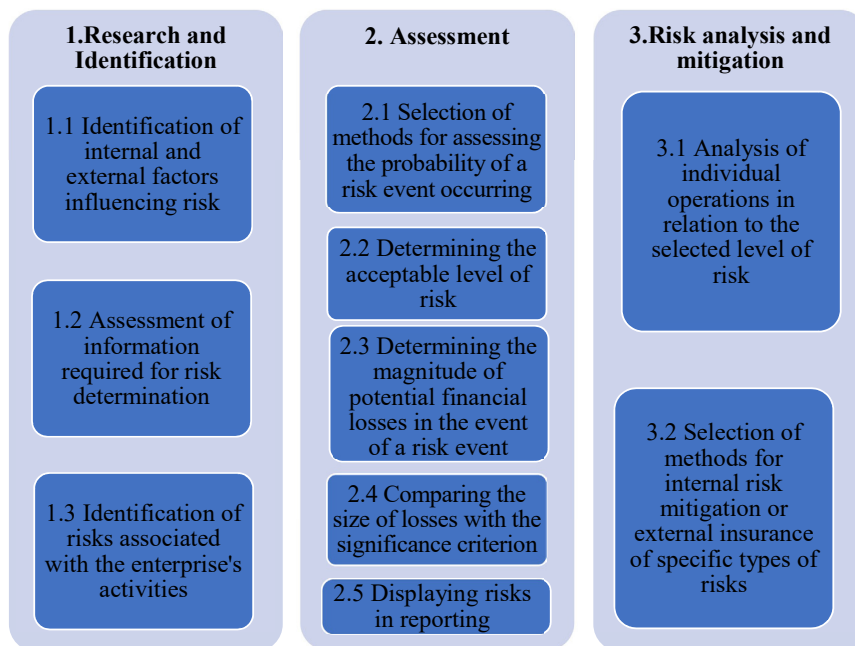


Fig. 1. Conceptual approach to improving the process of enterprise risk management in conditions of a state of war

The proposed conceptual approach to improving the enterprise risk management process in conditions of a state of war involves conducting analytical procedures in three blocks: research and identification; assessment, analysis, and mitigation of risks. The first block involves researching and identifying risks that may arise in a state of war. This helps identify potential threats and determine their consequences for the enterprise. The second block includes risk assessment, analyzing their impact, and determining their significance. This stage allows for evaluating the probability of risk events, determining the magnitude of potential financial losses in the event of a risk event, comparing the size of losses with the significance criterion, and justifying the need to reflect risks in the enterprise's reporting. Risk mitigation is the third block of analytical procedures and involves taking measures to reduce the impact of risk events or even eliminate them. These measures may include internal security measures, risk diversification, crisis planning, and external insurance for specific types of risks.

The proposed conceptual approach is particularly relevant in the context of a state of war as it helps identify potential risks, assess them, and mitigate their impact. Implementing this approach allows enterprises to minimize the impact of risk events, ensure resilience, and maintain effective operations even in a state of war.

To practically implement the proposed conceptual approach to risk management in enterprises, it is necessary to integrate it into the enterprise's accounting and analytical risk management system. The main goal of integration is to improve the effectiveness of risk management and ensure a

comprehensive approach to risk analysis, monitoring, and tracking.

Overall, accounting and analytical risk management enable enterprises to systematically identify, assess, measure, and control risks, as well as reflect them in financial reporting. The key elements of accounting and analytical risk management include:

1. Risk Identification: This process involves systematically identifying potential risks that may affect the enterprise. Risk identification can be done through analyzing the internal and external environment of the enterprise, involving stakeholders, and expert assessments.

2. Risk Assessment: After identifying risks, it is necessary to assess them. This process involves assessing the likelihood of risk events occurring and their potential consequences for the enterprise. Various methods can be used for risk assessment, such as statistical analysis, expert evaluations, and modeling.

3. Risk Measurement: Measuring risks helps establish quantitative indicators for assessing risks and their impact on the financial performance of the enterprise. This may include calculating indicators such as the probability of a risk event occurring, expected losses, risk capital, etc.

4. Reflection of Risks in Financial Reporting: To ensure a comprehensive representation of risks in financial reporting, their impact on the financial results, asset status, and liabilities of the enterprise should be taken into account. This may involve creating reserves, reflecting contingent liabilities, providing analytical explanations, and additional information in the reports.

5. Risk Control: After reflecting risks in financial reporting, mechanisms for control should be established to track and minimize risks. This may include implementing internal control, developing risk management policies and procedures, monitoring and evaluating the effectiveness of implemented measures.

In summary, accounting and analytical risk management help enterprises systematically identify, assess, measure, and control risks, as well as reflect them in financial reporting. This enables the management of the enterprise to make informed decisions regarding risk management and ensure stability and resilience even in extraordinary circumstances such as a state of war. Integrating the proposed conceptual approach to enhancing the enterprise risk management process in the conditions of a state of war into

the system of accounting and analytical risk management will allow enterprises to detail analytical procedures according to the proposed blocks and more effectively implement and manage risks in a state of war. This will contribute to reducing losses, ensuring stability, and achieving successful business operations.

### 5. 2. Researching the types of existing risks in a state of war

Entrepreneurial risk is associated with unexpected or anticipated events in the future that can result in certain costs, with varying degrees of likelihood. Risks can be caused by various factors, both internal to the enterprise related to production, financial and commercial activities, and external factors. External factors include inflation, political and economic situation, exchange rate fluctuations, demographic situation, etc.

In order to identify the risks inherent to Ukrainian companies during a state of war, Reports on the management of the top 10 largest companies in Ukraine, according to Forbes' top 100 rankings in 2021, were analyzed. The reports, available on the companies' websites and in accordance with the principle of full disclosure, should contain information about risks associated with a state of war. As a result, the following types of risks were identified (Table 1).

By combining the risks identified by companies and the risks investigated in scientific papers [1–11], the following classification of risks by their source was presented (Fig. 2).

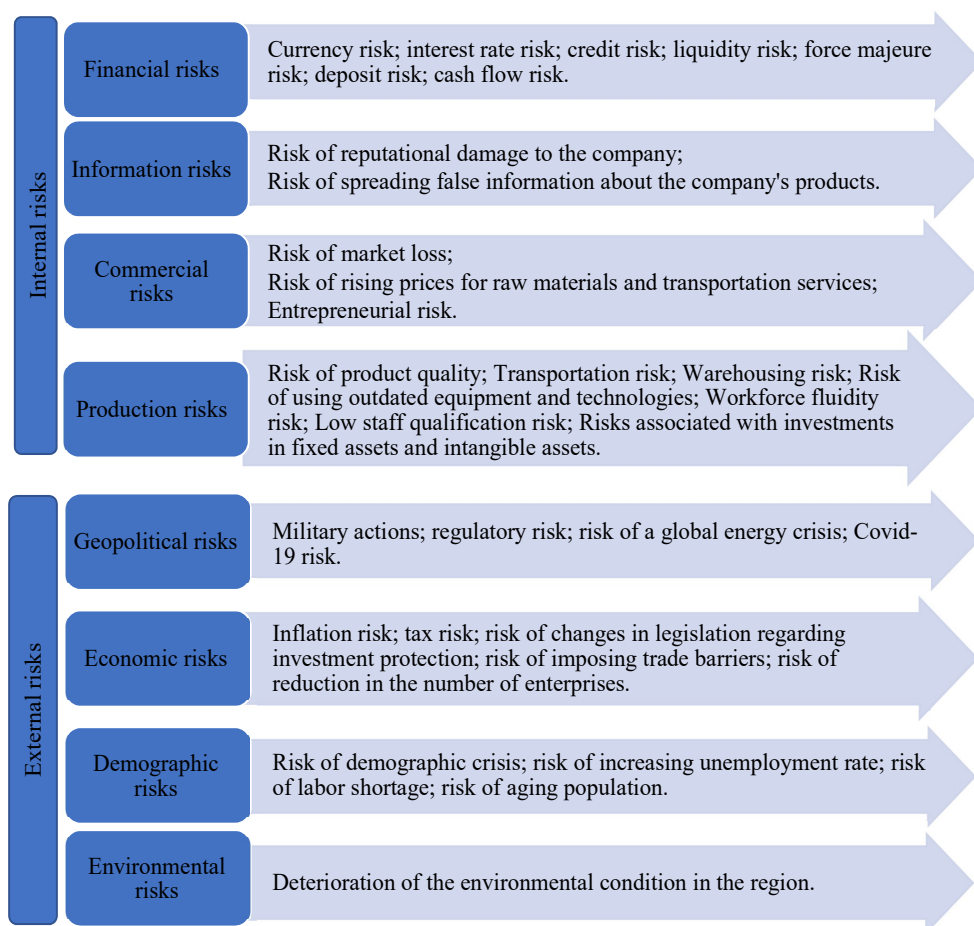


Fig. 2. Classification of enterprise risks by sphere of origin

Table 1

## Risks Identified in the Reports of Ukrainian Companies

Company name	See risks
NJSC “Naftogaz of Ukraine”	<p>1. Financial risks:</p> <ul style="list-style-type: none"> <li>– low payment capacity and discipline of key counterparts – natural gas buyers;</li> <li>– significant increase in energy resource prices;</li> </ul> <p>– dependence on the implementation of state financing programs, including international financial assistance.</p> <p>2. Geopolitical sphere:</p> <ul style="list-style-type: none"> <li>– global energy crisis and energy war instigated by Russia;</li> <li>– military aggression of the Russian Federation against Ukraine</li> </ul>
PJSC “Interpipe NPK”	<p>1. Financial risks:</p> <ul style="list-style-type: none"> <li>– price risks;</li> <li>– liquidity risk;</li> <li>– cash flow risk;</li> <li>– currency risk;</li> <li>– credit risk;</li> <li>– market risk;</li> <li>– interest rate risk</li> </ul>
Group «Metinvest»	<p>1. Financial risks:</p> <ul style="list-style-type: none"> <li>– price risks;</li> </ul> <p>– risks associated with production and logistics, which are assessed as potential additional costs;</p> <p>2. Production risks:</p> <ul style="list-style-type: none"> <li>– risks associated with investments in fixed assets and intangible assets</li> </ul>
LLC JV “Nibulon”	<p>1. Financial risks:</p> <ul style="list-style-type: none"> <li>– currency risk;</li> <li>– liquidity risk.</li> </ul> <p>2. Commercial risks:</p> <ul style="list-style-type: none"> <li>– market risk;</li> <li>– business risk.</li> </ul> <p>3. Production risks:</p> <ul style="list-style-type: none"> <li>– product quality risk;</li> <li>– transportation risk;</li> <li>– warehouse risk.</li> </ul> <p>4. Political risks:</p> <ul style="list-style-type: none"> <li>– regulatory risk;</li> <li>– risk of military aggression</li> </ul>
PJSC “Vodafone Ukraine”	<p>1. Financial risks:</p> <ul style="list-style-type: none"> <li>– currency risk;</li> <li>– liquidity risk;</li> <li>– credit risk.</li> </ul> <p>2. Commercial risks:</p> <ul style="list-style-type: none"> <li>– market risk.</li> </ul> <p>3. COVID-19 risk.</p> <p>4. Political risks:</p> <ul style="list-style-type: none"> <li>– military actions.</li> </ul>
LLC “Coca-Cola Ukraine Limited”	<p>1. Financial risks:</p> <ul style="list-style-type: none"> <li>– currency risk;</li> <li>– liquidity risk</li> </ul>
PJSC “Mondelēz Ukraine”	<p>1. Financial risks:</p> <ul style="list-style-type: none"> <li>– credit risk;</li> <li>– risk of credit losses;</li> <li>– liquidity risk;</li> <li>– interest rate risk;</li> <li>– currency risk.</li> </ul> <p>2. Commercial risks:</p> <ul style="list-style-type: none"> <li>– market risk.</li> </ul> <p>3. Political risks:</p> <ul style="list-style-type: none"> <li>– risk of military aggression.</li> </ul> <p>4. Coronavirus risk</p>
PJSC “Philip Morris Ukraine”	<p>1. Political risks.</p> <p>2. Macroeconomic risks</p>
PJSC “Dnipros-petsstal”	<p>1. Financial risks:</p> <ul style="list-style-type: none"> <li>– currency risk;</li> <li>– interest rate risk;</li> <li>– liquidity risk;</li> <li>– force majeure risk.</li> </ul> <p>2. Commercial risks:</p> <ul style="list-style-type: none"> <li>– risk of losing market outlets;</li> <li>– risk of increasing prices for raw materials and transportation services</li> </ul>
PJSC “Nikopol Ferroalloy Plant”	<p>1. Credit risk.</p> <p>2. Liquidity risk</p>

It should be emphasized that risks at each individual enterprise are determined by experts based on available data. However, as research on enterprise reporting (Table 1) shows, many of them identify similar risks.

**5.3. Improvement of the procedure for settlements and accounting for provisions and reserves**

At the present stage, the influence of accounting on management decision-making and the assessment of any events is increasing. The enterprise should strive to reflect not only information about risks but also their impact on the financial position of the enterprise and the size of potential losses in the financial statements. This information can be presented using one of the following approaches:

1) creation of specific reserves, provisions, funds – the application of this approach leads to the recognition of expenses that the enterprise will incur in the event that a risky event occurs. If necessary, these funds can be set aside in a deposit account and used in the future if such an event occurs;

2) disclosure in the footnotes to the financial statements – the enterprise records existing risk events that may have a significant impact on the enterprise and result in substantial changes in the financial statements.

Of particular note is the first approach, which is associated with accounting methods for risk insurance. It involves creating reserves and provisions, certain funds that will be used to cover potential losses. Indeed, the creation of reserves or provisions leads, on the one hand, to increased expenses during their creation period and, on the other hand, to the avoidance of such expenses when the events for which they were intended actually occur. In other words, expenses are reflected in advance, ensuring their even distribution. Additionally, users of financial statements receive information with more realistic figures.

The most challenging stage is determining the size of potential losses from risk events and selecting a specific valuation method. To ensure the reliability of comparisons, both internal and external experiences in conducting such operations are used. To predict risky situations and calculate certain amounts of provisions or reserves, the enterprise must anticipate future expenses. For such assessment, past periods can be used as indicators, as events typically have recurring characteristics.

When considering risks, it should be noted that they can be divided into three groups: risks subject to full control and influence, risks subject to partial control and influence, and risks beyond control and influence. For the first two groups, the enterprise can perform calculations and create certain types of reserves and provisions, as accounting rules and standards allow for pre-assessment of entrepreneurial risks. The third group of risks can be evaluated based on data from other enterprises, cities, or regions that have previously encountered the same risks. To establish such a system, accounting norms need to be combined with risk management fundamentals. The result of the occurrence of risk events is losses that can be estimated in monetary terms in accordance with accounting standards.

Special attention should be given to IAS 37 “Provisions, Contingent Liabilities, and Contingent Assets” [15]. According to the standard, provisions are recognized under certain circumstances, namely, if there is an existing obligation resulting from a past event, it is probable that the outflow of resources embodying economic benefits will be required to settle the obligation, and a reliable estimate of the amount of the obligation can be made. The amount recognized as a provision should represent the best estimate of the expenditures required to settle the present obligation at the end of the reporting period. The standard also acknowledges that in order to obtain the best estimate of provisions, risks and uncertainties that are inevitably associated with many events and circumstances should be taken into account.

The types of reserves, funds, and provisions for each enterprise are regulated by its accounting policy, which should clearly define their types and the procedure for their creation.

Based on the analysis of international and national accounting standards and previous research [14], the types of reserves, provisions, funds, their purpose, and the timing of their creation have been determined (Fig. 3).

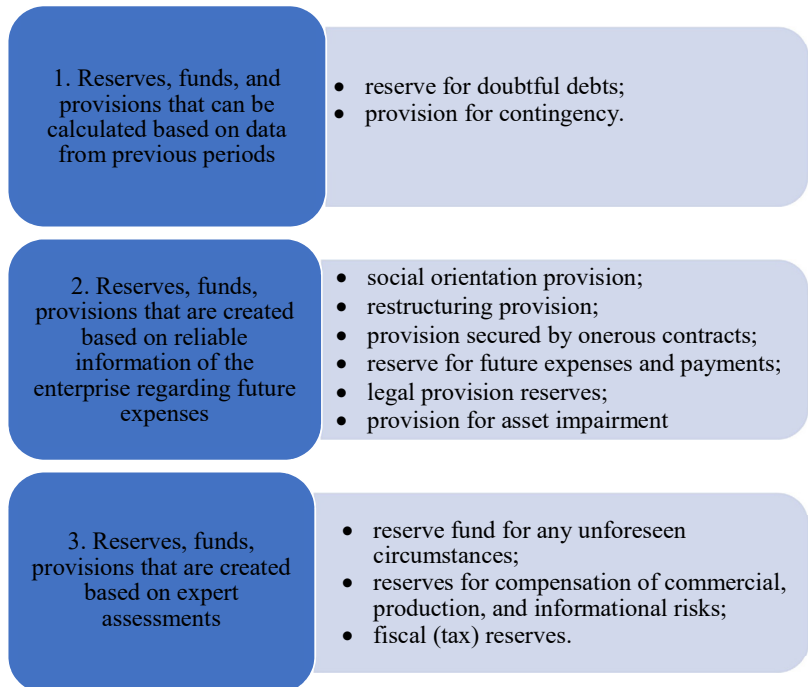


Fig. 3. Types of reserves, funds, and provisions for risk management

The first group should include reserves, funds, and provisions that can be calculated based on accounting data from previous periods using calculation-analytical methods. Let’s assume that the amount of expenses incurred by the enterprise in case of a risk event in past periods will be approximately equal to the amount of expenses in future periods. The more periods considered, the more accurate the calculation results.

For example, to create provisions for warranty service reflecting production-related risks associated with the replacement or repair of defective products or goods, it is necessary to gather information on the size of such expenses in previous periods. To do this, the following formula is proposed [1]:

$$S_{ri} = R_i \cdot x \left( \frac{\sum E_n / R_n}{n} \right); \tag{1}$$

$S_{ri}$  – provision for warranty service of the  $i$ -th period;

$R_i$  – revenues of the  $i$ -th period;

$E_n$  – expenses for conducting warranty replacements in previous periods;

$R_n$  – revenues from conducting warranty replacements in previous periods;

$n$  – number of previous periods.

Other provisions and reserves of this group are proposed to be created following the same principle, taking into account accounting data from previous periods.

The second group consists of reserves, funds, and provisions created based on reliable information about future expenses, which can be estimated approximately based on available calculations, estimates, invoices, and other documents. This includes provisions for legal proceedings conducted by the enterprise that may result in the payment of known penalties in advance.

The third group includes reserves, funds, and provisions created based on approximate assessments by expert specialists. These reserves cannot be estimated based on indicators from previous periods or existing documents. Determining such reserves (provisions, funds) is a problem that should be addressed by expert owners, chief accountants, financial directors, company executives, and other professionals, taking into account events in future periods. For example, risks associated with military actions cannot be assessed based on indicators from previous periods or documents on future events. When assessing them, the overall state of military activities in the region and expert evaluations should be considered.

The accounting policy of the enterprise specifies how to create reserves, provisions, and funds, in what manner, under what circumstances, and which ones. Such creation can be done periodically – a certain percentage in each period, or under certain circumstances that may lead to the occurrence of risky situations. However, all the mentioned reserves and provisions should not be created simultaneously. Considering the specific nature of its activities, the enterprise should determine which reserves, provisions, or funds are necessary for insuring against the occurrence of risky situations.

To obtain complete information about the consequences of future risks, an integrated risk indicator is proposed. This indicator combines the consequences of all possible risks inherent in a particular business activity.

#### 5. 4. Development of an analytical matrix of risk impact on event disclosure in reporting

The risk management process shown in Fig. 1 includes an important and challenging stage of risk assessment. During the assessment, a series of procedures need to be conducted to obtain the necessary information. It is important to emphasize that the disclosure of the consequences of future risk events is associated with the following questions:

1. What is the likelihood of a risk event occurring?

2. How significant are the costs that the company will incur in the event of a risk event?

If the likelihood of a risk event is high and the costs incurred by the company are significant, then the anticipated consequences of the predicted risk events should be disclosed. If the likelihood is low and the costs are insignificant, it is generally not worthwhile to disclose such expenses.

Based on previous research [16] and expert studies on the possibility of risky operations, the following scale is proposed to assess the likelihood of risks:

– up to 5 % – minimal risk;

– 5–20 % – unlikely to occur;

– 20–50 % – a significant probability of occurrence;

– more than 50 % – likely to occur.

These risks can be assessed by experts within the company or by independent experts. Information can also be obtained from various information sources. For example, to assess the risk of asset destruction due to military actions in Ukraine, it is necessary to determine whether the object is located in an area of combat operations. If so, the probability of asset destruction by the enterprise exceeds 50 %, as over 50 % of civil and industrial infrastructure objects have been destroyed in most cities.

In addition to assessing the likelihood of risk, it is important to evaluate how costs associated with risks influence decision-making by company owners and whether they should be reflected in the accounting records.

Analysis of international accounting standards [17] indicates that the disclosure or non-disclosure of expenses related to risks is related to materiality. The assessment of materiality in financial reporting is determined by IAS 1 “Presentation of Financial Statements” [18]. According to the standard, material omissions or errors occur when they individually or collectively can influence economic decisions made by users based on financial statements.

The threshold for material events is determined by each company based on the size of assets, income, or profit in its accounting policy. For example, according to the recommendations of the Ministry of Finance of Ukraine [19], the materiality threshold can be set at 5 % of the asset value. Generally, this threshold is recommended to be applied within the range of 1 % to 10 %. Therefore, it is necessary to compare the expected costs associated with risk events with the materiality threshold. If these costs do not exceed the threshold, it is not necessary to reflect them, but if their expected amount is greater, they should be reflected to ensure accurate reporting. Once the probable size of losses from risk events has been determined and it is confirmed to be material and capable of influencing decisions by company owners, it should be reflected in the accounting records.

The decision regarding the disclosure of information regarding risk events in accounting is facilitated by the combination of two components – probability and materiality. To achieve this, a matrix has been developed that combines this information and allows determining the position where this information falls (Fig. 4).

The analysis should be conducted for each specific type of reserves, funds, and provisions created to reflect the impact of risk events that are inherent to a particular enterprise. The analytical matrix indicates that only if the indicators of risk events fall into the black zone, they should be reflected in the financial reporting. If the indicators fall into the gray zone, it is desirable to reflect them, but the decision regarding this will be made by the enterprise. If the indicators fall into the light zone, there is no need to reflect such information in the reporting.

For example, a company located in a conflict zone has inventory worth 100 c.u., with total assets of 2000 c.u. The likelihood of the destruction of such inventory exceeds 50 %, making this operation significant as the inventory exceeds 5 %. In this situation, the company can create a reserve for the write-down of such inventory.

<b>Probability</b>			
– More than 50 % – likely that the risk will occur			
– 20–50 % – the probability of risk occurrence is relatively high			
– 5–20 % – the risk is unlikely to occur			
– Up to 5 % – the risk is minimal			
<b>Materiality</b>	≤1 % of asset value – the size of the losses is not significant.	1–5 % of asset value – the size of the losses is minimally significant.	≥5 % of asset value – the size of the losses is significant.

Fig. 4. Analytical matrix of the impact of risks on event disclosure in reporting

It should be noted that according to IFRS 1 “Presentation of Financial Statements” [18], non-financial information is disclosed in the notes. Such information includes sources of estimation uncertainty at the end of the reporting period that pose a significant risk and may result in a material adjustment to the carrying amount of assets and liabilities in the subsequent financial year. Regarding such assets and liabilities, the notes should contain detailed information about their nature and their carrying amount at the end of the reporting period.

During the risk management process, at the third stage, based on the information reflected in the reporting, management and owners make certain decisions to neutralize the impact of risk events. Internal risks can be fully or partially influenced by the company’s decisions to prevent their occurrence, while external risks cannot be influenced by the company and the situation that caused their emergence cannot be changed. Such risks can only be anticipated, analyzed, and insured.

### 6. Discussion of the results of the research on the methodology of integrated reporting

Establishing risk assessment procedures takes into account previous risk research and is based on an integrated approach that combines macro, meso, and micro environmental factors that affect business operations. The research results are presented in Fig. 1, which represents a conceptual approach to improving the risk management process consisting of three blocks of analytical procedures: research and identification, assessment and analysis, and risk neutralization. Unlike previous studies, the risk management process includes three blocks of analytical procedures, within which specific components are identified. The proposed conceptual approach to risk management in a state of war is integrated into the enterprise’s accounting and analytical system.

This study analyzed the financial reporting of major Ukrainian enterprises to identify the types of risks they reflect in their reports (Table 1). A comparative analysis of reporting was conducted in comparison with previous studies [1–11] that did not focus on analyzing enterprise reporting. The obtained results were combined with risks

identified in the works of experts to create a classification of risks based on their origins. Risks include both internal risks influenced entirely or partially by the enterprise’s decisions and external risks independent of the enterprise’s decisions (Fig. 2). This approach expands our understanding of the risks faced by enterprises, particularly in a state of war, and provides a basis for further improving the risk management system. Its application will enable enterprises to respond more effectively to risk events and mitigate their negative impact on financial activities.

Taking into account international standards, an improved methodological approach is used to reflect reserves, provisions, and securities in accounting. Unlike previous research [4], which only listed specific indicators for reflecting risks in accounting, this study grouped types of reserves, provisions, and funds, specifying their purpose and creation moment (Fig. 3).

Based on theoretical and methodological research and analysis of regulatory documents, a risk assessment procedure was developed, and the analytical and applied support for risk reflection in accounting was improved by using an analytical risk assessment matrix. The proposed analytical matrix allows determining the relevance of reflecting risk information in accounting by combining information on the likelihood and significance of risks (Fig. 4). It differs from previous research [2], where only criteria for the likelihood of risk events were used. The proposed procedure and analytical-applied support for risk reflection in accounting will enable enterprises to more accurately assess risks and effectively reflect them in financial accounting. This will contribute to making more informed decisions and efficient risk management in a state of war.

Therefore, for effective risk management in a state of war, it is necessary to conduct a comprehensive analysis and identification of risks, evaluate their impact and likelihood of occurrence, and measure risks to obtain objective information. Then, risks should be reflected in financial reporting and controlled through the development and implementation of relevant strategies and measures, considering the conditions of a state of war.

Accounting and analytical support for enterprise risk management in a state of war is a complex and multifaceted process that requires interaction between various functional departments of the enterprise. Its successful integration into the risk management system will allow enterprises to effectively identify, assess, and manage risks, ensuring their stability and the preservation of competitive positions in unpredictable conditions of a state of war.

However, the study has certain limitations. To comprehensively assess existing risks, it is advisable to develop an integral risk assessment index in the future that can provide management with a complete assessment of existing threats. Developing such an index may involve experimental difficulties since not all types of risks can be precisely measured and evaluated. It should be emphasized that in conditions of uncertainty, it is challenging to accurately predict risks associated with the external environment and, therefore, determine the size of specific provisions. This issue can be further explored.



---

## 7. Conclusions

---

1. A conceptual approach to improving enterprise risk management in a state of war has been proposed, which involves conducting analytical procedures in three blocks: research and identification of risks, assessment, analysis, and risk neutralization. This approach is particularly relevant in the context of a state of war as it helps identify potential risks, evaluate them, and ensure their neutralization. Integrating this approach into the enterprise's accounting and analytical risk management system is crucial for its practical implementation. The main goal of integration is to enhance the effectiveness of risk management and ensure a holistic approach to risk analysis, control, and monitoring. Overall, accounting and analytical support for enterprise risk management is viewed as a system that encompasses various processes and tools to identify, evaluate, measure, reflect, and control risks. This enables enterprise management to make informed decisions regarding risk management and ensures stability and resilience even in unpredictable conditions, such as a state of war. Integrating the proposed conceptual approach into the accounting and analytical risk management system will allow enterprises to detail analytical procedures based on the proposed blocks and more effectively implement and manage risks in a state of war.

2. The identified risks reported by Ukrainian enterprises were used to determine the most significant types of risks and classify them based on their origin. Using the example of the top 10 largest companies in Ukraine, as listed in Forbes' Top 100 ranking in 2021, it was found that studying business risks in the context of a state of war is an important task that allows enterprises to understand potential threats and develop effective risk management strategies to ensure stability and successful operation in unforeseen circumstances.

3. The methodological approach to reflecting risks in accounting has been improved, wherein three groups of reserves, provisions, and funds are distinguished based on the information provision created to anticipate losses

from risk events. Three groups of indicators are identified as information provision for risk events: data from past periods, indicators of future periods, or information obtained from experts. The specification of information provision contributes to conducting analytical calculations of the consequences of risk events and their detailing in the accounting and analytical support procedures.

4. The analytical and applied support for reflecting risks in accounting has been improved by developing an analytical matrix of the impact of risks on event reflection in financial reporting. This matrix includes two scales – the significance of information scale and the likelihood of risks scale – and allows for assessing the necessity of reflecting information in accounting based on the significance of indicators and the probability of a risk event occurring. This assessment is conducted by the enterprise for each type of funds, reserves, and provisions created as a result of anticipated risk events. This approach helps determine which risk events should be reflected in accounting and which events should be ignored. Events with minimal probability or insignificant impact on the decision-making process of financial statement users are ignored.

---

### Conflict of interest

---

The authors declare that they do not have a conflict of interest in relation to this study, including financial, personal nature, authorship or other nature that could affect the study and its results presented in this article.

---

### Financing

---

The study was performed without financial support.

---

### Data availability

---

Manuscript has no associated data.

---

### References

- Atamas, P. Y., Atamas, O. P., Kramarenko, H. O. (2016). Rol bukhhaltenskoho obliku v upravlinni ryzykamy pidpriemnytstva. *Akademichniy ohliad*, 1 (44), 60–69. Available at: <https://acadrev.duan.edu.ua/images/stories/files/2016-1/8.pdf>
- Gnilitska, L. V. (2014). Informatsiyne zabezpechennya rizykami pidpriemnitskoi' diyalnosti: oblikovy aspect. *Ekonomichni innovatsiyi*, 57, 88–100. Available at: [http://nbuv.gov.ua/UJRN/ecinn\\_2014\\_57\\_12](http://nbuv.gov.ua/UJRN/ecinn_2014_57_12)
- Druri, K. (2017). *Upravlencheskiy uchety dlya biznes-resheniy*. Moscow: YUNITI-DANA, 655.
- Derun, I. (2016). Risk identification in the company's accounting system. *Economic Annals-XXI*, 159 (5-6), 97–100. doi: <https://doi.org/10.21003/ea.v159-21>
- Junkes, M. B., Tereso, A. P., Afonso, P. S. L. P. (2015). The Importance of Risk Assessment in the Context of Investment Project Management: A Case Study. *Procedia Computer Science*, 64, 902–910. doi: <https://doi.org/10.1016/j.procs.2015.08.606>
- Soin, K., Collier, P. (2013). Risk and risk management in management accounting and control. *Management Accounting Research*, 24 (2), 82–87. doi: <https://doi.org/10.1016/j.mar.2013.04.003>
- Gatzert, N., Martin, M. (2015). Determinants and Value of Enterprise Risk Management: Empirical Evidence From the Literature. *Risk Management and Insurance Review*, 18 (1), 29–53. doi: <https://doi.org/10.1111/rmir.12028>
- Drábková, Z., Pech, M. (2022). Comparison of creative accounting risks in small enterprises: the different branches perspective. *E+M Ekonomie a Management*, 25 (1), 113–129. doi: <https://doi.org/10.15240/tul/001/2022-1-007>
- Deaconu, A., Crisan, S., Buiga, A. (2016). Value allocation – contribution and risk to the reliability of financial reporting. *E+M Ekonomie a Management*, 19 (2), 105–119. doi: <https://doi.org/10.15240/tul/001/2016-2-007>

10. Sunder, S. (2015). Risk in Accounting. *Abacus*, 51 (4), 536–548. doi: <https://doi.org/10.1111/abac.12060>
11. Nichita, M. (2015). Regression Model for Risk Reporting in Financial Statements of Accounting Services Entities. *SEA - Practical Application of Sciences*, 3 (2), 101–107. Available at: [https://seaopenresearch.eu/Journals/articles/SPAS\\_8\\_14.pdf](https://seaopenresearch.eu/Journals/articles/SPAS_8_14.pdf)
12. Karpushenko, M. (2019). Financial risks management. *Visnyk Khmelnytskoho natsionalnoho universytetu*, 2, 110–113. Available at: <http://journals.khnu.km.ua/vestnik/wp-content/uploads/2021/01/23-15.pdf>
13. Karpushenko, M., Filatova, I. (2021). Features of risk reflection in integrated reporting. *Herald of Khmelnytskyi National University*, 2, 211–214. doi: <https://doi.org/10.31891/2307-5740-2021-292-2-36>
14. Chebanova, N., Orlova, V., Revutska, L., Karpushenko, M. (2019). Identification, Measurement and Reflection of Risks in Accounting. *SHS Web of Conferences*, 67, 01001. doi: <https://doi.org/10.1051/shsconf/20196701001>
15. Mizhnarodnyi standart bukhhalterskoho obliku 37 (MSBO 37). Zabezpechennia, umovni zoboviazannia ta umovni aktyvy. Available at: [https://zakon.rada.gov.ua/laws/show/929\\_051#Text](https://zakon.rada.gov.ua/laws/show/929_051#Text)
16. Momot, T., Karpushenko, M., Sobolieva, H., Lytovchenko, O., Filatova, I. (2021). Compiling invest-oriented integrated reporting: advantages, standards, recommendations. *Eastern-European Journal of Enterprise Technologies*, 3 (13 (111)), 47–54. doi: <https://doi.org/10.15587/1729-4061.2021.235905>
17. Mizhnarodnyi standart bukhhalterskoho obliku 8 (MSBO 8). Oblikovi polityky, zminy v oblikovykh otsinkakh ta pomylyky. Available at: [https://zakon.rada.gov.ua/laws/show/929\\_020#Text](https://zakon.rada.gov.ua/laws/show/929_020#Text)
18. Mizhnarodnyi standart bukhhalterskoho obliku 1 (MSBO 1). Podannia finansovoi zvitnosti. Available at: [https://zakon.rada.gov.ua/laws/show/929\\_013#Text](https://zakon.rada.gov.ua/laws/show/929_013#Text)
19. Pro suttievist u bukhhalterskomu obliku i zvitnosti. Lyst vid 29.07.2003 N 04230-108. Ministerstvo finansiv Ukrainy. Available at: <https://ips.ligazakon.net/document/MF03268>