

DOI: <https://doi.org/10.32782/2524-0072/2025-72-38>

UDC 336.7

THE USE OF THE DELPHI METHOD BY NATIONAL ECONOMIC ENTITIES FOR IDENTIFYING AND ASSESSING RISKS IN THE AML/CFT SPHERE

ВИКОРИСТАННЯ НАЦІОНАЛЬНИМИ СУБ'ЄКТАМИ ГОСПОДАРЮВАННЯ МЕТОДУ ДЕЛЬФІ ДЛЯ ВИЯВЛЕННЯ ТА ОЦІНКИ РИЗИКІВ У СФЕРІ AML/CFT

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The research examines the requirements for primary financial monitoring entities to conduct activities based on a risk-oriented approach, the process of using the Delphi collective expert research method, and the possibilities of applying the Delphi method in the activities of primary financial monitoring entities. The study identifies the possibility of using the Delphi method both to determine the most critical risk criteria from an initial set of primary criteria and to assign specific weights to these risk criteria. It establishes the number of experts in a homogeneous group required for effective risk identification and assessment. Furthermore, the study highlights elements of the risk-oriented approach where independent expert evaluations are advisable, as well as elements where employees of the primary financial monitoring entity can serve as experts.

Keyword: financial monitoring, Delphi method, risk-oriented approach, risk criteria, national economic entities.

У статті досліджено вимоги до суб'єктів первинного фінансового моніторингу щодо здійснення діяльності на основі ризик-орієнтованого підходу, процес використання методу колективного експертного дослідження Дельфі та можливості застосування методу Дельфі у діяльності суб'єктів первинного фінансового моніторингу. Даний предмет дослідження було обрано у зв'язку з труднощами компаній без наукового підґрунтя визначати та оцінювати ризики у сфері протидії відмиванню коштів та фінансуванню тероризму. Використання методу Дельфі дозволить компаніям довести державним регуляторам факт встановлення ризик-профілю клієнтів та ризик-профілю компанії на основі результатів комплексного та належного аналізу. Актуальність дослідження зумовлена необхідністю імплементації та застосування законодавчо встановлених вимог щодо протидії відмиванню коштів та фінансуванню тероризму для ефективного розвитку національної економіки та можливості її інтеграції до Європейського Союзу. Для вивчення вимог застосування ризик-орієнтованого підходу в сфері фінансового моніторингу застосовано метод аналізу даних. Для цілей систематизації і класифікації джерел інформації застосовано кластерний аналіз. Для розробки рекомендацій стосовно використання методу Дельфі суб'єктами первинного фінансового моніторингу застосовано науковий метод синтезу та узагальнення. Практичним значенням статті є розробка рекомендацій щодо застосування компаніями методу Дельфі для виявлення та оцінювання ризиків у сфері фінансового моніторингу. Виявлено можливість використання методу Дельфі як для цілей виокремлення найбільш важливих критеріїв ризику з початкового переліку первинних критеріїв, так і для цілей встановлення критеріям ризику питомої ваги. Встановлено кількість однорідної групи експертів, яка є достатньою для ефективного визначення та оцінки ризиків. Виокремлено елементи ризик-орієнтованого підходу, в яких доцільно використовувати оцінки незалежних експертів, та елементи, щодо яких експертами можуть виступати співробітники суб'єкта первинного фінансового моніторингу.

Ключові слова: фінансовий моніторинг, метод Дельфі, ризик-орієнтований підхід, критерії ризику, національні суб'єкти господарювання.

Formulation of the problem. National economic entities of Ukraine that perform the functions of primary financial monitoring entities (as defined by Ukrainian legislation) or reporting entities (according to international definitions) are required to conduct their activities using a risk-based approach. Legislation explicitly mandates that primary financial monitoring entities apply a risk-based approach and consider risk criteria. The determination of risk criteria to be used by a reporting entity is based on the institution's own decision while taking into account the risk criteria developed by market regulators. Moreover, reporting entities must not only define a list of risk criteria but also assess their significance, considering the potential consequences of risk realization, and assign specific weights to selected criteria for use in further client risk level assessments. Fulfilling this requirement presents significant challenges, as most companies lack sufficient information and resources to process it effectively. To overcome this issue, collective expert research methods can be used. One of the most widely applied among them is the Delphi method.

Analysis of recent research and publications. The methodology of the risk-based approach at the stage of primary financial monitoring, international practices of its implementation, the classification of risks resulting from financial transactions, and the impact of such risks on business efficiency were studied by Levytska S. and Osadcha O. [1]. Utkina M., in her work, emphasized the ability of the risk-based approach to focus on the most vulnerable areas and clients [2]. Zakharova N. justified the importance of an enterprise forming a risk register, a risk map, and management measures that should genuinely, rather than nominally, improve the quality of management [3]. Perepelytsia M. explored the issue of defining clear and standardized risk criteria and indicators of suspicious activity, which would enhance the effectiveness of financial monitoring and contribute to better understanding between regulators and reporting institutions [4]. Andriichenko Zh. and Litvinova S. statistically substantiated the necessity of implementing a risk-based approach, relying on the number of reports submitted to the State Financial Monitoring Service of Ukraine by reporting institutions [5]. However, the application of collective expert evaluation methods in the implementation of the risk-based approach remains underexplored and requires further research.

Formulation of research goals. The aim of the article is to explore the possibility of applying the Delphi method by primary financial monitoring entities to fulfill their requirements for conducting activities based on a risk-based approach.

Outline of the main research material. The main objectives of the risk-based approach, according to the Regulation on Financial Monitoring by Banks and the Regulation on Financial Monitoring by Institutions, approved by the National Bank of Ukraine, are to identify existing and potential risks of money laundering and terrorist financing, assess identified risks, and develop measures to mitigate them. To achieve these objectives, reporting institutions must assess two key elements: the risk profile of the reporting institution itself and the risk profile of its clients [6; 7]. A client's risk profile must be assessed by the company before establishing business relationships. Its value may be revised if the primary financial monitoring entity receives updated client information that significantly affects the risk level. The risk profile of the reporting institution must be reviewed at least once a year and approved by its management.

When determining the risk profile of a reporting institution, the company's risk appetite in the field of anti-money laundering and counter-terrorist financing (AML/CFT) must be assessed and documented in internal regulations. The determination of an institution's risk appetite should include: risks the entity is willing to accept; risks the entity may accept, but only after implementing appropriate measures; risks the entity cannot accept. For effective risk management, including in the AML/CFT sphere, it is crucial to clearly distinguish the following concepts: risk capacity, risk appetite, and risk tolerance.

Risk capacity is the maximum level of risk an entity can accept to achieve its market objectives, considering the level of all its resources. In the literature, risk capacity is often defined as the amount of the institution's capital that can be exposed to risk. Risk appetite, in turn, refers to the limit within which an entity is willing to operate without facing bankruptcy. This limit is set within the institution's risk capacity. Risk tolerance is applied to assess specific types of risks. Accordingly, an institution's risk appetite consists of various types of risk, each with its own level of risk tolerance [8, p. 141–142].

When developing their risk profile, reporting entities face the challenge of selecting methods to determine risk appetite in the AML/CFT

sphere. Commonly known methods for defining risk appetite include: expert method, cost of risk management measures, method based on the institution's current risk level, method based on the institution's historical experience, analogue method. Since each of these methods has both strengths and weaknesses, reporting entities often use a combination of them in practice when determining their risk appetite.

One of the key challenges for reporting entities is determining the specific weight of each risk criterion in the AML/CFT sphere. This issue cannot be resolved using information from the State Financial Monitoring Service, as reports on suspicious activities or suspicious financial transactions, which contain risk criteria, include restricted-access information. Therefore, an alternative approach is to generalize anonymized data through the use of expert assessment methods.

Additionally, legislation requires reporting entities to consider not only the risk criteria established by state financial monitoring entities but also the information contained in typological studies in the AML/CFT field. This information is prepared and published by the State Financial Monitoring Service. Another source of such information is the results of the National Risk Assessment.

Furthermore, reporting entities must analyze their products and services for potential risks related to their use for money laundering or terrorist financing purposes.

If reporting entities fail to comply with the requirements for applying a risk-based approach in their operations, they may be subject to severe enforcement measures. A reporting entity must have an adequate risk management system, the characteristics of which are specified in regulatory legal acts. If at least one characteristic of the system is deemed inadequate by the regulator, the entire risk management system of the reporting entity is considered non-compliant. This may result in a sanction in the form of a fine, which can amount to up to 10% of the institution's total annual turnover but not exceeding 7,950,000 non-taxable minimum incomes of citizens. As of now, the fine can reach up to 135,150,000 UAH. Indicators of an inadequate risk management system include, among other things, improper risk assessment and reassessment [6; 7].

The Delphi method was developed by specialists from the American corporation Rand as part of a military project funded by the US government. A detailed description of the

method was presented to the general public in Norman Dalkey's work "The Delphi Method: An Experimental Study of Group Opinion" in 1969 [9]. According to this work, the method is an iterative process based on the collection and generalization of expert opinions through a series of questionnaires with feedback. The purpose of developing the questionnaires is to identify problems, opportunities, solutions, or forecasts. The formation of each subsequent questionnaire is based on the results of the previous questionnaire. The survey process is completed when consensus is reached. The Delphi method is characterized by the following features: anonymity, controlled feedback, statistical group response. Anonymity is achieved through questionnaires or other formal communication channels and serves as a way to reduce the influence of dominant participants on other experts. Members of the expert group are unknown to each other and communicate only with the survey organizer. Each participant in the process of conducting successive rounds of the survey has the opportunity to change their point of view without publicly announcing such a change.

Controlled feedback involves conducting several rounds of surveys, between which experts are informed about the final results of the previous round. Statistical indicators of the group response allow each expert to familiarize themselves with the opinions of other survey participants and compare their answers with the generalized responses of the group.

The use of statistical determination of the group response allows calculating indicators of group agreement and consensus on each question in the questionnaire. After each stage of the study, the median and quartiles are calculated. To increase objectivity, expert self-assessment can be used.

The median provides information about the central tendency of the obtained responses, indicating where most points fall on the "disagreement-agreement" scale. It is a measure that divides the distribution into two equal parts if the distribution is a normal bell-shaped curve. Another explanation of the median is the point below which 50% of cases lie. However, if the distribution of responses is shifted towards the upper or lower ends of the scale, the median will often be close to the highest or lowest possible value.

The degree to which study participants reach consensus on a particular response is determined by the "interquartile range."

This range provides information about data variability without affecting extreme scores. The interquartile range is calculated by taking half the difference between the "upper quartile," or the point in the distribution below which 75% of cases lie, and the "lower quartile," the point below which 25% of cases lie. Accordingly, the range of responses that fall within the middle 50% of cases is calculated. This provides information about the consensus of response to a particular questionnaire item [10, p. 244–248].

In the statistical processing of the obtained results, the average level of group self-assessment of experts is initially calculated using formula (1):

$$s_a = \frac{\sum_{i=1}^n x_i}{n} \quad (1)$$

where s_a – the average level of group self-assessment;

x_i – expert self-assessment coefficient;

n – number of experts.

At the next stage, the average value of the obtained responses is calculated by dividing the sum of expert assessments by the number of experts using formula (2):

$$s_{al} = \frac{\sum_{i=1}^n y_i}{n} \quad (2)$$

where s_{al} – average level of expert assessments;

y_i – expert assessment;

n – number of experts.

Next, the weighted average score is determined, using formula (3), which is calculated as the ratio of the sum of the products of expert self-assessment coefficients and the level of expert assessments to the sum of expert self-assessment coefficients:

$$s_{wa} = \frac{\sum_{i=1}^n x_i y_i}{\sum_{i=1}^n x_i} \quad (3)$$

where s_{wa} – weighted average expert score.

At the next step, the median and quartiles are calculated. The median value is the arithmetic mean between the middle scores, ordered in ascending or descending order. And the quartile is defined through the following formula (4):

$$\text{Quartile} = \frac{\max(y_i) - \min(y_i)}{4} \quad (4)$$

After determining the quartile, it becomes possible to calculate the lower and upper bounds of the confidence region, between which the actual confidence interval will be

located. The length of the actually obtained confidence interval is compared with the value that was planned before the study. If the actual confidence interval meets the set criterion, no new stages of the study are carried out, since it is considered that consensus has been reached. If the actual confidence interval goes beyond the set criterion, a new round takes place, in which the questionnaires are resent to experts for further evaluation.

In the scientific works of some researchers, the "fuzzy Delphi method," first proposed by Akiro Ishikawa, which uses the estimation of forecast values based on which triangular membership functions are created [11], was used to select the most important indicators from a list of possible ones. At the same time, in studies by teams of scientists led by Muataz Hazza Al Hazza [12] and Yung-Fu Wang [13], the standard Delphi technique was used to select the main criteria. The above allows us to conclude that there is no "typical Delphi method," since this method can be easily modified depending on the circumstances and nature of the research.

An important practical issue is determining the necessary number of experts for research on the risks of money laundering and terrorist financing using the Delphi method. There are no strict rules regarding this number. According to generally accepted notions, as the number of experts increases, the group error decreases, and the quality of the decision, accordingly, increases. However, firstly, there is a limit in this process, after which the studies become too cumbersome with minimal benefits in the accuracy of estimates. Secondly, much depends on the qualitative characteristics of the sample: a homogeneous sample will require significantly fewer experts than a heterogeneous one. According to Andre Delbeq, in the case of a homogeneous group, a sample size of ten to fifteen participants allowed obtaining results of sufficient quality [14]. A group of scientists led by Kari K. Lilja concluded that the average number of experts in Delphi method research is most often set within the range of 15 to 30 participants [15]. Conclusions based on a smaller number of experts can be confirmed by verification through further research in the form of interviews or surveys.

Given the specifics of applying the Delphi method, Table 1 proposes the following division of elements of the risk-based approach, in which it is advisable to use assessments from either independent experts or employees of the reporting entity.

Table 1

**Use of the Delphi method for various elements of the risk-based approach
in the AML/CFT sphere**

Aspects of a risk-based approach where the involvement of national experts is beneficial	Aspects of a risk-based approach where the involvement of experts from the reporting entity is beneficial
Identification of risk criteria related to clients and their financial operations, derived from typological research and the National Risk Assessment. Assignment of weightings to these risk criteria	Identifying new risks in the AML/CFT sphere that may arise in connection with the development of new products, the use of new technologies and establishing weighting coefficients for these new risks
Establishing weighting coefficients for risk criteria in the AML/CFT sphere, as approved by regulatory legal acts of state financial monitoring entities	Defining a list of AML/CFT risks that will be used by the reporting entity when calculating its risk profile, and establishing weighting coefficients for them
	Determining risk capacity and risk tolerance in the context of AML/CFT
	Identifying the most effective methods or combinations thereof for a reporting entity to establish its AML/CFT risk appetite

Source: Created from [6; 7; 10]

Conclusions. Analyzing the possibilities of using the Delphi method by reporting entities in the AML/CFT sphere to fulfill the requirements of the risk-based approach, the following conclusions can be drawn:

1) it is advisable for national economic entities of Ukraine, which perform the functions of primary financial monitoring subjects, to primarily use the Delphi method to meet the requirements of applying a risk-based approach;

2) the Delphi method can be applied both to identify the most important risk criteria in the AML/CFT field from the initial list of all primary risk criteria and to assign a specific weight to the risk criteria;

3) when identifying and assessing risks in the AML/CFT field, a homogeneous group of

experts ranging from ten to thirty individuals is sufficient;

4) to identify risk criteria in the AML/CFT field, which are determined after analyzing typological studies conducted by the financial intelligence unit and the National Risk Assessment, and to subsequently assign them specific weights, it is advisable to use assessments from independent experts. The same applies to assigning weights to risk criteria that are mandated for use by national regulators. For the purposes of identifying risks related to the own products and technologies of reporting entity; creating a list of risks to be used in the institution's risk profile; determining risk capacity and risk tolerance; and defining optimal methods for establishing risk appetite in the AML/CFT field, employees of the primary financial monitoring entity may act as experts.

REFERENCES:

1. Levytska, S. O., & Osadcha, O. O. (2021). Risk-based approach at the stages of primary financial monitoring. *Bulletin National University of Water and Environmental Engineering*, vol. 3(95), pp. 54–72.
2. Utkina, M. S. (2023). IMPLEMENTATION OF A RISK-BASED APPROACH IN FINANCIAL MONITORING SYSTEMS OF UKRAINE. *Actual problems of native jurisprudence*, vol. 2, pp. 27–131. DOI: <https://doi.org/10.32782/39221481>
3. Zakharova, N. Y. (2023). Risk management at the enterprise: essence, approaches and methods. *Business Inform*, vol. 1, pp. 203–209. DOI: <https://doi.org/10.32983/2222-4459-2023-1-203-209>.
4. Perepelytsya, M. (2021). Classification of financial monitoring objects: criteria and indicators of suspicion. *Law and innovative society*, vol. 1(16), pp. 144–153. DOI: [https://doi.org/10.37772/2309-9275-2021-1\(16\)-20](https://doi.org/10.37772/2309-9275-2021-1(16)-20)
5. Andriichenko, Zh. O., and Litvinova, S. O. (2017) Statistical justification of the need to introduce a risk-based approach in the field of financial monitoring in Ukraine. *Problems and prospects for the development of entrepreneurship*, vol. 2, pp. 49–54.

6. Verkhovna Rada of Ukraine. (2020) Regulations on financial monitoring by banks. URL: <https://zakon.rada.gov.ua/laws/show/v0065500-20#Text>
7. Verkhovna Rada of Ukraine. (2020) Regulations on the implementation of financial monitoring by institutions. URL: <https://zakon.rada.gov.ua/laws/show/v0107500-20#Text>
8. Shulga, N., & Belyanko, L. (2022). Risk appetite in banks. *Scientia fructuosa*, vol. 145(5), pp. 138–152. DOI: [https://doi.org/10.31617/1.2022\(145\)09](https://doi.org/10.31617/1.2022(145)09)
9. Dalkey, N. C., Brown, B. B., & Cochran, S. (1969). The Delphi method: An experimental study of group opinion (Vol. 3, p. 107). Santa Monica, CA: Rand Corporation.
10. Stone Fish, L., & Busby, D. M. (2005). The delphi technique. In D. H. Sprenkle and F. P. Piercy (Eds.), *Research methods in family therapy*, (2nd ed.). New York: Guilford.
11. Ishikawa, A., Amagasa, M., Shiga, T., Tomizawa, G., Tatsuta, R., & Mieno, H. (1993). The max-min Delphi method and fuzzy Delphi method via fuzzy integration. *Fuzzy sets and systems*, vol. 55(3), pp. 241–253.
12. Al Hazza, M. H., Abdelwahed, A., Ali, M. Y., & Sidek, A. B. A. (2022). An integrated approach for supplier evaluation and selection using the delphi method and analytic hierarchy process (AHP): A new framework. *Int. J. Technol.*, vol. 13(1), pp. 16–25. DOI: <https://doi.org/10.14716/ijtech.v13i1.4700>
13. Wang, Y. F., Hsu, Y. F., & Fang, K. (2022). The key elements of gamification in corporate training – The Delphi method. *Entertainment Computing*, 40, 100463. DOI: <https://doi.org/10.1016/j.entcom.2021.100463>
14. Delbecq, A. L., Van de Ven, A. H., & Gustafson, D. H. (1975). Guidelines for conducting NGT meetings. *Group Techniques for Program Planning: A Guide to Nominal Groups and Delphi Process*, 40–82.
15. Lilja, K. K., Laakso, K., & Palomäki, J. (2011, July). Using the Delphi method. In *2011 Proceedings of PICMET'11: Technology Management in the Energy Smart World (PICMET)* (pp. 1–10). IEEE.

СПИСОК ВИКОРИСТАНИХ ДЖЕРЕЛ:

16. Левицька, С. О., Осадча, О. О. Ризико-орієнтований підхід на етапах первинного фінансового моніторингу. *Вісник Національного університету водного господарства та природокористування*. 2021. № 3. С. 54–72.
17. Уткіна М. С. Впровадження ризик-орієнтованого нагляду в системі фінансового моніторингу України. *Актуальні проблеми вітчизняної юриспруденції*. 2023. № 2. С. 127–131. DOI: <https://doi.org/10.32782/39221481>
18. Захарова Н. Ю. Управління ризиками на підприємстві: сутність, підходи та методи. *Бізнес Інформ*. 2023. № 1. С. 203–209. DOI: <https://doi.org/10.32983/2222-4459-2023-1-203-209>
19. Перепелиця М. О. Класифікація об'єктів фінансового моніторингу: критерії та індикатори підозрілості. *Право та інноваційне суспільство*. 2021. № 1. С. 144–153. DOI: [https://doi.org/10.37772/2309-9275-2021-1\(16\)-20](https://doi.org/10.37772/2309-9275-2021-1(16)-20)
20. Андрійченко, Ж. О., Літвінова, С. О. Статистичне обґрунтування необхідності запровадження ризик-орієнтованого підходу у сфері фінансового моніторингу в Україні. *Проблеми і перспективи розвитку підприємництва*. 2017. № 2. С. 49–54.
21. Положення про здійснення банками фінансового моніторингу: затв. постановою Правління Національного банку України 19.05.2020 р. № 65. URL: <https://zakon.rada.gov.ua/laws/show/v0065500-20#Text>
22. Положення про здійснення установами фінансового моніторингу: затв. постановою Правління Національного банку України 28.07.2020 р. № 107. URL: <https://zakon.rada.gov.ua/laws/show/v0107500-20#Text>
23. Шульга Н., Белянко Л. Ризик-апетит у банках. *Scientia fructuosa*. 2022. Т. 145, № 5. С. 138–152. DOI: [https://doi.org/10.31617/1.2022\(145\)09](https://doi.org/10.31617/1.2022(145)09)
24. Dalkey, N. C., Brown, B. B., & Cochran, S. (1969). The Delphi method: An experimental study of group opinion (Vol. 3, p. 107). Santa Monica, CA: Rand Corporation.
25. Stone Fish, L., & Busby, D. M. (2005). The delphi technique. In D. H. Sprenkle and F. P. Piercy (Eds.), *Research methods in family therapy*, (2nd ed.). New York: Guilford.
26. Ishikawa, A., Amagasa, M., Shiga, T., Tomizawa, G., Tatsuta, R., & Mieno, H. The max-min Delphi method and fuzzy Delphi method via fuzzy integration. *Fuzzy sets and systems*. 1993. № 55(3), pp. 241–253.
27. Al Hazza, M. H., Abdelwahed, A., Ali, M. Y., & Sidek, A. B. A. An integrated approach for supplier evaluation and selection using the delphi method and analytic hierarchy process (AHP): A new framework. *Int. J. Technol.* 2022. № 13(1), pp. 16–25. DOI: <https://doi.org/10.14716/ijtech.v13i1.4700>
28. Wang Y.-F., Hsu Y.-F., Fang K. The key elements of gamification in corporate training – The Delphi method. *Entertainment Computing*. 2022. № 40. P. 100463. DOI: <https://doi.org/10.1016/j.entcom.2021.100463>
29. Delbecq, A. L., Van de Ven, A. H., & Gustafson, D. H. (1975). Guidelines for conducting NGT meetings. *Group Techniques for Program Planning: A Guide to Nominal Groups and Delphi Process*, 40–82.
30. Lilja, K. K., Laakso, K., & Palomäki, J. Using the Delphi method. *2011 Proceedings of PICMET'11: Technology Management in the Energy Smart World (PICMET)*. 2011. (pp. 1–10). IEEE.