https://doi.org/10.26565/2786-4995-2026-1-04
UDC 336.71:004:005.334

Piskunov Roman
PhD of Economics, Associate Professor
Head of the Department of Accounting and Taxation
V.N. Karazin Kharkiv National University
4, Svobody Sq., Kharkiv, 61022, Ukraine
e-mail: r.a.piskunov@karazin.ua
ORCID ID: 0000-0001-6133-9233
Moskalenko Olena
PhD of Economics, Associate Professor
Associate Professor at the Department of
Banking Business and Financial Technologies
V.N. Karazin Kharkiv National University
4, Svobody Sq., Kharkiv, 61022, Ukraine
e-mail: o.v.moskalenko@karazin.ua
ORCID ID: 0000-0001-9840-2347

Digital risk management tools in ensuring bank financial stability

Abstract. The object of this study is the process of interaction between regulatory requirements and digital technologies within the risk management system of a modern bank. The key characteristics of the object under study include its high level of integration into the international architecture of banking regulation (Basel III standards, IFRS 9) and the active use of innovative technological solutions such as machine learning, Big Data analytics, RegTech tools, and cloud services to ensure operational continuity.

Problem statement. The core research problem lies in the fundamental transformation of the logic of banking risk management under the dual pressure of stringent regulatory constraints and rapid technological progress. In conditions of macroeconomic instability and wartime shocks, risk management ceases to be merely an internal control function and becomes a strategic instrument for ensuring the overall financial stability of a banking institution.

Unresolved issues. Despite the significant body of academic literature, digitalization and regulatory aspects are often examined as isolated processes. In particular, the systemic relationship between specific regulatory standards and the development of digital analytical tools remains insufficiently explored, as does the manner in which these technologies enable banks to stabilize capital adequacy (CAR/H2) and liquidity coverage (LCR) indicators in real time.

Purpose of the article. The purpose of the study is to provide a theoretical substantiation of the role of regulatory standards as an institutional driver of risk management digitalization and to determine the mechanisms through which digital tools influence the financial stability of a bank in a dynamic environment.

Main material. The article analyzes the regulatory framework of the National Bank of Ukraine and international standards (ICAAP, ILAAP) that shape requirements for banks' analytical infrastructure. Practical cases of leading institutions (PrivatBank, Oschadbank) regarding the implementation of cloud technologies and artificial intelligence are examined. Methods of logical generalization and graphical modeling are applied to develop a four-level framework describing the interaction between regulatory requirements, digital tools, risk parameters, and financial stability indicators.

Conclusions. The study demonstrates the existence of a stable bidirectional relationship between regulatory norms and digitalization: regulatory requirements act as an institutional driver of digital transformation, while digital tools contribute to reducing risk parameters and stabilizing regulatory indicators. The findings have theoretical significance for the development of the concept of bank financial stability and practical relevance for improving risk management systems within a dynamic regulatory environment

Keywords: *digital tools, risk management, bank financial stability, regulatory requirements, machine learning, cloud computing, RegTech, scenario modeling.*

JEL Classification: G21, G32, O33.

Formulas: 0, **Figures**: 1, **Tables**: 2, **References**: 25.

For citation: Piskunov Roman, Moskalenko Olena. Digital risk management tools in ensuring bank financial stability. Financial and Credit Systems: Prospects for Development. №1(20) 2026. P. 51-61. https://doi.org/10.26565/2786-4995-2026-1-04

Introduction. The current stage of development of the banking system is characterized by the combination of two interrelated processes: the strengthening of regulatory requirements aimed at ensuring financial stability and the active digital transformation of the financial sector. The implementation of international standards such as Basel III [4], the adoption of IFRS 9 provisions [7], the development of internal ICAAP and ILAAP procedures, as well as increasing requirements for transparency and risk management, are shaping a new architecture of banking regulation. Under these conditions, risk management ceases to be merely an internal control function and becomes a strategic instrument for ensuring the stability of a banking institution.

At the same time, the digitalization of financial services and the development of Big Data, machine learning, cloud technologies, and RegTech solutions significantly transform the methods of risk assessment and monitoring. The use of digital tools enhances the accuracy of credit risk forecasting, ensures continuous liquidity monitoring, automates compliance procedures, and reduces operational losses. These processes become particularly relevant under wartime and macroeconomic shocks, when operational resilience and the speed of decision-making turn into critical factors in maintaining banks' solvency.

However, in academic research, the digitalization of banking activities and regulatory aspects of risk management are often examined separately. Most studies focus either on technological innovations in the financial sector or on issues of capital adequacy and liquidity, while the systemic relationship between regulatory standards and the development of digital risk management tools remains insufficiently explored. In particular, further clarification is required regarding how regulatory requirements act as a driver of digital transformation and how digital technologies, in turn, contribute to stabilizing regulatory indicators of financial stability.

The relevance of the study is determined by the need to develop a comprehensive approach to assessing the role of digital tools in ensuring bank financial stability within a dynamic regulatory environment. Identifying the bidirectional nature of the interaction between regulatory requirements and the digitalization of risk management allows for a deeper theoretical understanding of the modern model of banking governance and substantiates practical directions for enhancing banks' adaptability to crisis conditions.

Literature review. The issue of using digital tools in banking risk management and their impact on financial stability has attracted considerable attention from both Ukrainian and international scholars. The academic discourse encompasses a broad range of topics, from the theoretical conceptualization of digitalization to the practical implementation of innovative technologies under martial law and global crises.

Fundamental studies by L. H. Klioba [10] and A. O. Kasych and I. O. Naumkina [9] define the digitalization of the banking sector as a comprehensive process of integrating modern economic, organizational, managerial, and institutional innovations into all areas of bank operations. The scholars emphasize the transition to a "neo-economy," in which digital data become the key resource and the bank transforms from a traditional intermediary into an agent that provides customers with autonomous access to financial transactions. S. A. Sheludko and P. P. Bratkevych [22] highlight a paradigm shift in relationships, moving from direct competition to strategic partnership between traditional banks and FinTech companies within a unified ecosystem.

A significant contribution to the systematization of digitalization risks was made by A. Abramova [1], who identifies the most influential categories: strategic, operational, cyber, compliance, and cloud-related risks. She substantiates three stages of banks' adaptation to the digital environment: response to competition, technological adaptation, and strategic positioning, where at the final stage the focus shifts toward achieving a balance between financial and non-financial risks. O. I. Bereslavska [5] complements this classification by arguing that cyber risk has become an objectively integrated component of core banking risks, creating new challenges for economic security.

In the works of D. Y. Kretov and O. I. Mindova [12], the role of breakthrough technologies such as artificial intelligence (AI), machine learning (ML), blockchain, and the Internet of Things (IoT) in reshaping the banking landscape is examined in detail. The authors emphasize that these tools enable the automation of routine operations, the development of predictive models, and the enhancement of transaction transparency. Y. Y. Kolomiiets [11] proposes an innovative approach through the integration of risk management and digital technologies in cash flow management, which is critically important for maintaining liquidity and solvency. A. O. Kasych and I. O. Naumkina [9] introduce the concept of a bank's "digital DNA," based on the formation of a flexible data architecture and the modernization of customer interaction processes.

The issue of financial stability has become particularly acute in the context of global challenges. R. Zvarych and co-authors [25] examine risk management under pandemic conditions, identifying the crisis as a powerful accelerator of Ukraine's digital trajectory. They propose a set of measures to ensure business continuity through the monitoring of critical dependencies and contingency planning. The studies by V. I. Erastov, I. S. Lyzhechko [6], and N. Z. Zarichna [24] focus on the functioning of the banking system under martial law. V. I. Erastov and I. S. Lyzhechko emphasize the critical importance of digitalization for ensuring business continuity and delivering services to customers across different regions of the world [6]. Based on an analysis of macroeconomic risks, N. Z. Zarichna demonstrates that the Ukrainian banking system has proven to be adaptive, maintaining high profitability and capital adequacy through the implementation of National Bank of Ukraine programs and the strengthening of cybersecurity measures [24].

I. S. Andriushchenko and V. L. Skydan [3] identify the main barriers to digital transformation, including resistance to change among staff, insufficient investment, and a lack of digital competencies within management. They also devote particular attention to the ethical and legal challenges associated with the use of artificial intelligence algorithms, especially the issue of accountability for decisions made by automated systems.

The analysis of academic literature indicates that digital risk management tools are not merely auxiliary instruments but constitute a fundamental foundation of a new banking business model. At the same time, most authors, including Y. Y. Kolomiiets [11] and A. Abramova [1], emphasize the need for further research aimed at adapting risk management methods to the unique characteristics of the digital economy and developing new legal frameworks to regulate this sphere.

Purpose, objectives and research methods. The purpose of the study is to substantiate the role of regulatory standards as a driver of the digitalization of bank risk management and to determine the impact of digital tools on ensuring financial stability within a dynamic regulatory environment.

The study is based on the assumption that modern regulatory requirements (in particular, Basel III standards [4], the provisions of IFRS 9 [7], and regulatory acts of the National Bank of Ukraine concerning ICAAP and ILAAP [16, 17]) not only establish quantitative parameters for capital adequacy and liquidity but also serve as an institutional stimulus for the digitalization of risk management. These requirements generate the need to implement digital analytical tools for risk forecasting, scenario modeling, and continuous monitoring of banking activities.

At the same time, digital tools are not considered autonomous technological solutions but structural elements of the risk management system that contribute to reducing risk parameters and stabilizing regulatory indicators of financial stability. Thus, regulatory standards and digital tools operate in a state of bidirectional interaction: the former stimulate digital transformation, while the latter ensure compliance with regulatory requirements.

The research employs a set of general scientific and specialized methods. The method of logical generalization was applied in the analysis of the regulatory framework of the National Bank of Ukraine and international standards. Comparative analysis was used to contrast the traditional risk management model, based on retrospective analysis, with the modern digital model that relies on real-time monitoring and predictive risk assessment. Inductive and deductive methods were

applied to formulate conclusions regarding the systemic relationship between regulatory standards and digital tools. The graphical method was used to visualize a structural and logical framework describing the bidirectional interaction between regulatory requirements and the digitalization of risk management within the system of ensuring bank financial stability.

Research results. The modern risk management system of Ukrainian banks operates under conditions of comprehensive regulatory transformation aimed at harmonization with international standards while simultaneously taking into account the specific features of the national financial environment. The fundamental principles of banking activity are defined by the Law of Ukraine "On Banks and Banking Activity" [20], which establishes the obligation of banks to ensure an adequate level of risk management as an integral component of financial stability.

Further specification of requirements is carried out through regulatory acts of the National Bank of Ukraine. Of key importance is Resolution No. 64 of the Board of the National Bank of Ukraine dated June 11, 2018 [15], which defines the structure of the risk management system, as well as the requirements for internal policies, assessment procedures, monitoring, and reporting. The document establishes the necessity of implementing an integrated Enterprise Risk Management (ERM) model covering all significant types of bank risks and ensuring a continuous process of their identification and assessment.

Particular significance is attached to the implementation of the principles of the Basel Committee on Banking Supervision (Basel III Framework [4]), which provide for a risk-oriented approach to capital adequacy, liquidity, and risk concentration management. In this context, digitalization is not merely a technological trend but a prerequisite for compliance with international standards.

An important element of the regulatory framework is IFRS 9 "Financial Instruments" [7], which introduces the concept of Expected Credit Losses (ECL). The transition from an incurred-loss model to a forward-looking provisioning model objectively requires the use of digital analytical tools capable of integrating macroeconomic scenarios and borrower behavioral characteristics.

Strengthened requirements for internal procedures of capital and liquidity adequacy assessment (ICAAP and ILAAP), established by Resolutions No. 156 and No. 157 of the National Bank of Ukraine dated December 27, 2019 [16, 17], also involve scenario analysis, stress testing, and cash flow forecasting, which are practically impossible to implement without digital risk management platforms.

Thus, the regulatory framework of Ukraine acts as an institutional driver of risk management digitalization, shaping the requirements for banks' analytical infrastructure (Table 1). At the same time, the results of applying digital tools, reflected in the stabilization of capital, liquidity, and asset quality indicators, influence the further improvement of regulatory approaches and supervisory practices. Therefore, the interaction between regulatory requirements and digital solutions is systemic and bidirectional in nature.

The research findings demonstrate that digital technologies transform not only the toolkit but also the underlying logic of bank risk management. While the traditional model was based on retrospective analysis and periodic reporting, the modern digital model relies on continuous risk monitoring, forward-looking assessment of risk parameters, and the integration of analytical results into managerial decision-making processes.

At the same time, the digitalization of risk management is not an isolated technological process but evolves under the influence of regulatory requirements related to transparency, stress testing, and internal capital and liquidity assessment. In its "Green Paper on the Development of Regulatory Technologies in the Financial Market of Ukraine" [19], the National Bank of Ukraine emphasizes that the development of regulatory technologies is aimed at automating compliance procedures, enhancing supervisory accuracy, and ensuring the stability of the financial system. Thus, regulatory impulses stimulate the implementation of digital solutions, while the latter, in turn, ensure compliance with prudential requirements.

Table 1. Regulatory and International Standards as Drivers of the Digitalization of Banking Risk Management

Document	Scope of Regulation	Significance for Digital Risk Management
Law of Ukraine "On Banks and Banking Activity" [23]	General principles of banking activity	Establishes the obligation of systematic risk management and maintenance of financial stability
NBU Resolution No. 64 [15]	Organization of the risk management system	Sets requirements for continuous monitoring and the implementation of an integrated ERM model
NBU Resolution No. 351 [14]	Credit risk assessment	Defines the procedure for provisioning and stimulates the implementation of forward-looking models
NBU Resolution No. 368 [13]	Economic prudential ratios (CAR/H2, liquidity ratios)	Establishes quantitative parameters for capital and liquidity that require digital analytical support
NBU Resolution No. 156 [17]	ICAAP – Internal Capital Adequacy Assessment Process	Provides for risk forecasting and scenario modeling, necessitating the use of digital platforms
NBU Resolution No. 157 [16]	ILAAP – Internal Liquidity Adequacy Assessment Process	Requires cash flow forecasting and stress testing based on digital tools
IFRS 9 [7]	Expected Credit Loss (ECL) model	Introduces a forward-looking provisioning model requiring algorithmic analysis of PD, LGD, and EAD
Basel III Framework [4]	Capital, liquidity, and risk management	Establishes a risk-oriented approach and raises requirements for the quality of internal models
ISO 31000:2018 [8]	General principles of risk management	Conceptualizes an integrated risk management system

Source: compiled by the author based on [4, 7, 8, 13–17, 23].

Digital analytical platforms integrate large volumes of structured and unstructured data, including clients' financial indicators, transaction histories, behavioral characteristics, and macroeconomic variables. The application of gradient boosting algorithms, neural networks, and logistic regression improves the accuracy of default forecasting and reduces uncertainty in risk assessment. This directly affects the calculation of expected credit losses, the level of provisioning, and the stability of the bank's capital.

Thus, digital tools transform risk management from a reactive control system into a proactive analytical platform operating in close interaction with the regulatory environment (Table 2).

Table 2. Impact of Key Digital Risk Management Tools on Risk Parameters and Financial Stability

Tool	Area of Application	Impact on Risk Parameters	Significance for Financial Stability
Machine learning	Credit scoring, anti-fraud	Increased accuracy of PD estimation, reduction of information asymmetry	Reduction of NPLs and optimization of provisions
Big Data	Stress testing, scenario analysis	Early detection of macroeconomic risks	Stabilization of capital and liquidity indicators
Cloud technologies	IT infrastructure backup and redundancy	Reduction of operational risk	Enhancement of bank operational resilience
RegTech	AML, KYC, compliance	Automation of regulatory control	Reduction of regulatory and compliance risk
BI platforms	Monitoring of key risk indicators (KRI)	Continuous control of risk parameters	Increased responsiveness of managerial decision-making

Source: compiled by the authors.

The use of cloud technologies that ensure operational continuity, data backup, and the resilience of IT infrastructure becomes particularly significant in conditions of heightened wartime and cyber risks. Requirements for operational continuity and information risk management, established in the regulatory acts of the National Bank of Ukraine and the Basel III standards, objectively encourage banks to implement digital infrastructure solutions.

The experience of Ukrainian banks during wartime risks confirms the systemic nature of this transformation. In particular, PrivatBank carried out a large-scale migration of its IT infrastructure to a cloud environment, which made it possible to ensure the uninterrupted provision of banking services even under physical and cyber threats [21]. This decision contributed to minimizing operational risk and enhancing the protection of clients' funds, directly affecting the bank's operational resilience indicators.

At the same time, the implementation of digital credit scoring models and automated data analysis optimized the credit decision-making process, reduced the time required to process applications, and improved the accuracy of credit risk assessment. In the context of IFRS 9 requirements, this contributes to a more substantiated formation of provisions and the stabilization of capital indicators.

Oschadbank actively applies artificial intelligence tools to automate customer services and monitor risks [20]. The use of RegTech solutions enables the automation of compliance procedures (AML, KYC), thereby reducing regulatory risk and increasing the transparency of operational activities.

Practical cases of Ukrainian banks demonstrate that digital solutions produce a comprehensive effect: they reduce operational and credit risks, enhance forecasting accuracy, and contribute to the stabilization of regulatory indicators. Thus, digitalization functions not only as an instrument for improving efficiency but also as an integral component of the system for ensuring financial stability, operating in close interaction with the regulatory environment.

Discussion. Thus, the study has established that the interaction between regulatory requirements and digital risk management tools forms a systemic cause-and-effect framework for ensuring a bank's financial stability. This framework reflects not a unilateral impact of digitalization on financial indicators but a bidirectional relationship in which regulatory standards act as a driver of digital transformation, while digital tools serve as a means of stabilizing risk parameters and ensuring compliance with regulatory requirements.

According to Resolution No. 64 of the National Bank of Ukraine dated June 11, 2018 [15], the risk management system must ensure the continuous identification, assessment, and monitoring of all significant risks. At the same time, the Instruction on the Regulation of Banking Activities (NBU Resolution No. 368 [13]) establishes the prudential ratios through which a bank's financial stability is assessed. Therefore, regulatory requirements not only set quantitative benchmarks for capital adequacy and liquidity but also necessitate the use of digital analytical tools for risk forecasting, scenario modeling, and the implementation of internal ICAAP and ILAAP procedures (Figure 1).

The proposed structural and logical framework reflects four interrelated levels.

The first level comprises regulatory requirements, including international standards (Basel III, IFRS 9), regulatory acts of the National Bank of Ukraine (in particular Resolutions No. 64, No. 351, No. 368, No. 156, and No. 157), and prudential ratios (CAR/H2, LCR). It is at this level that the regulatory impulse for the digitalization of risk management is formed.

The second level includes digital risk management tools, such as machine learning systems for credit scoring, analytical platforms for stress testing, BI systems for monitoring key risk indicators, RegTech solutions for compliance, and cloud technologies ensuring operational resilience. Their implementation is aimed at increasing the accuracy of risk assessment and ensuring the continuity of monitoring processes.

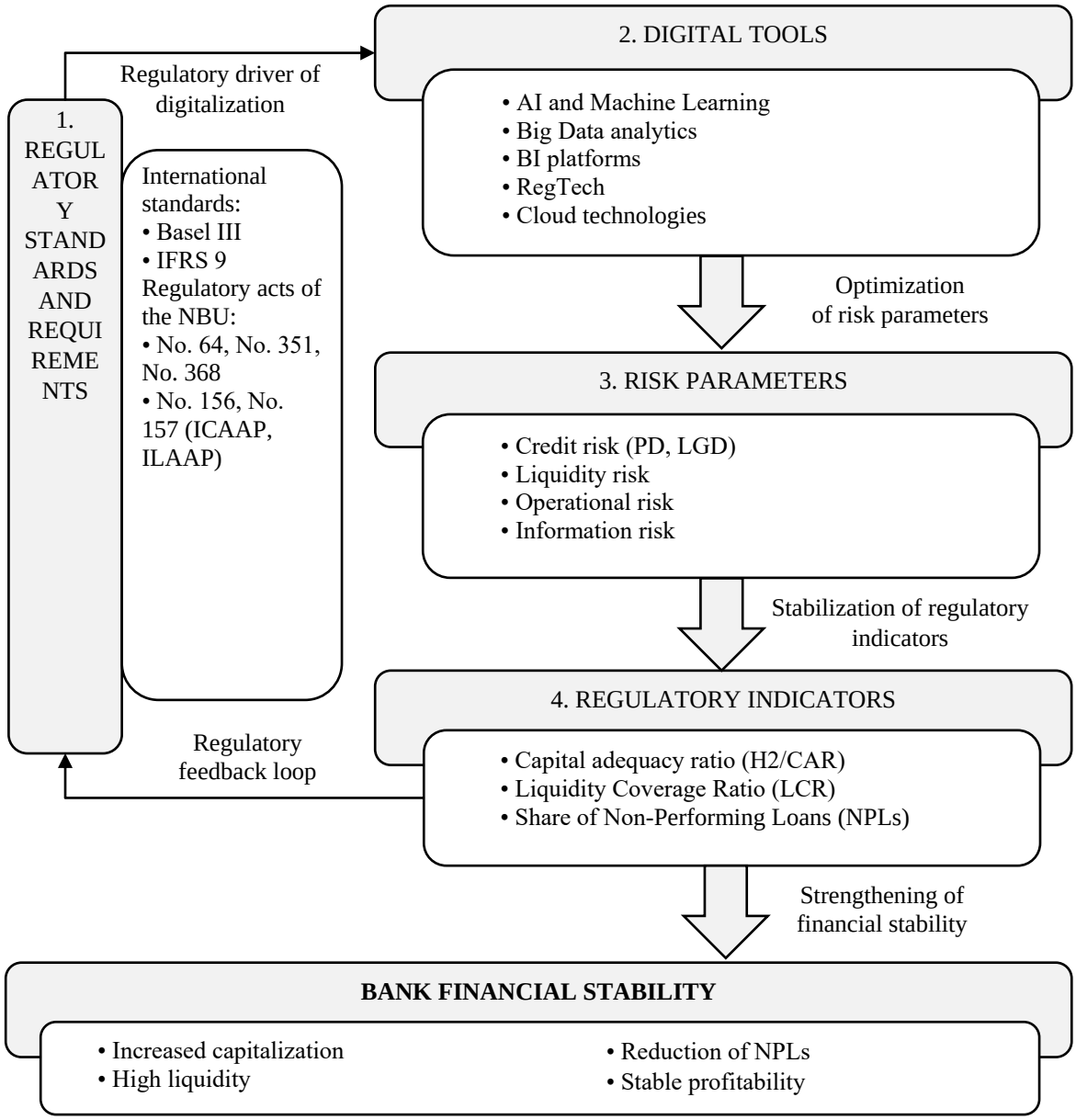

Figure 1. Structural and Logical Framework of the Bidirectional Interaction between Regulatory Standards and Digital Risk Management Tools in the System of Ensuring Bank Financial Stability
Source: *developed by the authors.*

The third level consists of banking risk parameters, among which the most significant are credit risk (including PD and LGD indicators), liquidity risk, operational risk, and information risk. The use of digital tools contributes to the reduction of risk parameters, mitigation of information asymmetry, and improvement of cash flow forecasting quality.

The fourth level encompasses regulatory indicators of financial stability, including the capital adequacy ratio (H2/CAR), the liquidity coverage ratio (LCR), and the share of non-performing loans (NPLs). The reduction of expected credit losses in accordance with IFRS 9 [7] contributes to capital stabilization, while digital liquidity forecasting ensures the maintenance of the LCR at a safe level.

The final level is bank financial stability, manifested in increased capitalization, high liquidity, a reduced share of non-performing loans, and the maintenance of stable profitability even under macroeconomic shocks.

At the same time, the framework incorporates a feedback regulatory loop: the results of compliance with prudential ratios and changes in risk parameters influence the further refinement of regulatory requirements and supervisory approaches, which, in turn, stimulates further digitalization of the risk management system.

Thus, the digitalization of risk management should not be viewed as an autonomous technological process but as a structural element of a regulatory-driven system for ensuring bank financial stability, within which regulatory requirements and digital tools operate in a dynamic bidirectional interaction.

Conclusions. The study substantiates that the digitalization of bank risk management is not an autonomous technological process but is formed within a regulatory-driven architecture for ensuring financial stability. It has been established that modern regulatory requirements (Basel III, IFRS 9, regulatory provisions of the National Bank of Ukraine concerning ICAAP and ILAAP, and prudential ratios for capital adequacy and liquidity) act as an institutional driver of the digital transformation of banking risk management systems. At the same time, digital tools — including machine learning, Big Data analytics, RegTech solutions, and cloud technologies — contribute to reducing risk parameters and stabilizing regulatory indicators of financial stability. Therefore, a systemic bidirectional interaction exists between regulatory standards and the digitalization of risk management.

The study formulates a conceptual approach to interpreting digital risk management tools as a structural element of a regulatory-oriented system for ensuring bank financial stability. Unlike the traditional approach, which considers digitalization primarily as an innovative factor enhancing efficiency, this research demonstrates its institutional conditioning and integration into the mechanism for implementing regulatory requirements.

Prospects for further research are associated with the quantitative assessment of the impact of digital tools on specific regulatory ratios, the development of methodologies for measuring the digital maturity of banking risk management systems, and the analysis of the influence of artificial intelligence on the transformation of supervisory practices within the context of RegTech and SupTech.

Thus, the findings confirm that the digitalization of risk management is not merely a technological factor in modernizing banking activities but a key element of the contemporary model of ensuring financial stability within a dynamic regulatory environment.

References

1. Abramova, A. (2021). Risk systems of commercial banks in the conditions of digitalization. *Problems and Prospects of Economics and Management*, 4(28), 186–193. https://doi.org/10.25140/2411-5215-2021-4(28)-186-193 [in Ukrainian]
2. Akymenko, N. V., & Mamontenko, N. S. (2021). Banking system in the digital economy. *Business Inform*, 5, 333–338. https://doi.org/10.32983/2222-4459-2021-5-333-338 [in Ukrainian]
3. Andriushchenko, I. S., & Skydan, V. L. (2023). Digital transformation of the banking sector of Ukraine. *Business Inform*, 12, 77–82. https://doi.org/10.32983/2222-4459-2023-12-77-82 [in Ukrainian]
4. Basel Committee on Banking Supervision. (2017). Basel III: Finalising post-crisis reforms. *Bank for International Settlements*. Retrieved from: https://www.bis.org/basel_framework/
5. Bereslavska, O. (2024). Transformation of banking services in the context of digitalization. *Economy and Society*, 60. https://doi.org/10.32782/2524-0072/2024-60-99 [in Ukrainian]
6. Erastov, V., & Lyzhechko, I. (2024). Digitalization of the banking system of Ukraine under martial law. *Economy and Society*, 60. https://doi.org/10.32782/2524-0072/2024-60-131 [in Ukrainian]
7. International Accounting Standards Board. (2014). International Financial Reporting Standard 9: Financial Instruments. Retrieved from: https://mof.gov.ua/storage/files/IFRS_9_Ukrainian-compressed.pdf [in Ukrainian]
8. International Organization for Standardization. (2018). ISO 31000:2018 Risk management - Guidelines. Retrieved from: https://www.iso.org/standard/65694.html
9. Kasych, A. O., & Naumkina, I. O. (2021). Digitalization processes as an integral component of modern banking management. *Economy and Society*, 28. https://doi.org/10.32782/2524-0072/2021-28-1 [in Ukrainian]
10. Klioba, L. (2018). Digitalization as an innovative direction of banking development. *Efficient Economy*, 12. https://doi.org/10.32702/2307-2105-2018.12.84 [in Ukrainian]
11. Kolomiiets, Y. (2025). Principles of bank cash flow management: Integration of risk management and digital technologies. *Economy and Society*, 73. https://doi.org/10.32782/2524-0072/2025-73-12 [in Ukrainian]

12. Kretov, D., & Mindova, O. (2024). Digitalization of the banking sector of Ukraine: Current state and development prospects. *Sustainable Development of Economy*, 2(49), 223–228. https://doi.org/10.32782/2308-1988/2024-49-35 [in Ukrainian]
13. National Bank of Ukraine. (2001). On approval of the Instruction on the procedure for regulating banking activities in Ukraine (Resolution No. 368). Retrieved from: https://zakon.rada.gov.ua/laws/show/z0841-01 [in Ukrainian]
14. National Bank of Ukraine. (2016). On approval of the Regulation on determining the amount of credit risk by banks of Ukraine for active banking operations (Resolution No. 351). Retrieved from: https://zakon.rada.gov.ua/laws/show/v0351500-16 [in Ukrainian]
15. National Bank of Ukraine. (2018). On approval of the Regulation on the organization of risk management systems in banks and banking groups (Resolution No. 64). Retrieved from: https://zakon.rada.gov.ua/laws/show/v0064500-18 [in Ukrainian]
16. National Bank of Ukraine. (2019). On amendments to certain regulatory legal acts of the National Bank of Ukraine (Resolution No. 157). Retrieved from: https://zakon.rada.gov.ua/laws/show/v0157500-19 [in Ukrainian]
17. National Bank of Ukraine. (2019). On approval of the Regulation on determining the minimum amount of operational risk by banks of Ukraine (Resolution No. 156). Retrieved from: https://zakon.rada.gov.ua/laws/show/v0156500-19 [in Ukrainian]
18. National Bank of Ukraine. (2022). On the use of cloud services by banks under martial law in Ukraine (Resolution No. 42). Retrieved from: https://zakon.rada.gov.ua/laws/show/v0042500-22 [in Ukrainian]
19. National Bank of Ukraine. (2025). Green paper on the development of regulatory technologies in the financial market of Ukraine. Retrieved from: https://bank.gov.ua/ua/news/all/zelena-kniga-z-rozvitku-regulyatornih-tehnologiy-na-finansovomu-rinku-ukrayini [in Ukrainian]
20. Oschadbank. (2025, July 16). Oschadbank launched the first digital AI consultant experiment. Retrieved from: https://www.oschadbank.ua/news/osadbank-zapustiv-persij-didzital-eksperiment-zi-ai-konsultantami [in Ukrainian]
21. PrivatBank. (2022, April 29). Financial security above all: PrivatBank completed migration to the cloud. Retrieved from: https://privatbank.ua/news/2022/4/29/finansova-bezpeka-ponad-use-privatbank-zavershiv-migraciyu-u-hmaru [in Ukrainian]
22. Sheludko, S. A., & Bratkevych, P. P. (2019). Impact of digitalization on banking business in Ukraine. *Pryazovskyi Economic Bulletin*, 5(16), 334–339. https://doi.org/10.32840/2522-4263/2019-5-57 [in Ukrainian]
23. Verkhovna Rada of Ukraine. (2000). On banks and banking activity (Law No. 2121-III). Retrieved from: https://zakon.rada.gov.ua/laws/show/2121-14 [in Ukrainian]
24. Zarichna, N. (2024). Formalization of development trends and financial stability of the banking system of Ukraine under martial law. *Sustainable Development of Economy*, 1(48), 214–219. https://doi.org/10.32782/2308-1988/2024-48-30 [in Ukrainian]
25. Zvarych, R., Dudnyk, Y., Homotiuk, V., & Bodnar, S. (2022). Risk management of digital transformation in pandemic conditions. *Bulletin of Economics*, 1, 38–53. https://doi.org/10.35774/visnyk2022.01.038 [in Ukrainian]

Received: 15.10.2025 *Accepted: 05.03.2026*
Received after review: 12.01.2026 *Published: 31.03.2026*

Authors Contribution: *All authors have contributed equally to this work*
Conflict of Interest: *The authors declare no conflict of interest*

Піскунов Роман
к.е.н., доцент, завідувач кафедри обліку та оподаткування,
Харківський національний університет імені В.Н. Каразіна,
майдан Свободи,4, Харків, 61022, Україна;
e-mail: r.a.piskunov@karazin.ua
ORCID ID: 0000-0001-6133-9233
Москаленко Олена
к.е.н., доцент,
доцент кафедри банківського бізнесу та фінансових технологій
Харківський національний університет імені В.Н. Каразіна,
майдан Свободи,4, Харків, 61022, Україна;
e-mail: o.v.moskalenko@karazin.ua
ORCID ID: 0000-0001-9840-2347

Цифрові інструменти ризик-менеджменту банку в системі забезпечення фінансової стійкості

Анотація. Об'єктом даного дослідження виступає процес взаємодії регуляторних вимог і цифрових технологій у системі ризик-менеджменту сучасного банку. Ключовими характеристиками досліджуваного об'єкта є його висока інтегрованість у міжнародну архітектуру банківського регулювання (стандарти Basel III, МСФЗ 9) та активне використання інноваційних технологічних рішень, таких як машинне навчання, Big Data-аналітика, RegTech-інструменти та хмарні сервіси для забезпечення операційної безперервності діяльності.

Постановка проблеми. Основна проблема дослідження полягає у докорінній зміні логіки функціонування банківського ризик-менеджменту під тиском подвійного впливу: жорстких регуляторних обмежень та стрімкого технологічного прогресу. В умовах макроекономічної нестабільності та воєнних шоків ризик-менеджмент перестає бути лише внутрішньою функцією контролю, перетворюючись на стратегічний інструмент забезпечення загальної фінансової стійкості банківської установи.

Нерозв'язані аспекти. Незважаючи на значну кількість наукових праць, цифровізація та регуляторні аспекти часто розглядаються як ізольовані процеси. Зокрема, недостатньо дослідженим залишається системний взаємозв'язок між конкретними регуляторними нормативами та розвитком цифрових аналітичних інструментів, а також те, як саме ці технології допомагають банкам стабілізувати індикатори капіталу (Н2) та ліквідності (LCR) у режимі реального часу.

Мета статті. Метою дослідження є теоретичне обґрунтування ролі регуляторних нормативів як інституційного імпульсу для цифровізації ризик-менеджменту та визначення механізмів впливу цифрових інструментів на забезпечення фінансової стійкості банку в динамічному середовищі.

Основний матеріал. У статті проаналізовано нормативну базу Національного банку України та міжнародні стандарти (ICAAP, ILAAP), що формують вимоги до аналітичної інфраструктури банків. Досліджено практичні кейси провідних установ (ПриватБанк, Ощадбанк) щодо впровадження хмарних технологій та ШІ. Використано методи логічного узагальнення та графічного моделювання для розробки чотирирівневої схеми взаємодії регуляторних вимог, цифрових інструментів, параметрів ризику та індикаторів стійкості.

Висновки. Авторами доведено, що між регуляторними нормами та цифровізацією існує стійкий двосторонній зв'язок: регуляторні вимоги виступають інституційним імпульсом цифровізації, тоді як цифрові інструменти забезпечують зниження параметрів ризику та стабілізацію регуляторних індикаторів. Отримані результати мають теоретичне значення для розвитку концепції фінансової стійкості банку та практичне значення для удосконалення систем управління ризиками в умовах динамічного регуляторного середовища.

Ключові слова: *цифрові інструменти, ризик-менеджмент, фінансова стійкість банку, регуляторні нормативи, машинне навчання, хмарні технології, RegTech, сценарне моделювання.*

Формули: 0, рис. 1, табл 2., бібл.: 25.

Для цитування: Piskunov Roman, Moskalenko Olena. Digital risk management tools in ensuring bank financial stability. Фінансово-кредитні системи: перспективи розвитку. №1(20) 2026. С. 51-61. https://doi.org/10.26565/2786-4995-2026-1-04

Список літератури

1. Абрамова А. Системи ризиків діяльності комерційних банків в умовах цифровізації. *Проблеми і перспективи економіки та управління*. 2021. № 4 (28). С. 186-193. https://doi.org/10.25140/2411-5215-2021-4(28)-186-193
2. Акименко Н. В., Мамонтенко Н. С. Банківська система в умовах цифрової економіки. *Бізнес Інформ*. 2021. №5. С. 333–338. https://doi.org/10.32983/2222-4459-2021-5-333-338
3. Андрющенко І. С., Скидан В. Л. Цифрова трансформація банківського сектора України. *Бізнес-інформ*. 2023. № 12. С.77–82. https://doi.org/10.32983/2222-4459-2023-12-77-82
4. Basel III framewor / Basel Committee on Banking Supervision. Basel: Bank for International Settlements, 2017. URL: https://www.bis.org/basel_framework/

5. Береславська О. Трансформація банківських послуг в умовах цифровізації. *Економіка та суспільство*. 2024. № 60. https://doi.org/10.32782/2524-0072/2024-60-99.
6. Ерастов В., Лижечко І. Діджиталізація банківської системи України в умовах воєнного стану. *Економіка та суспільство*. 2024. № 60. https://doi.org/10.32782/2524-0072/2024-60-131.
7. Міжнародний стандарт фінансової звітності 9 «Фінансові інструменти»: від 30.06.2017: станом на 03 вер. 2025 р. URL: https://mof.gov.ua/storage/files/IFRS_9_Ukrainian-compressed.pdf
8. ISO 31000:2018 Risk management – Guidelines. Geneva: International Organization for Standardization, 2018. URL: https://www.iso.org/standard/65694.html
9. Касич А.О., Наумкіна І.О. Процеси цифровізації як невід'ємна складова сучасного банківського менеджменту. *Економіка і суспільство*. 2021. Вип.28. https://doi.org/10.32782/2524-0072/2021-28-1
10. Кльоба Л. Цифровізація – інноваційний напрям розвитку банків. *Ефективна економіка*. 2018. № 12. https://doi.org/10.32702/2307-2105-2018.12.84
11. Коломієць Ю. Засади управління грошовими потоками банку: інтеграція ризик-менеджменту та цифрових технологій. *Економіка та суспільство.* 2025. №73. https://doi.org/10.32782/2524-0072/2025-73-12
12. Кретов Д., Міндова О. Цифровізація банківського сектору україни: сучасний стан та перспективи розвитку. *Сталий розвиток економіки*. 2024. № 2(49). С. 223-228. https://doi.org/10.32782/2308-1988/2024-49-35
13. Про затвердження Інструкції про порядок регулювання діяльності банків в Україні : Постанова Нац. банку України від 28.08.2001 № 368 : станом на 31 серп. 2025 р. URL: https://zakon.rada.gov.ua/laws/show/z0841-01#Text.
14. Про затвердження Положення про визначення банками України розміру кредитного ризику за активними банківськими операціями : Постанова Нац. банку України від 30.06.2016 № 351 : станом на 6 лют. 2026 р. URL: https://zakon.rada.gov.ua/laws/show/v0351500-16#Text.
15. Про затвердження Положення про організацію системи управління ризиками в банках України та банківських групах : Постанова Нац. банку України від 11.06.2018 № 64 : станом на 27 січ. 2026 р. URL: https://zakon.rada.gov.ua/laws/show/v0064500-18#Text.
16. Про внесення змін до деяких нормативно-правових актів Національного банку України : Постанова Нац. банку України від 24.12.2019 № 157 : станом на 20 листоп. 2021 р. URL: https://zakon.rada.gov.ua/laws/show/v0157500-19#Text.
17. Про затвердження Положення про порядок визначення банками України мінімального розміру операційного ризику : Постанова Нац. банку України від 24.12.2019 № 156 : станом на 23 груд. 2025 р. URL: https://zakon.rada.gov.ua/laws/show/v0156500-19#Text.
18. Про використання банками хмарних послуг в умовах воєнного стану в Україні : Постанова Нац. банку України від 08.03.2022 № 42. URL: https://zakon.rada.gov.ua/laws/show/v0042500-22#Text.
19. Зелена книга з розвитку регуляторних технологій на фінансовому ринку України. *Національний банк України*. 28.05.2025 р. URL: https://bank.gov.ua/ua/news/all/zelena-kniga-z-rozvitku-regulyatornih-tehnologiy-na-finansovomu-rinku-ukrayini.
20. Ощадбанк запустив перший діджитал-експеримент із ШІ-консультантами. *Офіційний сайт АТ «Ощадбанк».* URL: https://www.oschadbank.ua/news/osadbank-zapustiv-persij-didzital-eksperiment-zi-ai-konsultantami?utm.
21. Фінансова безпека понад усе. ПриватБанк завершив міграцію у "хмару". *Офіційний сайт АТ КБ «Приватбанк»*. URL: https://privatbank.ua/news/2022/4/29/finansova-bezpeka-ponad-use-privatbank-zavershiv-migraciyu-u-hmaru.
22. Шелудько С.А., Браткевич П.П. Вплив цифровізації на банківський бізнес в Україні. *Приазовський економічний вісник*. 2019. № 5 (16). С.334–339. https://doi.org/10.32840/2522-4263/2019-5-57
23. Про банки і банківську діяльність : Закон України від 07.12.2000 № 2121-III : станом на 1 січ. 2026 р. URL: https://zakon.rada.gov.ua/laws/show/2121-14#Text.
24. Зарічна, Н. Формалізація тенденцій розвитку та фінансової стійкості банківської системи України в умовах воєнного стану. *Сталий розвиток економіки*. 2024. № 1(48). С. 214-219. https://doi.org/10.32782/2308-1988/2024-48-30
25. Зварич Р., Дудник Ю., Гомотюк В., Боднар С. Ризик-менеджмент цифрової трансформації в умовах пандемії. *Вісник Економіки*. 2022. Вип. 1. С. 38–53. https://doi.org/10.35774/visnyk2022.01.038

Стаття надійшла до редакції 15.10.2025 *Статтю рекомендовано до друку 05.03.2026*
Стаття надійшла після рецензування 12.01.2026 *Статтю опубліковано 31.03.2026*

Внесок авторів: *всі автори зробили рівний внесок у цю роботу*
Конфлікт інтересів: *автори повідомляють про відсутність конфлікту інтересів*