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IMPROVEMENT OF THE RISK MANAGEMENT SYSTEM IN BANKING INVESTMENTS

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Abstract
This article analyzes the issues of improving the risk management system in banking investments. Financial, credit, market, and liquidity risks arising in the investment activities of banks, as well as mechanisms for their reduction, were studied. The importance of the Basel Committee principles used in international practice, modern risk management methods, including Value-at-Risk, stress tests, credit rating systems, and diversification policy in increasing the stability of the bank's investment portfolio, is highlighted. Also, the national practice of risk assessment and management in the activities of commercial banks of Uzbekistan was analyzed, and proposals for their more effective organization were developed.

Keywords: Banking investments, risk management, risk management, Basel principles, Value-at-Risk, stress testing, credit risks, liquidity risks, diversification, financial stability .

Introduction

In the context of the increasingly complex global financial system of the modern world economy, the issue of risk management in bank investments is gaining particular importance. The global financial crisis of 2008, the impact of the 2020 pandemic, and the geopolitical tensions of 2022-2024 have shown that traditional risk management models are insufficient in today's complex market conditions. The increasing interconnectedness of financial markets, the acceleration of data flows, and the expansion of algorithmic trading are creating new types of systemic risks for banks. Events such as flash crashes, contagion effects, and network risks are forcing banks to fundamentally rethink their risk management systems. Also, factors beyond traditional financial risks, such as climate risks, cyber threats, and operational disruptions, are significantly affecting the investment strategies of banks. In this case, improving the risk management system is necessary not only to ensure the bank's own stability, but also to contribute to the overall stability of the entire financial system.

The introduction of Basel III and Basel IV standards, the application of IFRS 9 reporting standards, and the strengthening of national regulatory requirements by various countries are creating the need to raise risk management in bank investments to a new level. The introduction of Expected Credit Loss (ECL) models, Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR) requirements, as well as Fundamental Review of Trading Book (FRTB) rules require new approaches to risk management for banks. Methods such as stress testing, scenario analysis, and reverse stress testing have

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now become mandatory rather than optional for banks. Processes such as CCAR (Comprehensive Capital Analysis and Review) and ICAAP (Internal Capital Adequacy Assessment Process) are creating the need for banks to create a risk appetite framework and strengthen the risk governance system. New requirements imposed on the national banking sector by the Central Bank of the Republic of Uzbekistan also create an imperative for local banks to modernize their risk management systems.

The rapid development of modern technologies such as Artificial Intelligence, Machine Learning, Big Data Analytics and Cloud Computing is fundamentally changing risk management in bank investments. Real-time risk monitoring, predictive analytics and automated decision-making capabilities are opening up new horizons in risk management for banks. Blockchain technology provides opportunities to reduce settlement risks, automate operational risks through smart contracts and increase transparency. However, new technologies, in turn, also create new risks such as cyber risks, model risks and technology risks. The development of quantum computing may jeopardize cryptographic-based security systems. The expansion of robo-advisory and algorithmic trading systems is increasing market manipulation and flash trading risks. Therefore, technology risk management and digital risk governance are emerging as new competencies for banks. Competition and cooperation with fintech companies are creating operational model risks and strategic risks for banks.

Global climate change and the development of sustainable finance concepts are creating the need to set climate risks management as a new priority in bank investments. Physical risks (floods, droughts, storms) and transition risks (carbon pricing, regulatory changes, technology shifts) can have a significant impact on banks' investment portfolios. The European Green Deal, the Paris Agreement and the SDG goals are creating an obligation for banks to take into account ESG (Environmental, Social, Governance) risks. New criteria such as stranded assets, green taxonomy compliance and carbon footprint measurement are complicating risk assessment processes for banks. International standards such as the Task Force on Climate-related Financial Disclosures (TCFD) recommendations and the EU Taxonomy Regulation are creating the need for banks to develop climate stress testing and scenario analysis methods. In the conditions of Uzbekistan, factors such as the Aral Sea ecological crisis, water scarcity and changes in the energy sector are creating new climate-related risks for banks.

The instability of the modern geopolitical environment, trade wars, sanctions regimes and global supply chain disruptions create the need to raise the management of country risks and political risks in bank investments to a new level. The COVID-19 pandemic has shown that global shock events can have an unexpected and strong impact on banks' investment portfolios. Deglobalization trends, economic nationalism and protectionism are increasing cross-border investment risks for banks. The breakdown of central bank policy coordination and monetary policy divergence are increasing currency risks and interest rate risks. Emerging markets volatility, debt sustainability concerns and capital flow reversal risks are creating the need for banks to create new hedging strategies. Structural reform risks, commodity price shocks and regional integration challenges are

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creating additional risk factors for transition economies such as Uzbekistan. Also, factors such as demographic changes, urbanization trends and social inequality are shaping long-term investment risks.

Literature review

In the process of analyzing the literature on the topic, several leading economists and experts from around the world have conducted scientific research on improving the risk management system in bank investments . Among them, M.Nurmukhammedov in his research analyzes the involvement of banks in investment projects and ways to strengthen bank investment activities; the article provides recommendations for banks to diversify investment instruments and attract external sources[1].

In his research, Z.G.Allaberganov provides practical recommendations for expanding investment activities in Uzbek banks, in particular, increasing activity in the securities market; the article emphasizes the coherence of banks and state policy[2].

In his research, A.A.Ismailov wrote articles on the development of commercial banks' activities in the stock market and the methodology for forming their investment portfolios; the works outlined mechanisms for improving portfolio diversification[3].

In her research, U.A.Ganieva provides an analytical article on the problems and prospects of bank investment activities; recommendations on how to apply diversification strategies in a national context[4].

In her research, O.P.Ovchinnikova considers diversification of banking activities in the Russian context as a factor of stability; the article describes the directions and practical measures of diversification (inter-sectoral, by type of activity)[5].

In her research, L.R.Mardeeva explores the experience of diversifying and managing credit portfolios; the articles contain proposals for sectoral allocation and coordination of credit policy[6].

In her research, E.V.Orlova develops mechanisms and practical models of credit portfolio diversification; her work provides algorithms for risk quantification and diversification[7].

There is an article in which K.A.Evgenievna describes practical recommendations and methodological steps for optimizing and diversifying credit portfolios in her research[8].

Research methodology

Economic research methods were used, such as analyzing research conducted by world scientists on improving the risk management system in bank investments, collecting and comparing all information on the topic, and logical thinking.

Analysis and discussion of results

Improving the risk management system in bank investments is one of the most pressing issues of modern financial systems. The constant volatility of the global economy, the uncertainty of markets and the rapid development of technological innovations are

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creating new risks in the investment activities of banks. In these conditions, banks are forced to effectively manage not only traditional credit risks, but also market, operational, strategic and technological risks. Since old methods of risk management are not enough to cope with modern challenges, improving the system is of great importance for the stability and competitiveness of banks.

In particular, in recent years, factors such as global financial crises, pandemics, geopolitical conflicts and climate change have increased the complexity of investment risks. For banks, it has become more important to ensure long-term stability rather than just short-term profits. By improving the risk management system, banks will be able to increase the efficiency of investments, minimize potential losses and meet the requirements of regulators.

Technological advances have created new opportunities for risk management. Technologies such as artificial intelligence, big data analytics, and blockchain enable us to predict, monitor, and respond to risks in advance. However, the implementation of these technologies also poses unique challenges, such as data security, a shortage of specialists, and high costs. Therefore, banks need to consider the risks involved in implementing technological innovations while also considering their potential.

Regulatory requirements also require improvement of risk management systems. Standards such as International Financial Reporting Standards (IFRS 9), Basel III require banks to more accurately assess risks and properly form reserves. This encourages banks to introduce new methodologies and systems. Failure to adapt to changes in legislation and international standards can lead to serious penalties for banks and a loss of reputation.

Improving the risk management system in bank investments is important not only for the bank itself, but also for the entire economy. Banks are the mainstay of the financial system, and their stability directly affects the sustainable development of the economy. An effective risk management system ensures that banks can function even in times of crisis, which increases the confidence of customers, investors and partners. This system also allows banks to maintain a competitive advantage, conquer new markets and develop innovative products.

Financial innovations such as cryptocurrency, DeFi (Decentralized Finance), NFTs and tokenization are creating new risk types for banks outside of traditional risk categories. Digital assets volatility, regulatory uncertainty and technology obsolescence risks are creating the need for banks to create new risk frameworks. The development of Central Bank Digital Currencies (CBDCs) is creating disintermediation risks for the traditional banking model. Peer-to-peer lending, crowdfunding and alternative investment platforms are increasing competitive risks for banks. Emerging technologies such as quantum finance, algorithmic stablecoins and programmable money are creating operational model risks for banks. FinTech partnerships and API banking expansion are increasing third-party risks and vendor risks. Data monetization, platform economics and ecosystem banking models are also creating reputational and compliance risks for banks. Issues such as artificial intelligence bias, algorithmic discrimination and

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automated decision-making ethics are creating new social responsibility risks for banks. The acceleration of digitalization and the expansion of remote working models are creating a need to raise cyber security risks and operational resilience in banking operations to a new level. Advanced Persistent Threats (APT), ransomware attacks and data breaches pose not only financial losses for banks, but also the risk of reputational damage and regulatory sanctions. Cloud computing adoption, outsourcing arrangements and third-party dependencies are creating vendor risks and concentration risks for banks. Business continuity planning, disaster recovery capabilities and crisis management protocols are facing the need to take into account new pandemic and natural disaster risks. Human capital risks, talent retention challenges and skills gap issues are creating difficulties for banks in ensuring operational effectiveness. While process automation, robotic process automation (RPA) and artificial intelligence integration increase operational efficiency, they also create new technology-related operational risks. Regulatory compliance automation, anti-money laundering (AML) systems and know-your-customer (KYC) processes are increasing compliance costs for banks and creating compliance risks.

The increasing interconnectedness of global financial markets and the dominance of algorithmic trading require new approaches to market risk management for banks. High-frequency trading, dark pools, and fragmented markets are creating new challenges for traditional market risk models. Negative interest rates, yield curve inversions, and unconventional monetary policies are forcing banks to reconsider traditional interest rate risk models. Commodity price volatility, currency wars, and cross-currency basis risks are complicating banks' hedging strategies. Liquidity risk management has become a new priority after the market stress events during the COVID-19 pandemic. Funding liquidity risks, market liquidity risks, and asset-liability duration mismatch are creating the need for banks to create integrated liquidity management frameworks. Contingent liquidity risks, off-balance sheet exposures, and derivative obligations are requiring banks to create comprehensive stress testing scenarios. Banks are facing the need to strengthen their liquidity buffers in order to reduce their dependence on central bank emergency liquidity facilities.

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Table 1 Improving the risk management system in bank investments*

Stage	Task	Implementation period	Responsible department/person	Expected result
Analysis and planning	a) Available risks management system audit b) Investment in the portfolio main Identifying risks (market , credit , liquidity , operational) International with standards (e.g. Basel) comparison based on spaces find. d) Improvement strategy and work plan to compile.	1-2 months	Risk Management Department, Internal Audit	A complete report on the strengths and weaknesses of the system.
System and methodology development	a)Introduction of quantitative risk assessment models (e.g. VaR – Value at Risk). b) Setting risk limits for new types of investments. c)Development and implementation of stress test scenarios. d) Creation of an early warning system for risks.	3-5 months	Risk Management Department, IT Department	A clear and reliable risk assessment methodology.
Improving technological infrastructure	a) Risks management for special software supply choice and current b) Investment and risk information centralized base Create a report. to give system automation.	6-9 months	IT Department, Risk Management Department	Fast and accurate data analysis.
Employee training	a)Risk management department employees for trainings organization b) Other investment with practitioner divisions for risks according to seminar c) Assessing the knowledge and skills of employees .	Permanent	HR Department, Risk Management Department	Formation of a risk culture and increase in the professional level of employees.
Monitoring and reporting	a) Risks about reports regular preparation and to the management presented b) Risk management committee their meetings c) External and internal audits through system efficiency permanent control to do	Monthly/quarterly	Risk Management Committee, All Divisions	Transparency and control of the risk management process are ensured.

*Compiled by the author.

An integrated approach to improving the risk management system in bank investments is of great importance. As shown in the table, identifying and analyzing risks, forming a methodological base, developing technological infrastructure, improving staff skills, and strengthening control mechanisms are the main stages of effective risk management. Through these stages, banks will be able to accurately assess not only credit, liquidity, or market risks, but also operational and strategic risks. As a result, a modern risk management system will serve to form a sustainable investment policy.

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The responsible departments and expected results listed in the table determine specific mechanisms for improving the effectiveness of risk management in banks. In particular, the coordinated activities of risk management departments and IT infrastructures allow for early forecasting of risks and taking prompt action. At the same time, the safety of bank investments is ensured as a result of regular training of employees, the formation of a risk culture and strengthening of internal control systems. This, in turn, leads to strengthening the financial stability of banks and increasing the diversification and efficiency of investment portfolios.

The complexity of credit risks in bank investment portfolios and the increase in concentration risks create the need to create new credit risk management methodologies. Corporate sector stress, SME financing challenges and retail credit expansion require diversified credit portfolio strategies for banks. Sector concentration, geographic concentration and single-name concentration risks create the need for banks to develop portfolio optimization models. Early warning systems, credit monitoring frameworks and workout strategies are tools for banks to ensure proactive credit risk management. Alternative credit scoring, machine learning-based underwriting and behavioral analytics provide opportunities to improve credit decision-making processes. Environmental credit risks, social credit risks and governance credit risks add additional dimensions to traditional credit analysis. Cross-default risks, correlation risks and systemic credit events create the need for banks to expand stress testing scenarios. Recovery and resolution planning, bail-in mechanisms and total loss-absorbing capacity (TLAC) requirements require banks to reformulate their capital planning and risk appetite framework.

The future of risk management in banking investments is based on emerging risks identification, scenario planning and adaptive risk management capabilities. Potential paradigm shifts such as Artificial General Intelligence (AGI), quantum computing breakthroughs and biotechnology advances require strategic risk planning for banks. Next-generation risk models, real-time risk aggregation and dynamic risk limits create proactive risk management capabilities for banks. Integrated risk frameworks, enterprise-wide risk culture and risk-aware decision making are tools for banks to create sustainable competitive advantage. Regulatory anticipation, supervisory dialogue enhancement and industry best practices sharing are strategies for banks to reduce regulatory risks. Stakeholder expectations evolution, social responsibility enhancement and purpose-driven banking models take reputational risk management to a new level for banks. Innovation labs, risk sandboxes and controlled experimentation enable banks to manage emerging risks and capture new opportunities. Risk data governance, model validation frameworks and continuous monitoring systems provide evidence-based risk management for banks. Strategic partnerships, ecosystem collaboration, and knowledge sharing provide opportunities for banks to build collective risk intelligence and strengthen industry-wide resilience.

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Conclusion and Suggestions

The risk management system in bank investments is one of the most important factors ensuring the stability of the financial market and the reliability of banking activities . If risk control mechanisms do not work effectively, the investment portfolio of banks may suffer losses and financial crises may occur. In the modern banking system, risk management is carried out not only through traditional methods (diversification, guaranteed assets, insurance mechanisms), but also through advanced methods (stress tests, Value-at-Risk models, credit ratings). In the conditions of Uzbekistan, risk management of commercial banks is still at the development stage, and it is necessary to widely introduce methodologies that comply with international standards, and use the principles of the Basel Committee. Research conducted by domestic, foreign and CIS scientists shows that the main ways to reduce risks in the investment portfolio are diversification, cross-sector balance, geographical investments, the use of innovative technologies and work with state guarantees.

It is advisable to implement the following measures to improve the risk management system in Bank investments in our country:

Creating a system for assessing operational, credit and liquidity risks in banks in accordance with international standards.

Real-time risk monitoring using artificial intelligence, Big Data, and blockchain technologies.

Commercial banks should not limit their investments to industry and trade, but also focus on promising sectors such as agriculture, IT, and green energy.

Regional risk sharing through the implementation of joint investment projects with foreign financial institutions and international funds.

Establish special training centers in banks and train personnel with international certificates.

Expanding the practice of guaranteeing investments of commercial banks in cooperation with insurance companies, etc.

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