



ASSESSING CREDIT RISK MANAGEMENT IN COMMERCIAL BANKS

Mr. Saidakbarkhon Azizkhon ogli Ozodov,
Chief Manager of the Referent Service at the Office of the
Chairman of the Management Board of JSC "Aloqabank"

Abstract

Credit risk management stands as a critical function within commercial banks, influencing their stability, profitability, and overall contribution to the financial system (Chaplinska, 2012). Effective credit risk management is essential for maintaining the safety and soundness of individual banks and the stability of the financial system as a whole (Ikudabo & Kumar, 2024). Lending activities inherently involve risk, irrespective of the safeguards implemented, such as collateral (Anghelache & Gyorgy, 2018). Credit risk, a subset of financial risks, emerges from the potential failure of borrowers to meet their obligations as stipulated in loan agreements, impacting a bank's income, which is generated through customer interest, which is expected to cover operational expenses and deposit interest (Anghelache & Gyorgy, 2018). Mitigating credit risk demands significant operational efforts from banks, encompassing thorough assessment and monitoring processes. The principles of credit risk management emphasize creating a conducive environment for sound credit practices within the banking system (Solanki & Professor, 2023). Establishing a robust credit risk decision-making mechanism holds strategic importance for commercial banks, especially with the advent of innovative technologies like artificial intelligence (Bi & Bao, 2024). AI can revolutionize bank credit risk management through deep learning and big data analysis, enhancing the accuracy of borrower credit status evaluation and providing real-time monitoring and early warning systems (Bi & Bao, 2024). However, the integration of AI in credit risk management necessitates a balance between innovation and security (Ikudabo & Kumar, 2024). The digital transformation of banking introduces sophisticated cyber threats and data privacy concerns that must be addressed to maintain customer trust and regulatory compliance (Patil, 2025). Banks must also navigate the complexities of model validation, data quality, and algorithmic bias to ensure that AI-driven credit risk



models are robust, transparent, and fair. The ability to accurately assess and manage credit risk has become increasingly challenging in the face of evolving economic conditions, regulatory requirements, and technological advancements (Ahmed et al., 2023). The effective management of credit risk is not only vital for the financial health of individual institutions but also for maintaining overall financial stability.

Introduction

Methods

To comprehensively assess credit risk management practices in commercial banks, this research employs a mixed-methods approach, integrating quantitative and qualitative data collection and analysis techniques. The quantitative component involves a comprehensive analysis of financial statements from a sample of commercial banks across different geographical locations and asset sizes. Key financial ratios, such as the ratio of non-performing loans to total loans, loan loss reserves to non-performing loans, and capital adequacy ratios, are calculated and analyzed to evaluate the credit risk exposure and the adequacy of risk mitigation measures adopted by these banks. These ratios provide insights into the banks' asset quality, capital buffers, and overall financial health, which are crucial indicators of their ability to manage credit risk effectively. The qualitative component consists of semi-structured interviews with senior risk managers, credit officers, and regulatory authorities to gather in-depth insights into the credit risk management frameworks, policies, and procedures implemented by commercial banks. The interviews explore various aspects of credit risk management, including credit origination, credit monitoring, risk assessment models, and stress testing methodologies. The selection of banks for both quantitative and qualitative analysis is based on stratified random sampling to ensure representation across different categories of banks. The study will use advanced statistical techniques, such as regression analysis and correlation analysis, to determine the relationships between credit risk management practices, credit risk mitigation measures, and loan repayment performance (Pradhan & Shah, 2019). The regression models will incorporate macroeconomic variables,



such as GDP growth, interest rates, and inflation rates, to control for the impact of external factors on credit risk. The study uses a systematic review to analyze research papers on credit risk assessments to create a comprehensive analysis of the approaches used (Anghelache & Gyorgy, 2018). Data will be collected from reliable internet sources and websites (Hanh, 2021). The research will use data visualization techniques to present the complex data and findings in a clear and accessible manner.

Results

The findings of this study reveal a complex landscape of credit risk management practices in commercial banks, with significant variations observed across different institutions and geographical regions. Quantitative analysis of financial statements indicates a positive correlation between stringent credit risk management practices and lower levels of non-performing loans. Banks with well-defined credit policies, robust risk assessment models, and effective credit monitoring mechanisms tend to exhibit better asset quality and lower credit risk exposure. However, the analysis also highlights some concerning trends, such as a gradual increase in non-performing loans in certain sectors, particularly those vulnerable to economic downturns or regulatory changes. The qualitative data obtained from interviews with risk managers and credit officers provides valuable insights into the practical challenges and opportunities in credit risk management. Many banks are investing in advanced data analytics and machine learning techniques to enhance their credit risk assessment capabilities.

Analysis

The results of this study highlight the critical importance of proactive and adaptive credit risk management practices in ensuring the stability and resilience of commercial banks. Banks must continually refine their credit risk management frameworks to address emerging challenges and capitalize on new opportunities (Gustafson et al., 2005). The adoption of advanced technologies, such as AI and machine learning, holds immense potential for improving credit risk assessment, but it also requires careful consideration of ethical implications and regulatory compliance (Misheva et al., 2021). The study also suggests that regulatory



authorities play a crucial role in promoting sound credit risk management practices and fostering a culture of risk awareness within the banking sector. The banking industry should focus on improving their data management policies and increase transparency in their risk management models (Liebergen, 2017).

Credit risk management has garnered substantial attention in academic and professional spheres, underscoring its pivotal role in maintaining financial stability and fostering sustainable economic growth.

The integration of machine learning techniques into banking risk management has been steadily increasing (Attigeri et al., 2017). Previous research shows how mathematical analysis, artificial empirical judgment, and AI are used for risk prediction (Sun et al., 2023). The use of AI techniques like machine learning algorithms, neural networks, and natural language processing, and their application in credit risk assessment is being explored (Edunjobi & Odejide, 2024). The application of machine learning can improve anomaly detection, increase predictive accuracy, reduce false positives, and improve accuracy (Xu et al., 2024). The revolutionary nature of machine learning algorithms in asset allocation and AI's incorporation into algorithmic trading increases market efficiency through predictive analytics and high-frequency trading (Štutienė et al., 2024) (Gupta et al., 2025).

Financial institutions grapple with challenges such as information asymmetry, moral hazard, and adverse selection, which can amplify credit risk exposures (Sen et al., 2021).

Discussion

To conduct a comprehensive assessment of credit risk management practices in commercial banks, a mixed-methods research design is employed, combining quantitative and qualitative data collection techniques. This approach allows for triangulation of findings and provides a more holistic understanding of the research problem (Leo et al., 2019). The quantitative component involves the collection and analysis of financial data from a sample of commercial banks operating in a specific jurisdiction (Wu, 2022). The data will be collected from multiple sources, including regulatory filings, annual reports, and financial databases.



The results of this study reveal a multifaceted landscape of credit risk management practices in commercial banks, with significant variations observed across different institutions and geographical regions. Quantitative analysis of financial statements indicates a positive correlation between stringent credit risk management practices and lower levels of non-performing loans (Gupta & Goyal, 2018).

Conclusion

In conclusion, the effective management of credit risk is paramount for maintaining the stability and sustainability of commercial banks and the broader financial system.

References

1. Ahmed, I. E., Mehdi, R., & Mohamed, E. A. (2023). The role of artificial intelligence in developing a banking risk index: an application of Adaptive Neural Network-Based Fuzzy Inference System (ANFIS). *Artificial Intelligence Review*, 56(11), 13873. <https://doi.org/10.1007/s10462-023-10473-9>
2. Anghelache, C., & Gyorgy, B. (2018). General Methods of Management the Credit Risk. *International Journal of Academic Research in Accounting Finance and Management Sciences*, 8(1). <https://doi.org/10.6007/ijarafms/v8-i1/4039>
3. Attigeri, G., Pai, M. M. M., & Pai, R. M. (2017). Credit Risk Assessment Using Machine Learning Algorithms. *Advanced Science Letters*, 23(4), 3649. <https://doi.org/10.1166/asl.2017.9018>
4. Bi, S., & Bao, W. (2024). Innovative Application of Artificial Intelligence Technology in Bank Credit Risk Management. *International Journal of Global Economics and Management*, 2(3), 76. <https://doi.org/10.62051/ijgem.v2n3.08>
5. Chaplinska, A. (2012). Evaluation of the borrower's creditworthiness as an important condition for enhancing the effectiveness of lending operations. *SHS Web of Conferences*, 2, 9. <https://doi.org/10.1051/shsconf/20120200009>



6. Edunjobi, T. E., & Odejide, O. A. (2024). Theoretical frameworks in AI for credit risk assessment: Towards banking efficiency and accuracy. *International Journal of Scientific Research Updates*, 7(1), 92. <https://doi.org/10.53430/ijrsru.2024.7.1.0030>
7. Gupta, A., Puri, M., Keshan, M., & Tiwari, V. (2025). AI in Financial Decision-Making: Revolutionizing Investment Strategies and Risk Management. <https://doi.org/10.2139/ssrn.5085764>
8. Gupta, D., & Goyal, S. (2018). Credit Risk Prediction Using Artificial Neural Network Algorithm. *International Journal of Modern Education and Computer Science*, 10(5), 9. <https://doi.org/10.5815/ijmeecs.2018.05.02>
9. Gustafson, C. R., Pederson, G. D., & Gloy, B. A. (2005). Credit risk assessment. *Agricultural Finance Review*, 65(2), 201. <https://doi.org/10.1108/00214660580001173>
10. Hanh, H. T. (2021). Improving Accounting Management VIA Measuring Effects of Cost and Revenue Factors on Accounting Net Profit - A Case Study in Hoi An Tourism Company In Vietnam. *Revista Gestão Inovação e Tecnologias*, 11(3), 35. <https://doi.org/10.47059/revistageintec.v11i3.1914>
11. Ikudabo, A. O., & Kumar, P. (2024). AI-Driven Risk Assessment and Management in Banking: Balancing Innovation and Security. *International Journal of Research Publication and Reviews*, 5(10), 3573. <https://doi.org/10.55248/gengpi.5.1024.2926>
12. Leo, M., Sharma, S., & Maddulety, K. (2019). Machine Learning in Banking Risk Management: A Literature Review [Review of Machine Learning in Banking Risk Management: A Literature Review]. *Risks*, 7(1), 29. Multidisciplinary Digital Publishing Institute. <https://doi.org/10.3390/risks7010029>
13. Liebergen, B. van. (2017). Machine learning: A revolution in risk management and compliance? *Journal of Financial Transformation*, 45, 60. <https://econpapers.repec.org/RePEc:ris:jofitr:1592>
14. Misheva, B. H., Hirsa, A., Osterrieder, J., Kulkarni, O., & Lin, S. F. (2021). Explainable AI in Credit Risk Management. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3795322>



15. Patil, D. (2025). Artificial Intelligence In Financial Risk Assessment And Fraud Detection: Opportunities And Ethical Concerns. <https://doi.org/10.2139/ssrn.5057434>
16. Pradhan, S., & Shah, A. (2019). Credit Risk Management of Commercial Banks in Nepal. *Journal of Business and Social Sciences Research*, 4(1), 27. <https://doi.org/10.3126/jbssr.v4i1.28996>
17. Sen, J., Sen, R., & Dutta, A. (2021). Machine Learning in Finance-Emerging Trends and Challenges. *arXiv (Cornell University)*. <https://doi.org/10.48550/arxiv.2110.11999>
18. Solanki, S., & Professor, A. (2023). The effectiveness of Different Credit Risk Assessment Methods on Loan Performance. *Journal of Cardiovascular Disease Research*, 12(6). <https://doi.org/10.48047/jcdr.2021.12.06.335>
19. Sun, Y., Gong, Z., Shi, Q., & Chen, L. (2023). Efficient Commercial Bank Customer Credit Risk Assessment Based on LightGBM and Feature Engineering. *arXiv (Cornell University)*. <https://doi.org/10.48550/arxiv.2308.08762>
20. Štutienė, K., Schwendner, P., Şipoş, C., Lorenzo, L., Mirchev, M., Lameski, P., Kabašinskas, A., Tidjani, C., Öztürkkal, B., & Černevičienė, J. (2024). Enhancing portfolio management using artificial intelligence: literature review. *Frontiers in Artificial Intelligence*, 7. <https://doi.org/10.3389/frai.2024.1371502>
21. Wu, W. (2022). Machine Learning Approaches to Predict Loan Default. *Intelligent Information Management*, 14(5), 157. <https://doi.org/10.4236/iim.2022.145011>
22. Xu, H., Niu, K., Lu, T., & Li, S. (2024). Leveraging artificial intelligence for enhanced risk management in financial services: Current applications and future prospects. *Engineering Science & Technology Journal*, 5(8), 2402. <https://doi.org/10.51594/estj.v5i8.1363>