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ADVANCED INTERNATIONAL PRACTICES OF EFFECTIVE CREDIT PORTFOLIO MANAGEMENT AND THEIR IMPLEMENTATION OPPORTUNITIES

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Abstract: The article examines the advanced foreign experience in the effective management of commercial banks' loan portfolios is analyzed, in particular, it examines the best practices used by commercial banks in developed countries, including a number of efficient strategies, technologies, and methodologies such as the automated credit risk assessment system ("credit scoring system"), deep diversification, Internal Ratings-Based Approach, stress testing practices, loan repackaging and securitization, as well as the opportunities offered by digitalization and "fintech" technologies, based on the analysis, relevant conclusions and recommendations for their implementation have been developed.

Key words: loan, credit policy, loan portfolio, diversification, credit scoring system, Internal Ratings-Based Approach, loan repackaging, loan securitization, lending strategy, credit rating.

Annotatsiya: Mazkur maqolada tijorat banklarining kredit portfelini samarali boshqarishdagi ilg‘or xorijiy tajriba, jumladan, rivojlangan davlatlarda tijorat banklari tomonidan qo‘llanilayotgan ilg‘or yondashuvlar tahlil qilingan. Unda ular tomonidan tatbiq etilayotgan samarali strategiyalar, texnologiyalar va metodikalar, jumladan, risklarni baholashning avtomatlashtirilgan credit scoring system, chuqur diversifikatsiyalash, ichki reyting tizimlari (Internal Ratings-Based Approach), stress-testlash amaliyoti, kreditlarni qayta paketlash va sek'yuritizatsiya, shuningdek, raqamlashtirish (sifrovizatsiya) va fintex texnologiyalarining imkoniyatlari o‘rganilgan. Shuningdek, ularni milliy bank tizimiga tatbiq etish bo‘yicha xulosa va tavsiyalar ishlab chiqilgan.

Kalit so‘zlar: kredit, kredit siyosati, kredit portfeli, diversifikatsiya, credit scoring system, Internal Ratings-Based Approach, kreditni qayta paketlash, kredit sek'yuritizatsiya, kreditlash strategiyasi, kredit reyting.

Аннотация: В данной статье исследуются передовой зарубежный опыт эффективного управления кредитным портфелем коммерческих банков, в том числе анализируются лучшие практики, применяемые коммерческими банками развитых стран, рассмотрены используемые ими эффективные стратегии, технологии и методики, в частности автоматизированная система оценки рисков «credit scoring system», глубокая диверсификация, системы внутренних рейтингов (Internal Ratings-Based Approach), практика стресс-тестирования, перепакетирование и секьюритизация кредитов, а также возможности цифровизации и финтех-технологий, на основе этих анализов разработаны выводы и рекомендации по их внедрению.

Ключевые слова: кредит, кредитная политика, кредитный портфель, диверсификация, credit scoring system, Internal Ratings-Based Approach, перепакетирование кредита, секьюритизация кредита, стратегия кредитования, кредитный рейтинг.

INTRODUCTION

In recent years, reforms implemented across all sectors in our country have faced various challenges due to global factors such as inter-state conflicts, the increasing interdependence of economies in energy, logistics, and agriculture — traditionally the key drivers of growth — as well as issues of water scarcity, environmental degradation, and the need to integrate advancements in science, technology, and innovation into effective project implementation. Under these conditions, it has become essential for commercial banks — the main and most reliable source of financing — to allocate their credit resources to productive projects, ensure the timely execution of reforms, and maintain the quality of their loan portfolios. In this context, adopting the best international practices of efficient credit portfolio management has gained critical importance.

As emphasized earlier, the increasing demand for large-scale investment loans requires banks to ensure the timely repayment of attracted funds, while simultaneously promoting job creation, expanding exports, reducing imports, and improving the balance of payments. Achieving these outcomes demonstrates the necessity of studying international experience in the effective management of commercial banks' credit portfolios to enhance their efficiency.

According to TheGlobalEconomy.com, the degree of economic dependence on bank lending has been rising even in developed countries in recent years. For instance, the ratio of bank assets to GDP stands at 169.9% in Denmark, 131.0% in France, 119.7% in Spain, 115.5% in Italy, 96.0% in Germany, 214.2% in China, 153.0% in Malaysia, 169.6% in Japan, and 181.7% in South Korea[1].

In the "Uzbekistan–2030" Strategy, the government aims to double the size of the national economy by 2030 and elevate the country into the group of "upper-middle-income states." Achieving this ambitious goal requires unlocking new opportunities by efficiently utilizing local raw material resources and developing industry based on advanced technologies[2].

REVIEW OF LITERATURE ON THE SUBJECT

The issues of efficient credit portfolio management by commercial banks, along with the practical experience, challenges, and shortcomings observed in this field, have been extensively studied by numerous scholars.

According to foreign researchers Sokol Ndoka and Manjola[3], effective credit portfolio management requires particular attention to credit risk management — specifically, the monitoring and control of non-performing loans (NPLs)[4].

Russian scholar Yu.A. Gerasina argues that "it is impossible to manage a credit portfolio effectively without regular risk reports and recommendations based on them. It should be noted that today, not only in Russia but globally, there is no single universally correct method of managing credit portfolios. Each bank develops its own systems for improvement, and only those systems that achieve competitive advantage in the market can be considered successful. Nevertheless, a set of fundamental principles and basic requirements must be adhered to[5]".

According to Uzbek economist D.M. Malikova, "in international practice, credit portfolio optimization is primarily based on managing 'problematic assets' — that is, impaired or hopeless loans. Reducing the share of such assets helps optimize the credit portfolio, thereby strengthening both the bank's stability and that of the entire banking system. Therefore, every bank must assess and manage its credit portfolio according to its specific circumstances, business priorities, market position, and other factors. It can be concluded that credit risk management methods must continuously evolve, requiring constant improvement of credit and banking information infrastructures[6]".

Economist Ye.M. Ponamareva states that "credit portfolio management is a complex and multifaceted process that demands banks to apply various methods and approaches. Credit diversification, risk assessment, and regular portfolio restructuring are key elements of effective management."

RESEARCH METHODOLOGY

During the research process, methods of abstract-logical reasoning, generalization, comparison, analysis and synthesis, as well as system analysis were applied. Statistical data related to the credit portfolios of commercial banks were analyzed and compared, and based on the results of this analysis, conclusions and recommendations were developed.

ANALYSIS AND RESULTS

In all sectors of the economy, including the banking system, the widespread use of advanced information technologies (IT), computer programs, the integration of IT platforms across various fields, the expansion of

1 https://www.theglobaleconomy.com/rankings/bank_assets
2 O'zbekiston Respublikasi Prezidentining Farmoni "O'zbekiston – 2030" strategiyasi, 2023-yil 11-sentyabr, PF-158-son Toshkent sh.
3 European university of Tirana
4 https://ecsdev.org/ojs/index.php/ejsd/article/view/370/367
5 https://cyberleninka.ru/article/n/15-10-upravlenie-kreditnym-portfelem-kommercheskogo-banka
6 https://cyberleninka.ru/article/n/kreditnyy-portfel-bankov-i-metody-effektivnogo-upravleniya-im

databases, and the simplification of data usage have significantly enhanced opportunities for effective credit portfolio management.

The main objective of any commercial bank is to increase profitability, and efficient management of its credit portfolio serves as the key factor in ensuring financial stability, maintaining liquidity, and mitigating credit risks.

An optimal credit portfolio is achieved by distributing loans among borrowers based on various principles to maximize profitability and minimize risk under prevailing economic conditions.

According to international experience, the primary requirement for forming and optimizing a credit portfolio is maintaining a high degree of balance—meaning that an increase in risk for certain types of loans should be offset by the stability and profitability of others.

In every country, the optimization of a bank's credit portfolio is implemented through tools and methods that balance risk, return, and liquidity—an approach widely recognized in international banking practice. Most global financial institutions emphasize the following measures as critical to portfolio optimization:

• Minimizing credit risk while increasing portfolio profitability;
• Encouraging compliance with both internal and external banking regulations;
• Meeting all requirements outlined in the bank's credit policy;
• Improving the quality of credit management;
• Introducing incentive systems for credit operations staff.

An analysis of advanced foreign practices used by commercial banks in developed countries shows that a range of effective strategies, technologies, and methodologies are being actively implemented.

Our research examines several of these approaches, including:

1. Automated systems for credit risk assessment ("credit scoring systems");
2. Deep diversification of the credit portfolio;
3. Internal rating systems (IRB – Internal Ratings-Based Approach);
4. Stress testing of loan portfolios;
5. Loan repackaging and securitization;
6. The use of digitalization and fintech technologies.

Automated systems for assessing credit risk represent statistical data analysis processes used by banks, creditors, and other financial institutions to determine a borrower's creditworthiness during loan issuance. These systems assist in decision-making regarding loan approval or rejection. A customer's long-term credit rating serves as the primary factor influencing their borrowing capacity—either increasing or limiting it.

In developed countries such as the United States, the United Kingdom, and Germany, banks widely employ automated credit scoring systems to evaluate a client's ability to repay loans and interest obligations.

As noted above, the credit scoring system assigns a numerical score to potential borrowers based on automated analysis of their financial condition and risk-related data. This score reflects the borrower's creditworthiness.

Typically, the system functions as a computer program designed to input and analyze borrower data, determining loan terms such as amount and duration. The program raises the rating of disciplined borrowers by assigning positive points and, conversely, deducts points from those who miss payments, thereby lowering their credit ratings.

Factors Influencing Borrowers' Credit Ratings:

1. Payment history (financial discipline) – 35%;
2. Level of indebtedness – 30%;
3. Length of credit history – 15%;
4. New credit – 10%;
5. Mixed types of credit – 10%.

A borrower's income (cash flow), traditionally considered the main indicator of creditworthiness, also plays a key role in credit scoring systems. These data are automatically retrieved from primary sources through digital platforms.

Currently, several credit scoring models exist, each differing in its assessment criteria. For example, the Fair Isaac Corporation (FICO) model is one of the most widely used and well-known scoring systems in the U.S. financial sector, employed by nearly 90% of financial institutions. Another example is the VantageScore system, developed in collaboration between the three major credit reporting agencies — TransUnion, Experian, and Equifax.

Although credit rating and credit scoring are logically related, they represent distinct concepts. Credit ratings are applied to companies, their securities, and asset-backed financial instruments, and are expressed using a letter-based scale. In contrast, a credit scoring model constructs a profile of an individual borrower's attitude and behavior toward credit.

While the credit scoring system provides a detailed assessment of a borrower's credit risk, it cannot predict the borrower's likelihood of facing a financial crisis. In other words, it evaluates risk levels ranging from the highest to the lowest but does not fully capture the probability of default under future adverse conditions.

Another limitation of the credit scoring system is its inability to account for current macroeconomic conditions that may influence a borrower's financial stability.

Thus, although credit scoring offers a fast and objective means of assessing a borrower's creditworthiness while minimizing human subjectivity, its capacity to evaluate external influences — such as economic shocks or regulatory changes — and their impact on the borrower's future financial position remains limited.

One of the key global practices for ensuring the efficiency of credit portfolios is loan diversification.

For instance, in Japan, commercial banks strive to maintain a balance among industrial sectors to improve the quality of their credit portfolios. In contrast, European Union commercial banks tend to prioritize geographical diversification of their loan portfolios.

Credit portfolio diversification refers to the process of distributing assets among various types and classes of borrowers, sectors, and geographic regions in order to reduce risk and mitigate the negative impact of low-performing segments.

Based on this definition, banks must ensure that their loan allocations are distributed evenly across different categories of borrowers to maintain portfolio stability.

Economic literature identifies four main types of diversification commonly used in international practice, each with its own characteristics, risks, and benefits:

1. Concentric diversification — The bank extends loans to new clients while maintaining the general purpose and structure of its existing credit portfolio.

2. Horizontal diversification — The bank expands its lending activities not only to its existing clients but also to entirely new groups of borrowers.

3. Vertical diversification — The bank finances projects in sectors different from those in which its core clients operate, thereby expanding into upstream or downstream industries.

4. Conglomerate diversification — The credit institution distributes its financial resources across unrelated sectors of the economy, different types of borrowers (individuals, legal entities, small, medium, and large businesses), and various geographical regions to minimize dependence on any single segment (Table 1).

Table 1. Average Level of Credit Portfolio Diversification

№	Indicator	International Practice	Basel Standards
1	Share of loans issued to a single sector	20–30%	20–30%
2	Share of loans issued to a single sub-sector	10–15%	–
3	Share of loans issued to a single region (province, district)	10–25%	25–30%*
4	Share of loans by type (mortgage, consumer, etc.)	40–50%	–
5	Share of loans with low collateralization (pledge, guarantee, warranty)	10–15%	50%**
6	Share of loans issued to a single borrower or related parties as a proportion of bank capital	15%	25%

* Share of total bank assets

** Share of loans issued under the same type of collateral

Based on the above table, foreign banks tend to maintain a higher degree of diversification by sectors compared to by regions. This suggests that loans within a single sector carry more homogeneous risks than loans distributed across different regions. The relatively low level of diversification by loan type can be explained by the fact that the same loan type is distributed among borrowers with different characteristics and risk profiles, which naturally balances overall exposure (Table 2).

Table 2. Sectoral Diversification of Commercial Banks' Credit Portfolios (Outstanding Balances at the Beginning of the Reporting Period)

Sector	01.01.2021	01.01.2022	01.01.2023	01.01.2024	01.01.2025
Industry	37%	36%	32%	30%	29%
Agriculture	10%	11%	11%	10%	9%
Construction	3%	3%	3%	3%	2%
Trade and general services	7%	8%	7%	7%	7%

Transport and communications	10%	9%	8%	7%	6%
Development of material and technical supply	1.4%	1.2%	1.0%	0.9%	0.8%
Housing and utilities	1.4%	0.7%	0.5%	0.5%	0.4%
Individuals	20%	21%	26%	32%	33%
Other sectors	11%	10%	12%	11%	12%
Total	**100%**	**100%**	**100%**	**100%**	**100%**
Diversification level	**21%**	**21%**	**21%**	**22%**	**23%**

As shown in Table 2, the overall level of credit portfolio diversification among commercial banks has been declining in recent years. The main reason is the sharp increase in the share of loans issued to individuals over the past five years, which has led to a more concentrated credit structure.

The IRB approach, developed under the Basel II and Basel III frameworks, has been adopted by many European and American banks. It serves as a method for calculating capital requirements for credit risk, allowing banks to use internal rating systems to determine the level of risk-weighted assets.

Within Basel regulations, two main IRB methodologies are applied:

• Foundation IRB (F-IRB)

• Advanced IRB (A-IRB)

The IRB system enables banks to assess key parameters such as:

• PD (Probability of Default) – The likelihood that a borrower will default within one year;

• LGD (Loss Given Default) – The percentage of exposure lost if the borrower defaults;

• EAD (Exposure at Default) – The total amount outstanding at the time of default;

• M (Maturity) – The average maturity period of the loan (Table 3, 4).

Table 3. Types of Internal Ratings-Based (IRB) Approaches

Type	Definition
Foundation IRB (F-IRB)	The bank estimates only PD, while LGD and EAD values are set by the regulator.
Advanced IRB (A-IRB)	The bank independently estimates PD, LGD, EAD, and M using internal models.

Table 4. Main Parameters of Internal Ratings-Based (IRB) Systems

Parameter	Definition	Measurement Explanation
PD (Probability of Default)	Probability that a borrower will default within one year	Percentage (%)
LGD (Loss Given Default)	Share of losses incurred due to default	Percentage (%)
EAD (Exposure at Default)	Loan amount outstanding at the moment of default	Sum or currency
M (Maturity)	Average term of the loan	Years

Key Requirements for IRB Systems:

• Model validation: Banks must develop models based on historical data and empirical evidence.

• Prudent estimation: Indicators should be calculated conservatively, adhering to the principle of prudence.

• Regulatory approval: Official authorization from the central bank or relevant authority is required before implementation.

• Data history: A minimum of five years of high-quality historical data must be available.

• Internal and external audit: IRB models must undergo independent verification and validation.

Globally, European banks such as ING and Deutsche Bank widely use A-IRB models, while banks in Japan and the United States have developed F-IRB systems based on extensive historical data.

Conclusions and suggestions

Recommendations Based on Research Findings:

1. Continuously improve credit portfolio diversification methods, taking into account the specific characteristics of each commercial bank.

2. To implement the IRB system effectively, enhance the development of high-quality data infrastructures and simplify the mechanism for obtaining regulatory approval from the Central Bank.

3. Develop mechanisms for securitization, enabling commercial banks to sell low-risk loans from their portfolios as asset-backed securities.

4. Introduce and integrate automated assessment systems, diversification tools, internal ratings, stress testing, financial technologies (FinTech), and ESG principles in parallel, while ensuring continuous modernization and updating of IT-based solutions.

List of used literature:

1. Ўзбекистон Республикасининг Қонуни “Банклар ва банк фаолияти тўғрисида” (янги таҳрири) Тошкент ш., 2019 йил 5 ноябрь, ЎРҚ-580-сон, https://www.lex.uz/acts/4581969;
2. Ўзбекистон Республикаси Президентининг Фармони “Ўзбекистон – 2030” стратегияси, Тошкент ш., 2023 йил 11 сентябрь, ПФ-158-сон, https://lex.uz/ru/docs/6600413
3. Али оглу А. О. Статистическое исследование непосредственного поддержания деятельности малого бизнеса в регионах // EPRA International Journal of Economic and Business Review (JEBR). - 2022. - Т. 10. – нет. 6. - С. 30-33;
4. Умаро З.А., Отамуродов Ҳ.Ҳ., Сайфиддинов И.Ф. МОНОГРАФИЯ, Тижорат банклари кредит портфелини бошқаришни такомиллаштириш, Тошкент молия институти -Т, “Молия-иқтисод” нашриёти, 2021. С. 19.
5. Кузмина С.Н., Арзикулов О.А. Методы управления кредитным портфелем коммерческих банков. Вестник Кокандского университета, 2023 г. №9. ISSN: 2181-1695. С. 11-16.
6. Арзикулов О. А. Роль малого бизнеса в развитых странах//Экономика и общество.-2019.-Нет. 12. - С. 30-33
7. Тавасиев А. М. Банковское дело. Управление и технологии: учебник / Под ред. А. М. Тавасиева. - М.: ЮНИТИ-ДАНА, 2015. 671 с.
8. Коробова Г. Г. Банковское дело: учебник / Под ред. Г. Г. Коробовой. - М.: Экономисту 2016. 766 с.
9. Банковские риски: учеб. пособие / коллектив авторов; под ред. д-ра экон.наук, проф. О.И. Лаврушина и д-ра экон. наук, проф. Н.И. Валенцевой. М., 2017 г.
10. Сабиров М.З. Кредитный портфель коммерческого банка: дис. канд.экон. наук. М., 2016г

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