

Improving the Borrower Creditworthiness Assessment System as A Tool for Enhancing the Loan Portfolio

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Received: 15 March 2026; **Accepted:** 03 April 2026; **Published:** 30 April 2026

Abstract: This article examines modern approaches to enhancing borrower creditworthiness assessment systems, a key tool for improving the quality of a commercial bank's loan portfolio. The study is driven by shifts in the structure of bank lending, the evolution of digital financial technologies, the expansion of remote lending, and the need for more precise credit risk identification. The research aims to develop a comprehensive approach to assessing borrower creditworthiness by combining traditional financial analysis, credit scoring, cash flow analysis, alternative data, artificial intelligence methods, and continuous monitoring of the client's financial status. The study employs methods of systems, comparative, and structural-functional analysis, alongside a synthesis of scientific approaches and an examination of international banking practices. It identifies the primary shortcomings of traditional creditworthiness assessment systems and outlines avenues for their improvement. A multi-level borrower assessment model is proposed, incorporating financial, non-financial, behavioral, and digital indicators. The study demonstrates that improving creditworthiness assessment not only enhances the quality of individual lending decisions but also improves overall loan portfolio management by reducing default probability, enabling the early identification of troubled borrowers, and optimizing the credit risk structure.

Keywords: Creditworthiness, borrower, credit risk, credit portfolio, credit scoring, financial analysis, Big Data, artificial intelligence, machine learning, probability of default, credit history, monitoring.

Introduction: Lending is a core activity of commercial banks and, simultaneously, a primary source of banking credit risk. The quality of a loan portfolio is directly linked to a bank's ability to effectively assess a borrower's capacity and willingness to meet their obligations.

In the current environment, traditional creditworthiness assessment is increasingly being supplemented by digital analysis methods. The expansion of remote banking services, the growth in electronic payment volumes, the development of digital platforms, and the emergence of new data sources create opportunities for a more comprehensive assessment of borrowers' financial health.

In accordance with modern Basel Committee principles, a bank must obtain sufficient information to understand a borrower's risk profile, capacity to repay

obligations, payment history, current financial position, and future cash flows. Furthermore, credit risk must be managed not only at the individual loan level but also at the portfolio level.

The need to improve creditworthiness assessment systems is particularly pressing given the digitalization of banking operations. The World Bank notes that modern algorithmic credit scoring systems can utilize a wide range of data—including transactional and behavioral information—potentially allowing for a more accurate assessment of the probability of default. At the same time, such systems require oversight regarding data quality, algorithms, and the risk of bias.

Improving creditworthiness assessment is also of practical importance for Uzbekistan's banking system. The IMF has recommended expanding access to credit information and refining banks' credit screening models and tools, while simultaneously modernizing

payment and digital infrastructure.

In this context, creditworthiness assessment should be viewed not merely as a one-time procedure prior to loan disbursement, but as a continuous credit risk management process spanning the entire lifecycle of the lending operation.

The aim of this study is to develop a comprehensive approach to improving borrower creditworthiness assessment systems as a means of enhancing the quality of a commercial bank's loan portfolio.

To achieve this aim, the following objectives have been defined:

1. to elucidate the economic essence of borrower creditworthiness;
2. identify the main methods of creditworthiness assessment;
3. identify the limitations of the traditional approach;
4. explore the potential for digitizing credit analysis;
5. determine the role of credit scoring and alternative data;
6. develop a multi-level creditworthiness assessment system;
7. determine the impact of improved borrower assessment on credit portfolio quality.

METHODS

The theoretical and methodological foundation of the study comprises modern approaches to credit risk management, international banking principles, and research on digital lending.

The information base draws upon materials from the Basel Committee on Banking Supervision, the International Monetary Fund, and the World Bank, as well as contemporary approaches to credit scoring, financial analysis, and credit portfolio management.

The study employs the following research methods:

- systems analysis;
- comparative analysis;
- structural-functional analysis;
- financial-economic analysis;
- logical generalization;
- expert assessment;
- credit risk analysis;
- scenario-based approach.

In this study, a borrower's creditworthiness is defined as a comprehensive characteristic of their ability and willingness to fulfill obligations to the bank in a timely and full manner.

For a comprehensive assessment, it is advisable to consider four main groups of factors: financial, credit, non-financial, and behavioral indicators.

Table 1. Main groups of indicators for assessing a borrower's creditworthiness

Group of indicators	Key characteristics	Value for assessment
Financial	Revenue, profit, liquidity, debt	Financial repayment capacity is determined
Credit-related	Payment history, past-due payments, current loans	Characterize credit discipline
Non-financial	Industry, business reputation, experience	They make it possible to take external factors into account
Behavioral	Transactions, movement of funds, limit usage	Reflect current financial behavior
Security	Collateral, guarantees, and surety bonds	They reduce potential losses in the event of default
Macroeconomic	Inflation, interest rates, and currency fluctuations	They take the external environment into account

Thus, a modern assessment of creditworthiness should be based not on a single indicator, but on a combination of factors characterizing the borrower's

capacity, stability, and behavior.

RESULTS

The analysis shows that improving creditworthiness

assessment is one of the most important areas for improving the quality of the loan portfolio. Errors made at the stage of the initial assessment of the borrower can lead to the accumulation of problem debt and a deterioration in the bank's financial performance.

A traditional appraisal system typically includes an analysis of financial statements, credit history, income,

leverage, collateral, and other standard metrics. This approach remains important, but its capabilities are limited for borrowers who have an insufficient credit history or incomplete financial statements.

A modern system should provide broader information coverage for the borrower.

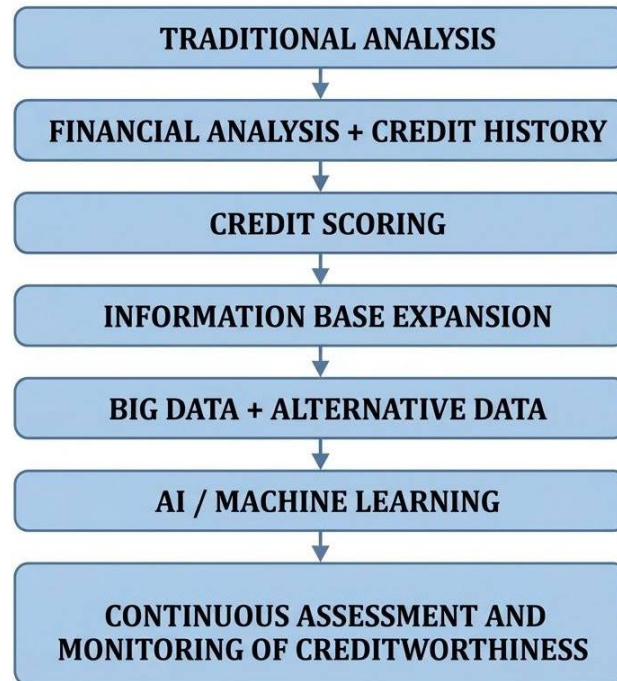


Figure 1. Evolution of the creditworthiness assessment system.

One of the key areas for improvement is the shift from static to dynamic creditworthiness assessment.

Under the static approach, the primary assessment takes place prior to loan issuance, with the bank conducting periodic monitoring thereafter.

In the dynamic approach, information about the

borrower is regularly updated, and changes in their financial or behavioral status can trigger an automatic revision of the risk level.

This approach makes it possible to take into account not only historical data but also current trends.

Table 2. Comparison of static and dynamic approaches

Criterion	Static approach	Dynamic approach
Evaluation time	Before the loan is issued	Throughout the entire credit cycle
Information	Historical	Historical + current
Monitoring	Periodic	Continuous/regular
Scoring	Initial	Periodically updated
Reaction to risk	After the problem arose	Before a significant delinquency arises

Data	Predominantly traditional	Traditional + alternative
Technologies	Standard information systems	Big Data, AI, ML

An important area for improvement lies in the development of credit scoring.

A scoring model enables the conversion of a borrower's characteristics into a quantitative assessment of credit risk. Depending on the borrower type, the model may factor in income levels, debt burden, loan repayment history, the duration of the financial relationship with the bank, cash flow structure, and other attributes.

However, applying a single scoring model to all borrower categories may lack efficiency. Consequently, it is advisable to employ segmented scoring models.

For example:

- a model for individuals;
- a model for sole proprietors;
- a model for small businesses;
- a model for medium-sized businesses;
- a model for large corporate borrowers.

This approach allows for the consideration of specific financial behaviors associated with different client categories.

Another key area is the use of alternative data. The World Bank indicates that transaction records—including data on sales, payments, orders, taxes, and other operations—can serve as additional indicators of a borrower's ability and willingness to meet repayment obligations.

Expanding the scope of credit information is particularly important for borrowers with limited credit histories. The World Bank notes that incorporating data such as utility payments, rent, microloans, and other positive information into credit reports can help clients with insufficient credit history build a more comprehensive credit profile.

For the banking system, this signifies a shift from evaluating only existing credit history to creating a more complete digital profile of creditworthiness.

At the same time, the use of alternative data must comply with confidentiality and data protection requirements. The World Bank emphasizes that the use of alternative data and algorithmic models entails risks related to data misuse, algorithmic bias, and a lack of decision transparency.

The next area of focus is improving the analysis of a borrower's cash flows.

This method is particularly important for entrepreneurs and corporate clients. In some instances, accounting profit figures do not fully reflect an enterprise's actual capacity to service debt. Cash flow analysis makes it possible to determine:

- the stability of inflows;
- revenue seasonality;
- payment regularity;
- the ratio of inflows to obligations;
- dependence on specific counterparties;
- the adequacy of cash flows for debt servicing.

Thus, the assessment must address the fundamental question:

is the borrower's projected cash flow sufficient to service the credit obligation on time?

The next element involves the use of debt burden analysis.

For individuals, a key indicator is the ratio of total debt obligations to income. For businesses, a similar analysis can be conducted using debt-service indicators, debt-to-cash-flow ratios, and other measures of financial stability.

Starting in 2026, a new debt-to-income limit will apply in Uzbekistan to consumer loans, microloans, and credit cards, aimed at keeping household debt burdens at an acceptable level.

It is proposed to construct an integrated creditworthiness index based on the aforementioned components.

Conceptually, it can be represented as follows:

$$ICI = F + C + D + B + N + M$$

where:

ICI — integrated creditworthiness assessment;

F — financial stability;

C — credit history;

D — debt burden;

B — behavioral indicators;

N — non-financial factors;

M — macroeconomic factors.

The specific weights of the components should be determined by the bank based on historical data, forecasting accuracy, and the characteristics of the

specific borrower segment. Therefore, the formula presented here serves as a conceptual model rather than a universal regulatory formula.

An important outcome of the study is the justification for shifting from a single integrated indicator to a multi-level credit decision-making system.

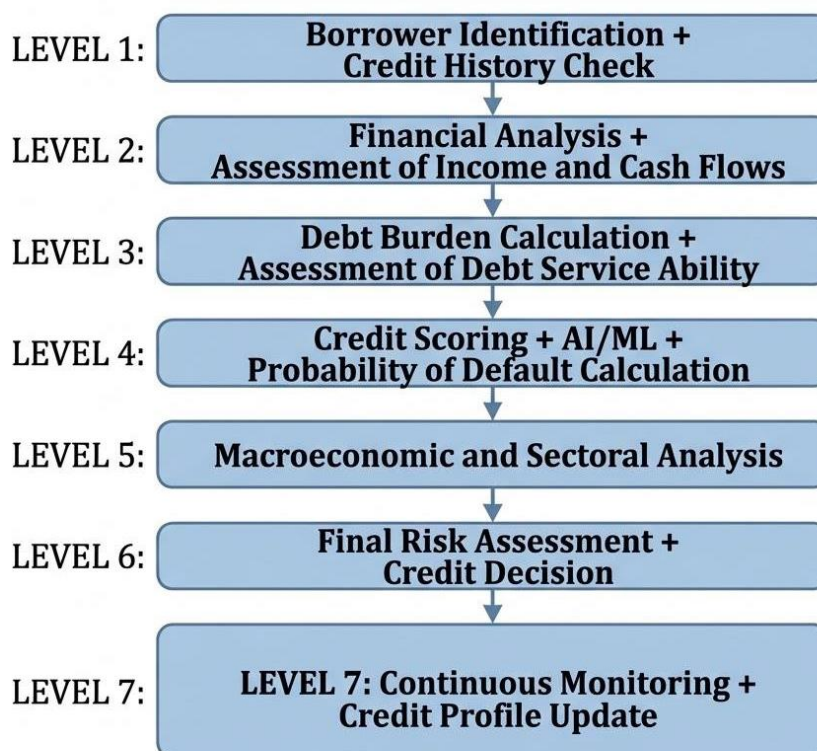


Figure 2. Multi-level creditworthiness assessment system

Such a system reduces reliance on a single metric for credit decisions while simultaneously providing a deeper understanding of the borrower's profile.

Forecasting the probability of default (PD) is of particular importance. Instead of simply classifying borrowers as "reliable" or "unreliable," a modern system can estimate the likelihood of default occurring within a specific time horizon.

Subsequently, PD metrics can be utilized for:

- setting credit limits;
- determining lending terms;
- customer segmentation;
- portfolio construction;
- calculating expected credit losses;
- conducting stress testing.

IMF reports on Uzbekistan highlight the development of credit risk models for banking portfolios that incorporate PD, as well as the integration of these models into macroeconomic stress testing.

Thus, improving creditworthiness assessment is directly linked to enhancing the management of the entire credit portfolio.

If a bank can more accurately assess the risk associated with each borrower, it gains the ability to:

1. set more well-founded credit limits;
2. reduce the concentration of high-risk loans;
3. build a more balanced portfolio;
4. identify potentially troubled borrowers in a timely manner;
5. manage reserves and expected losses more effectively.

DISCUSSION

The study results indicate that the creditworthiness assessment system needs to be improved across several dimensions simultaneously.

The first dimension involves expanding the information base. Modern banks possess a significantly larger volume of data than traditional banking models previously utilized. Transactional data, electronic payments, and alternative sources can complement traditional credit history.

The second dimension relates to enhancing the analytical capabilities of models. The use of statistical methods, machine learning, and artificial intelligence enables the analysis of complex relationships between

borrower characteristics and credit risk.

The third dimension is continuous monitoring. Even a borrower who is initially reliable may experience changes in their financial situation; therefore, assessments must be updated periodically.

The fourth dimension involves integrating individual and portfolio-level assessments. A lending decision should consider not only the risk associated with a specific client but also their impact on the overall structure of the credit portfolio.

The fifth aspect concerns data quality and protection. While expanding the information base increases the potential accuracy of assessments, it simultaneously raises the requirements for personal data management and information security.

This area is of particular importance for Uzbekistan. The IMF has highlighted the need to expand credit information and improve bank credit screening processes as key elements in fostering more sustainable financial inclusion.

At the same time, digital transformation should not be viewed as a complete replacement for traditional methods. A hybrid approach is the most rational choice, combining financial analysis, credit history, and expert judgment with digital scoring, cash flow analysis, and modern analytical technologies.

CONCLUSION

The study leads to the conclusion that improving borrower creditworthiness assessment systems is a key tool for enhancing the quality of a commercial bank's loan portfolio.

A modern assessment system must go beyond the traditional analysis of financial statements and credit history. It must take into account financial indicators, debt burden, cash flows, credit behavior, non-financial characteristics, alternative data, and macroeconomic factors.

Shifting from static to dynamic assessment is of particular importance. A borrower's creditworthiness should be evaluated not only prior to loan issuance but also throughout the entire term of the loan agreement.

The use of Big Data, credit scoring, machine learning, and artificial intelligence creates opportunities to improve the accuracy of credit risk forecasting. However, the application of digital tools requires effective data quality control, model validation, information security, and mechanisms for decision explainability.

Improving creditworthiness assessment impacts not only individual lending decisions but also the structure of the entire loan portfolio. More accurate risk

assessment enables the setting of well-founded credit limits, the prevention of excessive risk concentration, the timely identification of potentially troubled borrowers, and more efficient credit resource management.

For Uzbekistan's banking system, further improving credit screening, expanding credit information, and developing digital infrastructure are vital areas for enhancing the quality of banking management. This aligns with IMF recommendations outlined in 2026 reports.

Thus, the most promising approach is an integrated creditworthiness assessment model that combines traditional financial analysis, credit history, cash flow analysis, debt burden assessment, digital scoring, alternative data, AI/ML, and continuous monitoring. The proposed approach enables the creation of a closed-loop system:

high-quality data → comprehensive borrower assessment → accurate credit risk determination → well-founded credit decision → continuous monitoring → early problem detection → improved credit portfolio quality.

REFERENCES

1. Basel Committee on Banking Supervision. Principles for the Management of Credit Risk. Bank for International Settlements, 2025.
2. Basel Committee on Banking Supervision. General Credit Risk Management. Basel Consolidated Guidelines, 2026.
3. International Monetary Fund. Republic of Uzbekistan: 2026 Article IV Consultation — Staff Report. IMF Country Report No. 26/152, 2026.
4. International Monetary Fund. Uzbekistan: Staff Concluding Statement of the 2026 Article IV Mission. 2026.
5. International Monetary Fund. Republic of Uzbekistan: Financial Sector Assessment Program — Detailed Assessment of Observance of the Basel Core Principles for Effective Banking Supervision. IMF Country Report No. 25/227, 2025.
6. World Bank. Screening and Approving the Customer. Digital Finance Inclusion.
7. World Bank. Credit Reporting. Digital Finance Inclusion.
8. World Bank. Digital Credit. Digital Finance Inclusion.
9. World Bank. Lending During the Recovery and Beyond. World Development Report 2022.
10. World Bank. When Digital Payments Unlock Access

to Credit: New Evidence from Firms in 101 Economies. 2026.

- 11.** World Bank. How Can Alternative Data Help Micro, Small and Medium Enterprises Access Credit?
- 12.** World Bank. Data Protection & Privacy. Digital Finance Inclusion.