

BIG DATA: CUSTOMER CREDIT ANALYSIS USING DIGITAL BANKING DATABASE

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Abstract: The article studies the scientific and practical aspects of improving credit analysis in Uzbek banks based on modern methods - big data and digital mirror technologies. The study analyzes statistical data from the 2024 report of the Central Bank of Uzbekistan, documents "Banking Reform Strategy-2025", as well as practical experience of institutions such as Uzpromstroybank and Xalq Bank. The essence of digital mirror systems, their role in reducing credit risk, integration of data sources (solliq.uz, my.gov.uz, social networks) are shown. The problems section covers the issues of data security, lack of legal basis, and customer distrust. The conclusion presents proposals for automating credit analysis, a centralized data platform, and personnel training.

Keywords: Big data, digital mirror, credit analysis, scoring system, artificial intelligence, Uzbek banks, data security.

Introduction. Digital technologies are bringing profound changes to all sectors of the economy in the 21st century, including the banking sector. The transition from traditional banking models to digital ecosystems has become a global trend and is an important factor in ensuring competitiveness and improving the quality of customer service. The digital transformation of banks includes the introduction of IT and artificial intelligence (AI) technologies, the development of innovative systems based on blockchain, as well as mobile applications and internet banking services.

The article examines the main directions of the digital transformation of banks, technological opportunities, existing challenges and measures necessary for the successful implementation of this process. In addition, the issues of cybersecurity and customer data protection are analyzed.

Research methodology. This study includes qualitative and quantitative analyses. The following methods were used during the study: Data collection: Central Bank reports, Uzpromstroybank and Xalq Bank projects, customer surveys; Analysis methods: Credit risk ratios (P/D, K/Z), AI models (Random Forest), SWOT analysis; Comparative analysis: Traditional vs. digital assessment efficiency (time, costs, error rate).

Analysis and results. Uzbek banks are at the initial stage of introducing digital technologies in credit risk management. The main problems of Uzbek banks in using digital technologies in credit risk management are:

- Limitations of traditional methods. Banks rely mainly on paper documents such as tax returns and employer certificates, which slows down the process of making credit decisions (Central Bank, 2024). 7.3% of problem loans demonstrate the weaknesses of traditional methods, as they do not reflect the dynamic financial situation of customers in real time. Example: A small business owner's annual tax return may not reflect their actual monthly income.

- Opportunities for digital banking technologies. The 45% share of loans issued through mobile apps (Central Bank, 2024) shows the potential of using digital data. Xalq Bank's



experience: Credit limits are automatically set using AI based on customer mobile app activity (e.g., number of monthly purchases). This approach reduced delays by 4.1%.

- Legal and infrastructure issues. The use of social media data is legally unclear. For example, there are no clear standards for including a customer’s Telegram or Instagram profile data in credit scoring. Small banks (e.g., non-state-owned ones) face financial difficulties in attracting cloud technologies (AWS, GCP) and AI specialists. Only 8 banks work with cloud technologies (AWS, GCP), the rest use legacy servers.

- Level of social acceptance. 65% of urban residents trust digital scoring, compared to 35% in rural areas (Central Bank survey, 2023). The younger age group (18–30 years old) is more likely to trust digital technologies (80%), while the number of people over 50 is 40%.

Strengths	Weaknesses
– Fast and affordable loan process; – Reduced error rate	– Data security issues; – Lack of legal framework
Opportunities	Threats
– International cooperation; – Young people’s propensity for technology	– Data breaches (cyber risks); – Customer distrust

SWOT Analysis

Compare with global experience. According to McKinsey (2022), big data can reduce credit analysis errors by 40%. However, in Uzbekistan this figure is still around 15-20%. In countries such as China and South Korea, loans are granted based on 100+ parameters, such as customer geolocation, social media activity, and transaction history.

Comparison of Traditional and Digital Methods

Parameter	Traditional Method	Digital Window
Credit Term	5–10 days	1–3 days
Error Rate	12%	4,1%
Costs (1 loan)	150 000 soums	50 000 soums
Customer Satisfaction	62%	89%

Source: Central Bank of Uzbekistan Report (2024), Uzpromstroybank data.

The following practical results were identified during the study:

Effectiveness of digital technologies. Loan issuance period reduced from 10 days to 1 day (Uzpromstroybank). The share of problem loans at Xalq Bank was reduced from 8.3% to 4.1% using AI scoring. Costs decreased from 150,000 soums to 50,000 soums per loan.

Customer experience. 89% of customers who used digital scoring rated the process as "convenient" (compared to 62% in the traditional method). The share of loans issued through mobile applications was 45% (2023 Central Bank report).

Expected results (based on proposals). If a central data platform is created, scoring accuracy will increase by 30–35%. Legislative reforms can increase customer confidence by 20–25%.

Conclusions and recommendations. Uzbek banks have made initial progress in digitizing credit analysis: the credit process has accelerated, errors have decreased, and customer satisfaction has increased. However, obstacles such as legal loopholes, technical limitations, and social distrust hinder the full development of the system. While trust in digital technologies is high in cities (58%), it is low in rural areas (22%). Compared with global experience (e.g., China and South Korea), Uzbekistan is still at an early stage.

The following measures can make the system more effective:

1. Create a single credit scoring system for all banks (integrated with data from soliq.uz, my.gov.uz, my.sud.uz). Guarantee access to the platform in cooperation with the state and banks.
2. Conduct mass campaigns on “data security” (especially in rural areas). Explain to customers the transparent scoring system (e.g., what parameters are evaluated).
3. Improve mobile applications (for example, the ability to track credit status in real time). Allocate startup loans for young entrepreneurs based on digital scoring.
4. Implement projects with the World Bank or IMF on digital banking reforms.
5. Provide subsidies to small banks to attract cloud technologies (AWS, Google Cloud) and AI specialists. Introduce the “Banking and AI” directions in collaboration with TATU and INHA universities.

The opportunities for Uzbek banks to introduce digital window technologies are remarkable, but joint efforts of the government, banks and society are necessary for success. If the above proposals are implemented, the main goals of the “Banking Reform Strategy” - reducing credit risk by 15% and introducing digital services to 90% of banks - can be achieved by 2025.

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