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Impact of Artificial Intelligence on Financial Decision Making in Indian Banks

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A Study on AI-based Credit Scoring and NPA Reduction)

Abstract

This research explores how Artificial Intelligence (AI) is transforming financial decision-making in Indian banks, particularly in the areas of credit scoring and Non-Performing Asset (NPA) control. The paper compares traditional credit assessment methods such as manual verification, CIBIL-based decisions, and ratio analysis with modern AI-driven models that study behaviour, transactions, and alternative data. Findings show that AI tools are far more accurate, faster, and better at identifying risky borrowers. Secondary data from RBI reports, industry research, and case studies of SBI, HDFC Bank, ICICI Bank, and Kotak Mahindra Bank support the conclusion that AI significantly improves risk prediction and helps reduce NPAs.

1. INTRODUCTION

India's banking system is rapidly moving toward digital transformation. After the growth of digital payments, UPI, and mobile banking, the next big shift is the adoption of Artificial Intelligence in day-to-day banking decisions.

One of the most important decisions in banking is credit evaluation—deciding who should receive a loan and under what conditions.

Earlier, bankers relied mainly on:

- Salary proofs
- Income tax returns
- CIBIL score
- Personal judgement of the credit officer

These methods were slow, manual, and often subjective.

AI changed this completely. AI systems can now examine:

- Spending trends
- Account behaviour
- EMI patterns
- Online transactions
- Mobile usage data
- Social and alternative indicators

With the help of machine learning, AI identifies risks that humans may not even notice. This shift has improved the accuracy and speed of financial decision-making in Indian banks.

2. RESEARCH PROBLEM

Indian banks—especially public sector banks—have faced high levels of NPAs for many years. Traditional

methods often fail to identify:

- Fraudulent borrowers
- Customers with no credit history
- Borrowers with unstable income
- Sudden behavioural changes that signal default risk

Therefore, this study focuses on the following core problems:

- Can AI make credit decisions more reliable?
- Can AI help reduce NPAs more effectively than traditional systems?

3. OBJECTIVES OF THE STUDY

1. To understand how AI technologies are being used for credit scoring in Indian banks.
2. To examine whether AI contributes to a reduction in NPAs.
3. To compare the effectiveness of traditional credit scoring methods with AI-driven models.
4. To identify the risks and challenges associated with using AI in banking.

4. RESEARCH QUESTIONS

1. How does AI-based credit scoring impact the reduction of NPAs?
2. Is AI more accurate than traditional credit scoring methods?

5. LITERATURE REVIEW (Simplified)

Industry studies and research papers show several common findings:

- AI identifies deeper behavioural patterns that humans cannot detect easily (McKinsey, 2023).
- RBI's Digital Lending studies indicate that AI enhances borrower assessment and early risk detection.
- Indian banks such as HDFC, SBI, and ICICI have already implemented AI to reduce fraud and improve loan underwriting accuracy.
- Machine learning models—logistic regression, random forests, neural networks—deliver stronger prediction accuracy than ratio-based or purely CIBIL-based assessments.

Summary:

AI "reads" a customer more deeply and more consistently than manual methods, leading to smarter decisions.

6. RESEARCH METHODOLOGY

- Type of Study: Qualitative, based on secondary data

Sources Used:

- RBI Digital Lending Reports
- McKinsey and Deloitte publications
- Academic papers on credit scoring
- Case studies of SBI, HDFC, ICICI, Kotak

Approach:

- Compare traditional and AI-based credit scoring models
- Evaluate differences in accuracy, speed, inclusion, and NPA performance

7. TRADITIONAL CREDIT SCORING VS AI-BASED SCORING

Traditional Credit Models

- Manual verification of documents
- Heavy dependence on CIBIL score
- Use of financial ratios and static data
- Human judgement plays a major role
- Slower processing with higher chances of error

AI-Based Credit Models

- Analyse thousands of data points
- Machine learning predicts probability of default (PD)
- Decisions are automated and more consistent
- Works even for customers with limited or no credit history
- Real-time updates and faster loan approval

Simple Example

Traditional method:

CIBIL 720 → Loan approved

AI method:

Even with a good CIBIL score, AI reviews:

- Salary fluctuations
- Transaction trends
- Late bill payments
- Spending spikes

AI may flag the customer as risky even if the CIBIL score looks safe. Thus, AI captures risks that traditional systems miss.

8. FINDINGS

1. **AI helps reduce NPAs**

Banks using AI tools like:

- SBI YONO underwriting
- HDFC Bank's EVA systems
- ICICI Bank's iLens

have reported better borrower filtering and fewer defaults.

2. **Higher Accuracy**

Approximate accuracy levels found in literature:

- Traditional methods: 60%–70%
- AI/ML models: 80%–95%

3. **Faster Processing**

Loan approval time has reduced from several days to a few minutes in many banks.

4. Early Warning Detection

AI monitors:

- Salary delays
- Consistent low balances

- Irregular EMI payments
- High-risk spending pattern

This helps banks reach out to customers before the loan becomes overdue.

5. **Better approval for New-to-Credit customers**

AI evaluates people without credit history using data such as:

- Mobile bill payments
- UPI usage
- Bank account activity

This increases financial inclusion.

9. CHALLENGES OF USING AI IN BANKING

Despite the benefits, AI brings a few challenges:

- Data privacy and security issues
- High cost of technology deployment
- Lack of skilled AI professionals
- Possibility of algorithmic bias
- Cybersecurity threats

Banks must handle these carefully to use AI responsibly.

10. CONCLUSION

This study concludes that AI has a powerful positive effect on financial decision-making in Indian banks. AI-based credit scoring systems are faster, more accurate, and better at detecting early risks compared to traditional credit assessment methods.

AI improves:

- Borrower assessment
- Early-warning systems
- Decision-making efficiency
- Reduction of NPAs
- Loan processing speed

As AI evolves, it is expected to become a central component of India's banking and credit risk management systems.

11. SUGGESTIONS

1. Banks should invest in training staff to understand and manage AI tools.
2. Strong data protection and cybersecurity measures must be followed.
3. AI and human judgement should complement each other, especially in complex loan cases.
4. RBI should provide clear guidelines for ethical and transparent use of AI in banking.

REFERENCES (Simple Format)

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5. Public disclosures from SBI, HDFC Bank, ICICI Bank, and Kotak Mahindra Ban