

Credit Risk Assessment Using Predictive Analytics: A Survey-Based Study

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Abstract: *Credit risk assessment has become a crucial function for financial institutions due to the increasing demand for loans, evolving customer profiles, and the need to minimize financial losses arising from loan defaults. Traditional credit evaluation methods, while widely used, often face limitations in accurately identifying potential credit risks in a dynamic financial environment. This study examines the key factors influencing credit risk assessment and evaluates the role of predictive analytics in improving the accuracy and efficiency of lending decisions. Primary data were collected from **87 respondents** using a structured questionnaire to understand perceptions regarding credit risk assessment, predictive analytics, machine learning, and data-driven decision-making in the banking and financial services sector. The findings indicate that factors such as income and employment stability, credit history, customer financial behavior, data quality, and regulatory compliance significantly influence the effectiveness of credit risk evaluation. The study further highlights those predictive analytics enables financial institutions to identify high-risk borrowers, enhance loan approval decisions, reduce default rates, and improve overall risk management practices. The results suggest that the adoption of predictive analytics, supported by accurate customer data and advanced analytical techniques, can strengthen credit risk assessment, support informed lending decisions, and contribute to improved financial stability and sustainable growth within the banking and financial services industry.*

Keywords: Credit Risk Assessment, Predictive Analytics, Credit Scoring, Machine Learning, Banking, Lending Decisions, Risk Management

I. INTRODUCTION

The banking and financial services industry has experienced significant transformation in recent years due to rapid technological advancements, increased digitalization, and the growing availability of financial data. Financial institutions are processing a larger volume of loan applications than ever before, making effective credit risk assessment a critical component of the lending process. In this competitive environment, banks and lending organizations must balance the objective of expanding credit access with the need to minimize the risk of loan defaults and financial losses.

Credit risk assessment refers to the process of evaluating a borrower's ability and willingness to repay a loan within the agreed terms. Conventional credit assessment methods primarily rely on factors such as credit history, income level, employment status, and existing financial obligations. Although these methods continue to play an important role, they may not always capture complex borrower behavior or rapidly changing financial conditions. Consequently, financial institutions are increasingly exploring advanced analytical approaches to strengthen the accuracy and efficiency of credit evaluation.

Predictive analytics has emerged as a valuable tool for enhancing modern credit risk management. By analysing historical customer data, financial transactions, and behavioural patterns, predictive models can estimate the probability of borrower default and generate more reliable credit risk scores. These insights enable lenders to make informed lending decisions, reduce non-performing assets, improve operational efficiency, and develop effective risk management strategies. This study examines the major factors influencing credit risk assessment and evaluates the role



of predictive analytics in improving lending decisions and supporting sustainable risk management practices in the banking and financial services sector.

II. REVIEW OF LITERATURE

Recent studies have highlighted the growing importance of predictive analytics and machine learning techniques in enhancing credit risk assessment and supporting informed lending decisions. Lessmann et al. (2015) compared various classification algorithms for credit scoring and concluded that advanced machine learning models provide superior predictive performance over conventional statistical techniques. Bellotti and Crook (2009) demonstrated that support vector machine models effectively classify borrowers according to their default risk and improve the accuracy of credit evaluation.

West (2000) reported that neural network-based credit scoring models outperform several traditional approaches in predicting loan defaults by identifying complex relationships within borrower data. Similarly, Abdou and Pointon (2011) reviewed credit scoring methodologies and emphasized that predictive analytics enables financial institutions to strengthen risk management by improving the precision of borrower assessment. Thomas, Crook, and Edelman (2017) further highlighted that modern credit scoring systems have become essential tools for supporting objective, consistent, and data-driven lending decisions.

The existing literature indicates that credit risk assessment is influenced by multiple financial, behavioural, and demographic factors, including credit history, income stability, employment status, repayment patterns, and existing liabilities. Although significant advancements have been made in predictive modelling and credit scoring techniques, challenges related to data quality, model transparency, regulatory compliance, and customer trust continue to affect their widespread adoption. This study seeks to address these concerns by examining public perceptions of predictive analytics in credit risk assessment and providing practical recommendations for improving lending decisions and financial risk management.

III. RESEARCH GAP

Previous studies have extensively explored the use of statistical techniques, machine learning algorithms, and predictive analytics models for improving credit risk assessment and credit scoring. While these studies have demonstrated considerable improvements in prediction accuracy, most have primarily focused on the technical performance of analytical models using historical financial datasets. Comparatively fewer studies have examined stakeholders' perceptions, awareness, and level of trust regarding the adoption of predictive analytics in credit risk assessment, particularly in the Indian banking and financial services sector. In addition, limited research has integrated customer and professional opinions with practical recommendations for implementing predictive analytics in lending decisions. This study addresses these gaps by analysing respondents' perceptions of predictive analytics, identifying the factors influencing effective credit risk assessment, and providing managerial insights that support more accurate, transparent, and data-driven lending practices.

IV. RESEARCH OBJECTIVES

Primary Objective :

- To examine the role of predictive analytics in improving credit risk assessment and supporting effective lending decisions in the banking and financial services sector.

Secondary Objectives :

- To identify the major factors influencing credit risk assessment and borrower creditworthiness.
- To assess the level of awareness and perception of predictive analytics in credit risk management.
- To examine the effectiveness of predictive analytics in improving the accuracy of credit risk assessment.
- To identify the key benefits and challenges associated with the implementation of predictive analytics in lending decisions.



- To recommend suitable strategies for enhancing credit risk assessment through the effective adoption of predictive analytics and data-driven decision-making.

V. RESEARCH METHODOLOGY

This study adopts a **descriptive research design** to examine the role of predictive analytics in credit risk assessment and to identify the factors influencing effective lending decisions in the banking and financial services sector. The research focuses on understanding respondents' awareness, perceptions, and opinions regarding credit risk assessment, predictive analytics, machine learning applications, and data-driven decision-making in financial institutions.

Research Design

Descriptive Research

Data Sources

- **Primary Data:** Collected through a structured questionnaire distributed to respondents using Google Forms.
- **Secondary Data:** Collected from research journals, books, published articles, conference papers, websites, and reports related to credit risk assessment, predictive analytics, machine learning, and banking risk management.

Sample Size

A total of **87 respondents** participated in this survey.

Sampling Technique

Convenience Sampling

Data Collection Method

Google Forms questionnaire and direct responses from respondents.

Area of Study

Banking and Financial Services Sector in India.

Data Analysis Tools

- Percentage Analysis
- Tabular Analysis
- Graphical Representation
- Microsoft Excel

Research Period

This study was conducted during the academic year 2025–26 as part of an MBA (Business Analytics) research project.

Particulars	Description
Research Design	Descriptive
Sample Size	87 Respondents
Sampling Technique	Convenience Sampling
Data Collection Tool	Structured Questionnaire
Data Sources	Primary and Secondary
Industry	Banking and Financial Services
Analysis Tools	Percentage Analysis, Excel
Area of Study	Banking and Financial Services Sector in India

VI. RESULTS

1. In your opinion, how important is credit risk assessment in lending decisions?

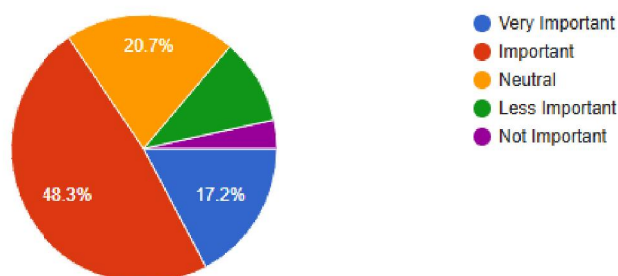
- Very Important
- Important
- Neutral



- Less Important
- Not Important

4. In your opinion, how important is credit risk assessment in lending decisions?

87 responses



Interpretation :

Response	Percentage	Approx. Number of Respondents
Very Important	17.2%	15
Important	48.3%	42
Neutral	20.7%	18
Less Important	10.3%	9
Not Important	3.4%	3
Total	100%	87

2. How effective do you think machine learning models are in predicting loan defaults?

Very Effective

1

2

3

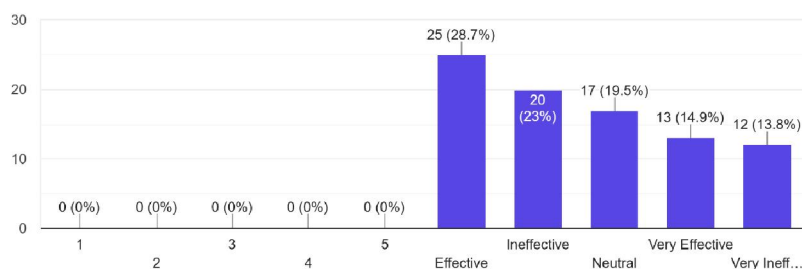
4

5

Very Inefficient

10. How effective do you think machine learning models are in predicting loan defaults?

87 responses



Interpretation:

Response	Number of Respondents	Percentage
Very Effective	13	14.9%
Effective	25	28.7%
Neutral	17	19.5%
Ineffective	20	23%
Very Ineffective	12	13.8%
Total	87	100%

VII. DATA ANALYSIS AND FINDINGS

Respondent Profile

The survey consisted of 87 respondents from diverse demographic and professional backgrounds. The majority of the participants were salaried employees and business owners with varying levels of work experience, providing a balanced perspective on credit risk assessment and predictive analytics.

Awareness of Credit Risk Assessment

The survey findings revealed that 64.4% of respondents were familiar with the concept of credit risk assessment, indicating a satisfactory level of awareness regarding credit evaluation and lending practices. However, a notable proportion of respondents were unfamiliar with the concept, highlighting the need for greater awareness of modern credit risk management techniques.

Perception of Predictive Analytics

A majority of respondents had heard about the application of predictive analytics in financial decision-making and believed that it could improve the accuracy of credit risk assessment. This reflects increasing acceptance of data-driven technologies in the banking and financial services sector.

Factors Influencing Credit Risk Assessment

The respondents identified income and employment stability, credit history, transaction records, and existing financial obligations as important factors in evaluating borrower creditworthiness. Many participants also emphasized that a combination of these factors provides a more reliable assessment of credit risk.

Benefits and Challenges of Predictive Analytics

The study found that respondents viewed faster decision-making, improved risk prediction, and better customer evaluation as the major benefits of predictive analytics. At the same time, data privacy concerns, regulatory compliance, data quality, and model complexity were identified as significant challenges affecting its successful implementation.

Lending Decisions and Future Adoption

Most respondents expressed confidence that predictive analytics can support better lending decisions and strengthen credit risk management. Although opinions regarding its future adoption were mixed, the findings indicate a growing recognition of predictive analytics as an effective tool for enhancing lending decisions, reducing default risk, and improving overall financial risk management.

VIII. DISCUSSION

The findings of the study indicate that effective credit risk assessment depends on multiple financial, behavioral, and technological factors rather than any single criterion. Respondents identified income and employment stability, credit history, transaction records, and existing financial obligations as key determinants of borrower creditworthiness. The results also demonstrate increasing awareness of predictive analytics and its potential to improve the accuracy of lending decisions. These findings are consistent with previous research, which emphasizes the growing importance of data-driven models in enhancing credit scoring and reducing default risk.



Predictive analytics enables financial institutions to identify borrowers with a higher probability of default by analyzing historical financial data and behavioral patterns. Such insights support more informed lending decisions, strengthen risk management practices, and improve operational efficiency. At the same time, the study highlights challenges including data privacy concerns, regulatory compliance, data quality, and model complexity, which must be effectively addressed for successful implementation. By integrating predictive analytics with traditional credit evaluation methods, financial institutions can transition from conventional risk assessment approaches to more proactive, accurate, and evidence-based lending practices, thereby improving portfolio quality and long-term financial sustainability.

IX. RECOMMENDATIONS

Based on the findings of the study, the following recommendations are proposed:

- Financial institutions should adopt predictive analytics models to enhance the accuracy and consistency of credit risk assessment and lending decisions.
- Banks and lending organizations should integrate traditional credit evaluation methods with machine learning techniques to improve the prediction of potential loan defaults.
- High-quality, accurate, and up-to-date customer data should be maintained to ensure reliable credit risk analysis and effective decision-making.
- Strong data privacy and security measures should be implemented to protect sensitive customer information and comply with regulatory requirements.
- Financial institutions should regularly monitor and validate predictive models to improve their performance, transparency, and reliability over time.
- Employee training programs should be conducted to enhance understanding of predictive analytics and encourage its effective use in credit risk management.
- Organizations should strengthen data-driven decision-making practices by continuously updating analytical models and incorporating changing market and customer behavior into the credit assessment process.

X. CONCLUSION

Credit risk assessment remains one of the most critical functions in the banking and financial services sector, as it directly influences lending decisions, financial stability, and the overall performance of financial institutions. This study demonstrates that factors such as credit history, income and employment stability, transaction behavior, and data quality play significant roles in evaluating borrower creditworthiness. The findings also indicate that respondents recognize the growing importance of predictive analytics in improving the accuracy, efficiency, and reliability of credit risk assessment.

The study further highlights those predictive analytics enables financial institutions to identify potential default risks at an early stage, thereby supporting informed lending decisions and effective risk management. Although challenges such as data privacy, regulatory compliance, and model complexity remain, the integration of predictive analytics with traditional credit assessment methods can significantly enhance decision-making and reduce credit-related losses. Therefore, the adoption of predictive analytics should be viewed not only as a technological advancement but also as a strategic approach for strengthening credit risk management, improving lending practices, and ensuring sustainable growth in the banking and financial services industry.

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