Breaking the Credit Barrier: Innovative Solutions for the First-Time Borrowers

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Agenda

1. Project Context
   - Problem Statement
   - Project Objective
2. Data Introduction
3. Model
4. Business Recommendations
5. Conclusions

1.

Project Context

Which problem are we facing?

“People with limited or no credit history, struggle to obtain loans and credit cards.

Traditional reliance on past credit behavior by financial institutions creates barriers to financial inclusion, making it difficult for these individuals to build their credit.”

What is the Project objective?

“Identify key variables influencing credit card approval decisions to develop strategies that increase approval rates for customers with limited or no credit history, promoting financial inclusion and expanding access to credit.”

2.

Data Introduction

Project data

The Data Set

- The dataset includes information on 25,128 bank clients who applied for a credit card
- Each entry contains personal details, income, car and property ownership, debt records, and credit card approval status.

Target Variable

- Credit card approval status

This variable determines if the credit card request was approved or declined.

Data excluded

- Gender
- Family status
- Age

These variables were excluded as they can bring biased insights for the analysis

3.

Model

Logistic regression

What is a Logistic regression?

Logistic regression is a statistical model that estimates the probability of an event occurring, based on a given data set of independent variables.

Why was it used for the model?

- Is specifically designed for binary outcomes. Approved or declined.
- Coefficients and Odds ratios: This interpretability helps understand the model's decisions and make data-driven business decisions.

Logistic Regression vs Random Forest

Model	ROC-AUC	F1 Score	Precision
Random Forest	0.998671	0.998103	0.996512
Logistic Regression	0.999998	0.999550	1.000000

Main results

#1

Debt status, whether good or bad, has a significant impact on credit card approval.

#2

Good debt substantially increases approval chances, while bad debt drastically decreases them

#3

Other variables have a much smaller influence, highlighting the dominant role of debt status in the credit approval process.

Main variables coefficient and Odds

Variable	Coefficent	Odds
Total_Good_Debt	2.474267307	11.87300466
Total_Children	0.560080399	1.750813259
Owned_Phone	0.447122988	1.563806617
Owned_Car	0.446032308	1.562101934
__Higher education	0.380352988	1.462800849
__Laborers	0.2387976	1.269721518
__State servant	0.211016614	1.234932872
__Sales staff	0.210228745	1.23396029
__Working	0.198912622	1.220075353
Total_Income	-0.000004	0.999996
Owned_Realty	-0.26305891	0.768696612
__Lower secondary	-0.280332594	0.755532414
Total_Bad_Debt	-2.74921323	0.063978178

- Positive Influences: Good debt, number of children, and ownership of phone or car strongly increase approval chances.
- Negative Influences: High bad debt, lower secondary, and owned property significantly reduce the likelihood of approval.

Coefficient vs Odds Ratios

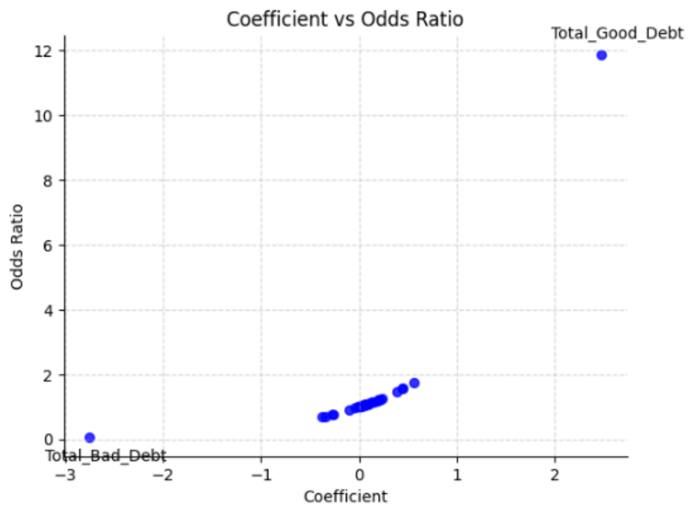

Chart shows how debt is the main decision maker for credit card approvals. While other variables remain in X(1,-1) for coefficient and Y(2,0)

4.

Recommendations

Recommendations

#1 Alternative Credit Score Models

Investigate and create alternative credit scoring models that consider other factors than credit history. For example, payment history for rent, utilities and other regular costs than can give a complete picture of a person’s creditworthiness

#2 Credit Score Financial Literacy

Educate people about credit scores, especially those with limited or no credit history. To help them improve their credit profiles and improve financial inclusion.

#3 Risk-Based Pricing and Customized Terms

Create a risk-based pricing model that adjusts interest rates and terms based on the credit risk profile of applicants. This model allows flexibility in credit terms based on overall financial situation of the client.

5.

Conclusions

Conclusions

- The primary factor influencing credit card approval is debt status.
- Individuals without a credit history or with a low credit score may find themselves financially isolated.
- Since the influence of other factors has a limited impact on credit decisions. It is important to create alternative credit measures to give these clients more financial options and avoid financial isolation.
- Debt status does not capture potential clients. They can be converted to clients with risk-based pricing and customize term products.

Thank you!

Q&A