

DATA SCIENCE CASE STUDY

Please review the business challenge below and prepare a presentation with your findings in a short, concise presentation to the Panel attendees.

Business Understanding

In the banking industry, customer relationships are paramount. Acquiring new customers is costly, and retaining existing customers is key to sustained profitability and growth. Customer churn, or attrition, represents a significant challenge for banks, impacting revenue, market share, and overall financial performance. Recognizing the need to address churn proactively, our bank aims to leverage data-driven insights to improve customer retention.

Customer churn refers to the situation where customers close their accounts or significantly reduce their engagement with the bank. Understanding the factors that drive churn is crucial for implementing effective retention strategies. We seek to develop a predictive model that can accurately identify customers who are at risk of churning. By gaining insights into customer behavior and preferences, we can tailor our services and engagement efforts to enhance customer satisfaction and loyalty.

1. Data quality:

- Ensure that you implement the data quality checks and techniques outlined in the Data Governance Session to verify the data's accuracy and its fitness for use. Should you encounter any concerns or unfamiliar definitions, please seek clarification prior to proceeding with the dataset.

2. Identify Key Drivers of Churn:

- Utilize demographic attributes (age, gender, dependents, education, marital status) to understand customer segments prone to attrition.
- Leverage financial information (income, credit limit, balances, transaction patterns) to uncover financial indicators of churn.
- Analyze behavioral data (months on book, total relationship count, inactivity, contact frequency) to identify engagement patterns associated with churn.

3. Predict Customer Churn:

- Develop a robust machine learning model that accurately predicts the likelihood of a customer churning based on available data.
- Enable proactive interventions to retain at-risk customers.

4. Returning Customer:

If we intend to intensify efforts to increase customer retention rates, please provide the business with a customer list with a relatively higher potential to return, proposing strategies to encourage them to reuse our services.

5. Churners Marketing Campaign:

Create a comprehensive marketing campaign that targets these identified churners. How will you measure the success of this campaign, and what key performance indicators (KPIs) will you use to track its effectiveness in reducing churn rates? Present your marketing plan, detailing the specific tactics, channels, and messaging you would employ to win back these potential churners and strengthen their relationship with the bank.

Datasets

Please refer to the “credit-card_customers” file provided

Expected Deliverables

- Provide a comprehensive list of all findings related to data quality issues within the dataset.
- Business Presentation (ideally PowerPoint) that should include:
 - The exploratory analysis, findings and insights, model choice and rationale, and model evaluation criterion and results;
 - Key factors influencing customer retention;
 - List and criterion for target customers;
 - Marketing Strategy
- Code used for the analysis and model development;

Evaluation Criteria

What we're looking for from successful candidates

- Problem structuring
How did you structure the problem, what assumptions did you make and how did you narrow the scope?
- Technical rigor
How reliable, readable and flexible was the code models that you developed to accomplish your work? How scalable would the approach be?
- Analytical rigor
How logically sound, complete and meaningful was the approach (machine learning, statistics, analytics, visualization) that you applied?
- Communication
How clearly were you able to describe your work, approach, methodology and conclusions? How effectively did you answer questions?
- Usefulness
If made production-worthy, how useful would the results of your work be?

We wish you best of luck!