BANK CUSTOMER CHURN PREDICTED

- محمد جمال أبوالفتوح عوض مقلد — SECTION 5
- محمد عبدالحليم سعد — SECTION 6
- محمد كمال حاويل — SECTION 6
- محمد كمال عبدالمولى علي — SECTION 6
- محمد حسن صلاح — SECTION 5

Credit Card Customer Churn Prediction Proposal

Introduction

In the competitive financial services industry, retaining existing customers is as crucial as acquiring new ones. Customers churn the rate at which customers cease their relationship with a service provider has significant impacts on revenue and business sustainability. Predictive analytics enables financial institutions to identify customers at risk of churning, allowing for proactive measures to improve satisfaction and retention. This proposal outlines a machine learning approach to predict customer churn among credit card users, leveraging data-driven insights to enhance customer loyalty and reduce attrition.

Problem Statement

Credit card providers face considerable revenue losses due to high customer churn rates. Identifying at-risk customers is challenging, as data often includes diverse information such as transaction histories, payment behavior, and customer demographics. Failure to intervene proactively can lead to higher churn, impacting profitability and market position. Thus, predictive models are needed to anticipate customer churn based on historical data, enabling financial institutions to take timely and targeted retention actions.

Goals

Listed below are the objectives of the project:

1. **Develop a Churn Prediction Model**: Build a model capable of accurately identifying credit card customers who are likely to churn based on behavioral, transactional, and demographic data.

2. **Evaluate Machine Learning Algorithms**: Assess a range of machine learning algorithms to determine the most effective approach for predicting churn in the financial context.

3. **Derive Actionable Insights**: Provide insights into factors that influence churn, allowing the company to focus on specific areas to improve customer experience and reduce attrition.

4. **Integrate Predictive Analytics into Retention Strategies**: Propose a framework for integrating predictive churn analysis into the company's customer retention and engagement strategies.

Related Work

Many research works have attempted to solve the problem of predicting customer churn using

machine learning, statistical and other methods. Specifically related works include:

1. "**CUSTOMER CHURN PREDICTION IN THE BANKING SECTOR USING MACHINE LEARNING-BASED CLASSIFICATION MODELS.**" The initial goal was to examine the impact of customer segmentation on the accuracy of customer churn prediction in the banking sector using machine learning models. The second objective is to experiment, contrast, and assess which machine learning approaches are most effective in predicting customer churn.
   https://research.ebsco.com/c/ylm4lv/search/details/z24mgyoa3n?q=CUSTOMER+CHURN+PREDICTION+IN+THE+BANKING+SECTOR+USING+MACHINE+LEARNING-BASED+CLASSIFICATION+MODELS.

2. "**Machine Learning to Develop Credit Card Customer Churn Prediction**" This paper aims to develop credit card customer churn prediction by using a feature-selection method and five machine learning models.

   https://www.researchgate.net/publication/365485893_Machine_Learning_to_Develop_Credit_Card_Customer_Churn_Prediction

3. " **Investigating customer churn in banking: a machine learning approach and visualization app for data science and management**" This paper tries to compare and analyze the performance of different machine-learning techniques that are used for churn prediction problem. Ten analytical techniques that belong to different categories of learning are chosen for this study.

   https://thesai.org/Downloads/Volume9No2/Paper_38-Machine_Learning_Techniques_for_Customer_Retention.pdf

4. “**Propension to customer churn in a financial institution: a machine learning approach**” This paper examines churn prediction of customers in the banking sector using a unique customer-level dataset from a large Brazilian bank. Our main contribution is in exploring this rich dataset, which contains prior client behavior traits that enable us to document new insights into the main determinants predicting future client churn.

   https://link.springer.com/content/pdf/10.1007/s00521-022-07067-x.pdf

Conclusion

This project aims to develop a robust churn prediction model for credit card customers, enabling data-driven interventions to retain high-value clients. By integrating insights from previous research with recent machine learning advancements, this project will support the development of a proactive and adaptive customer retention strategy, tailored to evolving customer behaviors and preferences.