

BANK CUSTOMERS CHURN ANALYSIS REPORT

Project Title: Customer Churn Analysis for European Bank

Prepared by: Sangeeta Pondrati

Tools Used: SQL, Power BI, DAX, Excel

Dataset source: <https://www.kaggle.com/datasets>

Introduction:

This project is to perform a comprehensive customer churn analysis for European Banks using SQL for data exploration and Power BI for data visualization. The project aims to provide insights to the bank management team that can help them identify factors contributing to customer churn and take proactive measures to reduce churn rate.

Objectives:

The purpose of this project is to help the Bank identify the key drivers of customer churn and suggest strategies to reduce it. My main aim is to

- Determine the overall churn rate and analyze it across different customer demographics.
- Identify high-risk customer groups by age, tenure, geography, and activity status.
- Help the business make data-driven decisions to improve customer retention.

Tools & Techniques Used

List the tools and languages used in the project.

- SQL (data querying, cleaning, aggregation)
- Power BI (data modelling, visualization)
- DAX (custom metrics, KPI creation)

About Dataset

RowNumber : Corresponds to the record (row) number

CustomerId : This is the customer's unique id.

Surname : The surname of a customer.

CreditScore : This is the rating of the customer's credit Score.

Geography : A customer's location.

Gender : This is the sex of the customer, grouped into male and female..

Age : This refers to the customer's age

Tenure : The number of years of relationship this customer has maintained with the bank.

Balance : The deductible balance on their bank account as at time this data was generated.

NumOfProducts : This shows the bank account type the customer has.

HasCrCard: This column shows if a customer has a credit card or not, represented as either 1 or 0 respectively.

IsActiveMember: These numerical values show whether an account is active or not, represented as either 1 or 0 respectively.

EstimatedSalary: This is the average annual salary received into the account.

Exited: This column indicates customer churn status, where a value of 1 represents a customer who churned, and a value of 0 represents a customer who is non-churned.

Data Transformation (Cleaning and Integration):

- Ensure there are no duplicate rows in the dataset.
- Verify that there are no missing values in any column.
- Ensure all columns have the correct data types (e.g., numerical columns are set to number, text columns are set to text, etc.).
- Adding new columns for
- Rename Columns: Rename column headers to capitalize the first letter of each word. For example, rename “customerid” to “Customer ID” and “age” to “Age”.

1.4 Merge Prefix to Product Column

- Add Prefix: Merge the prefix “Prod” to the column “Product”, converting values 1, 2, 3, 4 to Prod1, Prod2, Prod3, Prod4 respectively.
- Remove Original Column: Remove the initial column for “Product” after merging the prefix.

1.5 Replace Values in Columns

- Churn Column: Replace values in the “Churn” column, changing 1 to “Churned” and 0 to “Not Churned”.
- Credit Card Status Column: Replace values in the “Credit Card Status” column, changing 1 to “Owned” and 0 to “Not Owned”.
- Activity Status Column: Replace values in the “Activity Status” column, changing 1 to “Active” and 0 to “Inactive”.

Overview of the project

The project involves analyzing customer churn using account data from 10,000 customers at a European bank. The dataset includes information such as credit score, account balance, number of products, and whether the customer has churned or remained with the bank.

Here are some key findings :

Key Performance Indicator(KPI)

- The total number of customers is 10,000.
- The churn rate is 20.37% which means 2,037 customers have churned.
- The Average Credit score is 650.53
- Total number of customers holding credit card is 7055
- Average Estimated Salary is 9,09M

Gender Distribution:

- There is a fairly balanced distribution of customers by gender, with 54.57% female and 45.43% male. The churning rate of Female customers(25.07%) is higher than male(16.46%).

Churn Rate by Country/Geography:

- Germany shows the highest customer churn rate at 32.4%, significantly higher than France (16.2%) and Spain (16.7%). Despite its lower churn rate, France accounts for the largest customer base with 5,014 clients, compared to 2,509 in Germany and 2,477 in Spain.

Customer Tenure:

- The average customer tenure is 5.01 years, with a maximum of 10 years. Active and Inactive customers :

Product Distribution:

- The majority of customers use Product 1 (50.84%) and Product 2 (45.90%), with very few using Product 3 (2.66%) and Product 4 (0.60%). The bank might need to investigate why Products 3 and 4 are less popular and whether these products contribute to customer churn.

Activity Status:

- 51.51% of the customers are active, while 48.49% are inactive. Nearly half of the customer base being inactive could indicate a risk factor for churn, as inactive customers might be more likely to leave.

Credit Card Status:

- A significant 70.55% of customers own a credit card, while 29.45% do not. Credit card ownership might be linked to customer loyalty, as customers with more products tend to have a higher engagement with the bank.

Age Group Analysis:

- The age group 30–40 has the highest number of customers (4,346). Customers under 20 are the least represented (89 customers).
- The highest churn rate is observed in the 51–60 age group at 56.2%, suggesting this age group might be experiencing issues prompting them to leave.
- The lowest churn rate is in the under 20 age group at 5.6%, indicating younger customers are more likely to stay with the bank.

Credit Score Analysis:

- The segment with a credit score of 600–700 has the highest number of customers (3,818)
- Customers with credit scores below 400 have the highest churn rate of 100%, highlighting a potential risk group. The churn rate decreases slightly for higher credit scores but remains a concern.

Account Balance Analysis:

- Customers with account balances between 100k-200k are the most numerous (4,765), followed by those with a 0 balance (3,617).
- The account balance segment of 1k-10k has the highest churn rate at 100%, indicating that customers with low account balances are more likely to leave. The least churn rate is observed for accounts with a 0 balance at 13.8%.
- Customers with a 0 balance have the lowest churn rate, indicating they might be inactive but not dissatisfied enough to leave. High churn rates among customers with balances over 200k suggest that even high-value customers may be at risk of leaving, possibly seeking better opportunities elsewhere.

RECOMMENDATION

1. Analysis indicates that customers with credit cards exhibit a higher churn rate compared to those without. Several potential causes and solutions are identified:

- **High Fees and Interest Rates**

Issue: Customers may be discouraged by high fees or uncompetitive interest rates.

Recommendation: Reevaluate the current fee structure and interest rates. Consider introducing competitive rates and offering value-added perks (e.g., cashback, loyalty programs) to improve retention.

- **Attractive Competitor Offers**

Issue: Competing banks may provide more appealing credit card deals, including lower interest rates, better rewards, or promotional offers.

Recommendation: Continuously benchmark against market trends and competitors. Update product features and launch timely promotional campaigns to remain competitive.

- **Security Concerns**

Issue: Customer trust may be eroded by fraud incidents or concerns about data privacy.

Recommendation: Enhance fraud detection systems, strengthen cybersecurity protocols, and maintain transparent communication about the bank's security efforts to rebuild trust.

2. Customers aged 51–60 show the highest churn rate. This may relate to changing lifestyle and financial needs:

- **Retirement and Financial Planning**

Issue: Approaching or recent retirees may experience shifts in income and financial priorities.

Recommendation: Develop personalized financial advisory services tailored for retirement planning. Offer attractive savings, pension schemes, and investment products suited to this age group.

- **Challenges with Digital Banking**

Issue: Some customers in this age range may face difficulty adapting to digital platforms.

Recommendation: Improve the usability of digital services. Provide onboarding support, tutorials, and offer hybrid service models (online + branch support) to accommodate varying tech comfort levels.

- **Health and Accessibility Needs**

Issue: Limited mobility or health issues can hinder regular branch visits.

Recommendation: Introduce home banking solutions, dedicated phone support, and collaborate with community services to improve accessibility for customers with special needs.