Customer Segmentation & Churn Pattern Analytics in European Banking

Project Report

1. INTRODUCTION

Customer retention has become a major challenge in the modern banking sector. With increasing competition and availability of multiple banking options, customers frequently switch banks, leading to customer churn. Customer churn refers to the situation where customers discontinue their relationship with a bank.

This project focuses on analysing customer churn patterns in European banks by applying customer segmentation techniques. By identifying which customer groups are more likely to churn, banks can design better retention strategies and improve long-term profitability.

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2. BACKGROUND OF THE STUDY

In retail banking, acquiring new customers is significantly more expensive than retaining existing ones. Customer churn results in reduced lifetime value, increased acquisition costs, and unstable revenue streams. Although banks track overall churn rates, they often lack detailed insights into churn behaviour across different customer segments.

This study aims to bridge this gap by using segmentation-based analytics to understand churn behaviour in European banking customers.

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3. PROBLEM STATEMENT

Despite having access to large volumes of customer data, banks face challenges in identifying high-risk customer segments. They struggle to understand how churn differs across geography, age groups, credit scores, and financial profiles.

Without structured analytical approaches, churn management strategies remain generic, reactive, and inefficient. Hence, there is a need for systematic customer segmentation and churn analysis.

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4. OBJECTIVES OF THE STUDY

Primary Objectives:

- To measure the overall customer churn rate
- To identify churn distribution across different customer segments
- To compare churn behaviour across European regions

Secondary Objectives:

- To analyse churn among high-value customers
- To study customer engagement and tenure patterns
- To support strategic and marketing decision-making

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5. DATASET DESCRIPTION

The study uses a customer-level banking dataset containing demographic, financial, and behavioural information. The dataset includes customers from three European countries: France, Spain, and Germany.

Key Variables Used:

- CustomerId
- CreditScore
- Geography
- Gender
- Age
- Tenure
- Balance
- Number of Products
- Credit Card Ownership
- Activity Status

- Estimated Salary
- Exited (Churn Indicator)

The variable Exited acts as the target variable, where:

- Exited = 1 indicates churned customers
- Exited = 0 indicates retained customers

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6. METHODOLOGY

The analysis follows a step-by-step analytical methodology:

1. Data ingestion and validation
2. Data cleaning and preparation
3. Customer segmentation design
4. Churn distribution analysis
5. Interpretation of results

Non-analytical fields were removed, and categorical variables were grouped to create meaningful customer segments.

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7. CUSTOMER SEGMENTATION

Customers were segmented based on the following dimensions:

- Geographic Segmentation: France, Spain, Germany
- Age Segmentation: Below 30, 30–45, 46–60, Above 60
- Credit Score Bands: Low, Medium, High
- Tenure Groups: New, Mid-term, Long-term customers
- Balance Segments: Zero balance, Low balance, High balance

These segments help in identifying patterns in customer churn behaviour.

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8. CHURN ANALYSIS

Churn rates were calculated for each customer segment to understand which groups are more likely to leave the bank. Comparative analysis across regions and demographic groups was performed to identify high-risk segments.

The analysis highlights the importance of engagement, tenure, and financial value in influencing customer retention.

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9. FINDINGS

- Certain age groups show higher churn rates compared to others
- Customers with low engagement and short tenure are more likely to churn
- Geographic differences significantly impact churn behaviour
- Churn among high-value customers has a greater financial impact

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10. CONCLUSION

The study demonstrates that customer churn in European banking is not uniform across all customer groups. Segmentation-based analysis provides valuable insights into high-risk customer segments. Banks can use these insights to design targeted retention strategies, improve customer satisfaction, and enhance long-term profitability.