Customer Churn Insights for Retail Banking

Power BI Dashboard Report

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Table of Contents

1. Introduction

This report provides a comprehensive analysis of customer churn within a retail banking context using a Power BI dashboard. It leverages a sample dataset to visualize key metrics related to customer behavior, churn patterns, and balance ranges. The objective is to help stakeholders identify patterns and make data-driven decisions to reduce churn.

2. Business Goals

The main goal is to understand churn behavior and identify segments at risk. This helps in crafting targeted customer retention strategies and improving satisfaction.

3. Dataset Overview

The dataset used contains 10,000 records of bank customers.

Key columns include:

- CustomerID: Unique ID of the customer
- Geography: Country of residence
- Gender: Customer gender
- Age: Age of the customer
- Tenure: Number of years as a customer
- Balance: Bank account balance
- NumOfProducts: Number of bank products used
- IsActiveMember: Activity status
- EstimatedSalary: Estimated income
- Exited: Whether the customer left the bank (1) or not (0)

Snapshot of CSV file for the dataset:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	RowNumber	CustomerId	Surname	CreditScore	Geography	Gender	Age	Tenure	Balance	NumOfProducts	HasCrCard	IsActiveMember	EstimatedSalary	Exited
2	1	15634602	Hargrave	619	France	Female	42	2	0	1	1	1	101348.88	1
3	2	15647311	Hill	608	Spain	Female	41	1	83807.86	1	0	1	112542.58	0
4	3	15619304	Onio	502	France	Female	42	8	159660.8	3	1	0	113931.57	1
5	4	15701354	Boni	699	France	Female	39	1	0	2	0	0	93826.63	0
6	5	15737888	Mitchell	850	Spain	Female	43	2	125510.8	1	1	1	79084.1	0
7	6	15574012	Chu	645	Spain	Male	44	8	113755.8	2	1	0	149756.71	1
8	7	15592531	Bartlett	822	France	Male	50	7	0	2	1	1	10062.8	0

4. Project Scope

This project is designed as a demonstration of analytical and dashboarding skills rather than a full-scale end-to-end churn prediction model. The analysis primarily focuses on key dimensions such as Geography, Gender, Account Balance, Salary, Customer Activity and Customer Churn Status (Exited). For the current scope, variables such as Credit Score, Age, Tenure, Number of Products, and Credit Card Ownership have been intentionally excluded to maintain clarity and simplicity in storytelling and dashboard functionality. These features may be explored in future iterations to enhance model depth and accuracy.

4. DAX Measures Created

Key DAX measures used:

- Total Customers = COUNT(customer[CustomerId])
- Churned Customers = CALCULATE(COUNT(customer[CustomerId]), churn[Exited] = 1)
- Churn Rate = DIVIDE([Churned Customers], [Total Customers])
- Zero Balance Customers = CALCULATE(COUNT(customer[CustomerId]), churn[Balance] = 0)
- Avg Balance = AVERAGE(customer[Balance])
- Avg Salary - Churned = CALCULATE(AVERAGE(customer[EstimatedSalary]), churn[Exited] = 1)
- % Active Members = AVERAGE(customer[IsActiveMember]) * 100
- % with Credit Card = AVERAGE(customer[HasCrCard]) * 100

KPI Card	Definition	Business Significance
Total Customers	Total unique customers in the dataset	Tracks overall customer base health and scale
Churned Customers	Customers who discontinued services within analysis period	Identifies attrition volume for retention focus
Churn Rate	% of total customers who churned	Key health metric; higher % indicates retention issues
Zero Balance Customers	Customers with $0 account balance	Highlights disengaged/low-value segments
Average Balance	Mean balance across all customer accounts	Measures deposit base strength and engagement
Avg Salary - Churned	Average income of churned customers	Reveals income patterns of at-risk segments
% Active Members	% of customers with recent transactions	Indicates engagement and product stickiness
% with Credit Card	% of customers holding bank's credit card	Shows cross-sell success and relationship depth

5. Balance Range Column

To enable meaningful segmentation of customers by financial standing, a custom DAX column named BalanceRange was created. This calculated column categorizes each customer into predefined balance tiers, making it easier to analyze churn behavior across different financial levels.

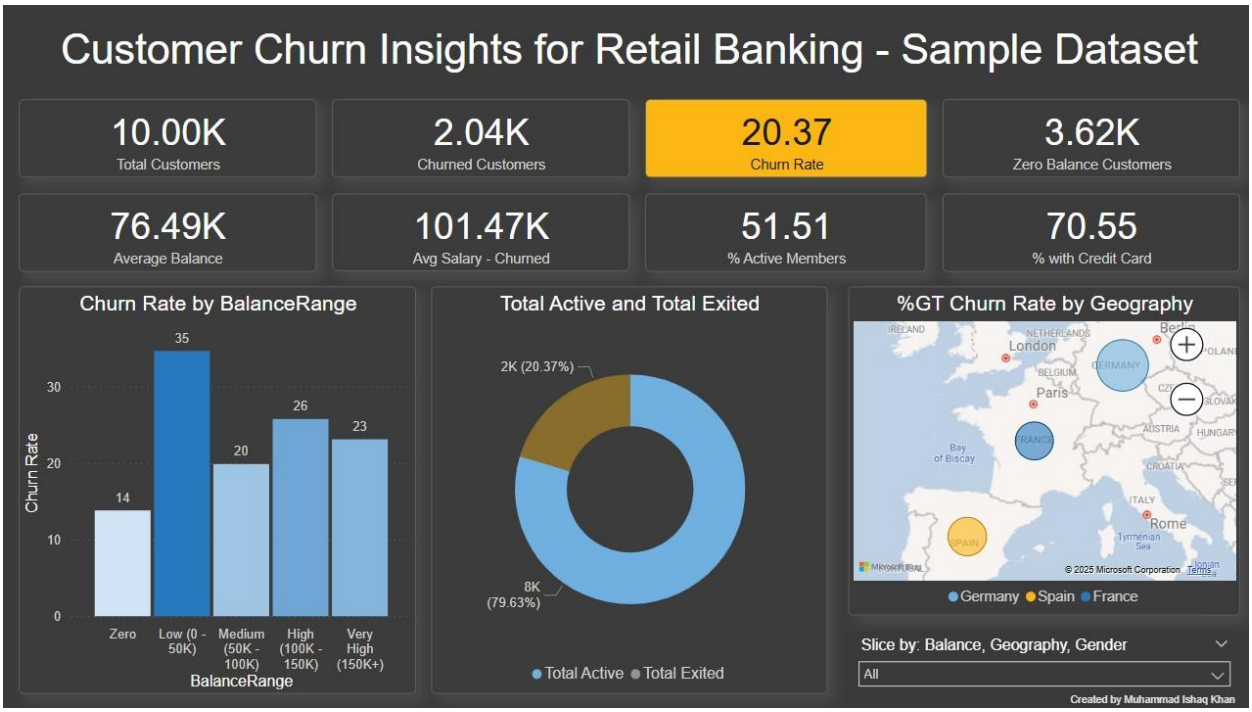
```
BalanceRange = SWITCH(TRUE(),
   customer[Balance] = 0, "Zero",
   customer[Balance] <= 50000, "Low (0 - 50K)",
   customer[Balance] <= 100000, "Medium (50K - 100K)",
   customer[Balance] <= 150000, "High (100K - 150K)",
   "Very High (150K+)"
)
```

6. Dashboard Visuals and Insights

The Power BI dashboard contains the following visuals:

- KPI cards showing Total Customers, Churned Customers, Churn Rate, etc.
- Bar chart: Churn Rate by Balance Range
- Donut chart: Total Active vs Total Exited
- Map: % Churn Rate by Geography (Germany, France, Spain)

Snapshot of the Power BI dashboard:

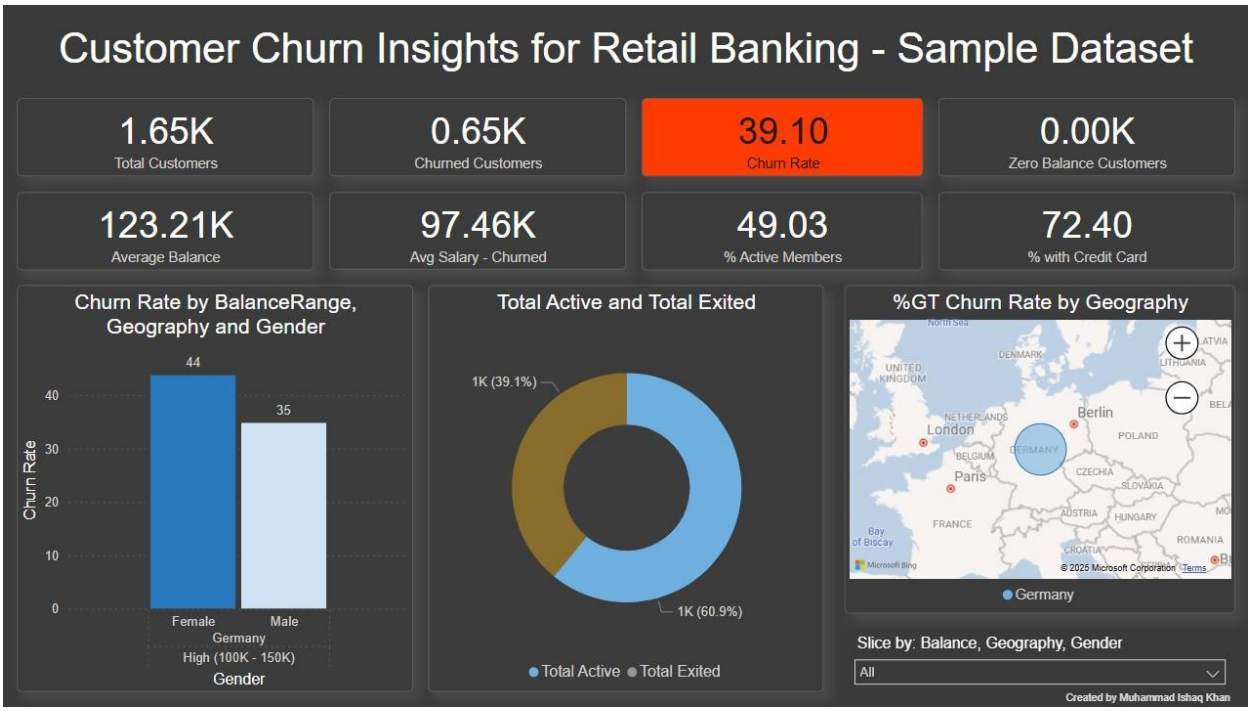


7. Slicers and Drill-Down Functionalities

The dashboard includes these interactive features:

- Slicers for Balance Range, Geography, and Gender.
- Bar chart supports drill-down by clicking BalanceRange to see lower-level detail
- Dynamic filtering applied across all visuals based on slicer selection

Snapshot of drill down on bar chart (bottom left):



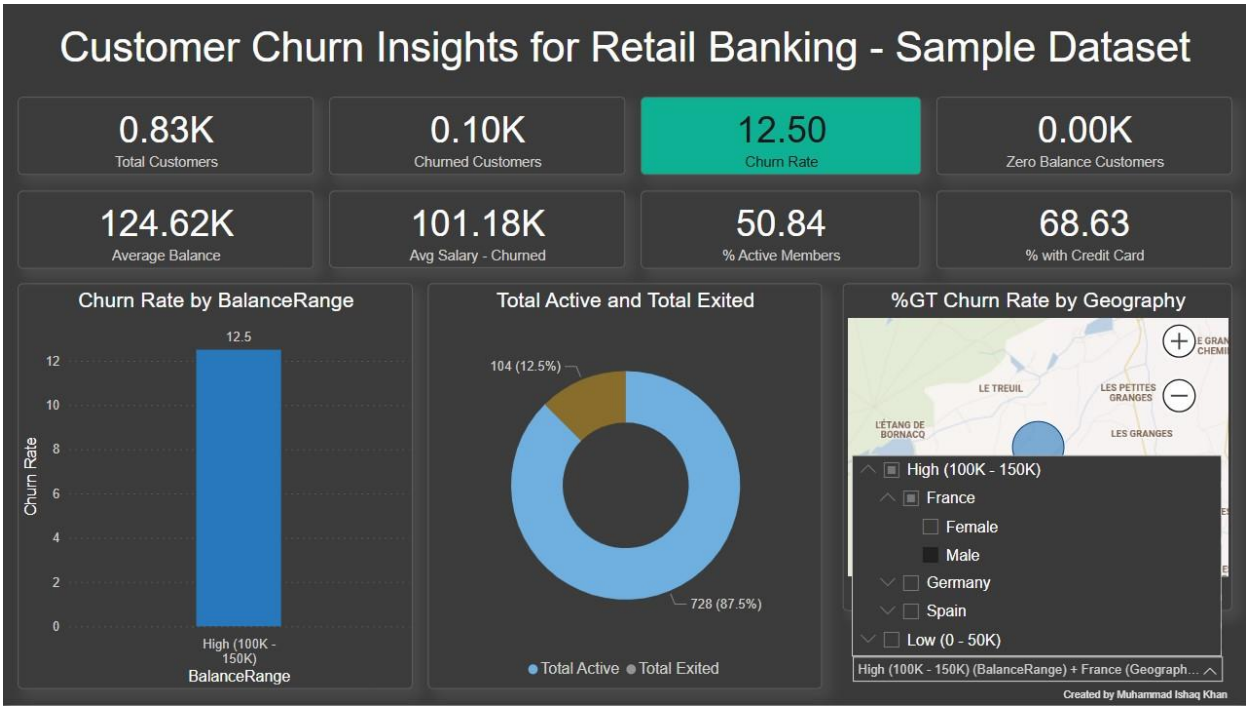
Section 8: Conditional Formatting Implementation

To enhance visual clarity and enable quicker decision-making, conditional formatting was applied to the Churn Rate KPI card. This feature provides intuitive color-coded indicators that highlight the severity of customer churn in real-time, helping stakeholders easily assess performance against predefined thresholds.

Formatting Criteria:

- Green: 0-15% (Acceptable churn)
- Yellow: 15-30% (Warning threshold)
- Red: 30%+ (Critical - immediate attention required)

The snapshot below demonstrates how slicer selections dynamically influence the churn rate color indicator, offering contextual awareness across customer segments:



Section 9: Key Findings & Business Insights

This section presents the core insights derived from the customer churn analysis. By examining overall trends as well as segmentation by balance range, country, and gender, the findings reveal critical patterns in customer behavior, churn risk, and potential areas for targeted intervention. These insights aim to support data-driven decisions that enhance customer retention strategies and improve business outcomes.

9.1 Overall Insights

- Total Customers: 10,000
- Churn Rate: 20.37% (2,037 churned customers)
- Active Customers: 7,963
- Zero Balance Customers: 3,617 (36.17% of total)
- Credit Card Holders: 51.51%
- Average Salary of Churned Customers: ₹101.47K
- Average Balance (All Customers): ₹76.49K

9.2 Insights by Balance Range

Balance Segment	Churn Rate	Key Findings
Zero Balance	13.82%	High % of credit card holders (71.66%), mostly churned from France (13.9%), Spain (13.6%),

		None from Germany.
Low (0–50K)	34.67%	Highest churn rate, mainly from France (49%) and Spain (40%), none from Germany.
Medium (50K–100K)	19.88%	Balanced churn; highest in Spain (24%), followed by Germany and France.
High (100K–150K)	25.77%	Highest churn from Germany (39%), despite high avg balance and salary.
Very High (150K+)	23.12%	Elevated churn in Spain (26%), then France (24%). Wealthier customers still churn.

Observation: Churn is not linear with balance — both low and high balance segments show high churn. Middle-tier balances show relatively lower churn.

9.3 Insights by Country

Country	Churn Rate	Notable Points
Germany	32.44%	Highest churn overall, despite no zero balance customers and highest avg balance (₹119.73K). Lower engagement with active members.
France	16.15%	Large customer base, lower churn, even though 48% have zero balance. Suggest stability or loyalty.
Spain	16.67%	Mid-level churn, similar salary and balance patterns as France, slightly better active member % (52.97%).

Insight: Germany poses the greatest churn risk and may need targeted retention strategies, even among high-value customers.

9.4 Insights by Gender

Gender	Churn Rate	Key Points
Male	16.46%	Lower churn rate. Largest zero balance segment (1.96K), but still better retention.
Female	25.07%	Significantly higher churn. Avg salary of churned customers is higher. Highest churn in Germany (37.5%).

Gender Insight: Female customers churn at a much higher rate, even though their average salary is higher. Special attention needed for female retention, especially in Germany and Spain.

Section 10: Recommendations

Key strategic recommendations based on dashboard metrics are:

- Target Germany with Retention Campaigns – Especially high-value customers, as churn is highest despite high balances and salaries.
- Address Female Churn – Develop loyalty programs, surveys, or communication channels tailored for female clients.
- Reassess Low Balance Segments – Despite low balances, they show the highest churn — may be under-supported or underserved.
- Analyze Zero Balance France/Spain Clients – They churn less even with zero balance; understand what's working to replicate elsewhere.
- Monitor Credit Card Users – Higher credit card ownership correlates with lower churn in several segments.

Section 11: Limitations & Future Enhancements

This project showcases key data analysis and dashboarding but has some limitations:

- Synthetic Dataset: Uses sample data, so insights may not fully reflect real customer behavior.
- No Temporal Dynamics: Lacks time-series data, limiting trend and seasonality analysis.
- Limited Features: Excludes variables like Credit Score and Tenure; future work could add these for deeper insights.
- No Predictive Modeling: Focuses on descriptive analytics; future versions could include churn prediction and recommendations.

Section 12: Project Repository Link

https://github.com/khan-Ishaq/customer-churn-powerbi-dashboard