**Bank Customer Churn Analysis Using Microsoft Excel**

**Project Overview**

This project investigates the reasons behind customer churn in a commercial bank. Over recent months, a significant number of customers have been closing their accounts, and the bank seeks to understand why. Using a dataset of 9000+ customers, I explored demographic, behavioral, and product-related factors to identify the main drivers of churn. The ultimate goal was to uncover hidden patterns in customer behavior and provide actionable insights that can help the bank strengthen customer retention strategies.

**Data Description**

* **Source**: Microsoft Excel file
* **Size**: 9992 records, 18 fields/Columns

**Key Variables**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| | **Variable** | **Description** | **Data Type / Values** | | --- | --- | --- | | CustomerId | Unique ID for each customer | Numeric | | Surname | Customer’s last name | Text | | CreditScore | Credit score of the customer | Numeric | | Geography | Customer’s country | Text | | Gender | Gender of the customer | Text | | Age | Age of the customer | Numeric | | AgeGroup | Categorized age group | Text | | Tenure | Years spent with the bank | Numeric | | Balance | Customer’s account balance | Numeric | | NumOfProducts | Number of products owned | Numeric | | HasCrCard | Credit card ownership | (Boolean) 1 = Yes, 0 = No | | IsActiveMember | Active membership status | (Boolean) 1 = Yes, 0 = No | | EstimatedSalary | Customer’s estimated salary | Numeric | | Exited | Whether the customer churned | (Boolean) 1 = Yes, 0 = No | | Complain | Whether the customer made a complaint | (Boolean) 1 = Yes, 0 = No | | Satisfaction Score | Satisfaction with bank services (Scale 1–5) | Numeric | | Card Type | Type of card owned (Gold, Platinum, Diamond, Silver) | Text | | Points Earned | Reward points accumulated | Numeric | |

**Tools and Skills Used**

The analysis was conducted entirely in **Microsoft Excel**. Key tools and features included:

* **PivotTables**: Summarized and segmented churn patterns.
* **XLOOKUP / INDEX-MATCH**: Retrieved customer details and performed lookups.
* **Text Functions**: Standardized data formatting.
* **Conditional Formatting**: Highlighted churn risk indicators.
* **Charts and Dashboards**: Visualized churn trends and comparisons.
* **CORREL Function**: Measured relationships between variables.

**Data Cleaning and Preparation**

The dataset was inspected and prepared to ensure reliability:

* Checked for duplicate **CustomerId** values (none found).
* Verified null or blank fields using Excel filters (none present).
* Standardized column formats (e.g., binary columns consistently represented as 1 = Yes, 0 = No).
* Created a new feature, **AgeGroup**, by categorizing ages into four brackets:
  + Young (18–34), Middle-aged (35–49), Old (50–70), Very Old (70+).  
    This transformation simplified age-related analysis and revealed clearer churn trends.

**Exploratory Data Analysis (EDA)**

The exploratory phase focused on uncovering patterns and relationships between customer attributes and churn behavior. I used a combination of PivotTables, PivotCharts, Excel formulas and functions, correlation analysis (CORREL), and conditional formatting to answer critical questions about who was leaving the bank and why.

To structure the analysis, I asked guiding questions such as:

1. Who are the churned customers in terms of age group, credit score, gender, geography, and card type?
2. Is churn related to low satisfaction scores or frequent complaints?
3. Do customers with fewer products or lower engagement tend to churn more?
4. Does having a credit card or being an active member reduce churn?
5. Are high earners or those with higher balances more loyal?
6. What role does tenure play in churn likelihood?
7. Which card types are more prone to churn?
8. Are there any geographic regions with higher churn rates?
9. Does churn correlate with the number of points earned or card usage?
10. Can we identify a customer churn risk profile for early detection?

**Approach**

* PivotTables and PivotCharts were used to compare churned versus non-churned customers across key variables such as age group, geography, card type, and gender.
* Correlation (CORREL function) was applied to test the relationship between churn and numeric variables such as credit score, satisfaction score, balance, and salary.
* Conditional formatting was applied to flag customers with low satisfaction and multiple complaints as potential churn risks.
* A derived variable, **AgeGroup**, was created to segment customers into Young, Middle-aged, Old, and Very Old for clearer age-related analysis.

**Preliminary Observations**

* Customers from **Germany** showed a noticeably higher churn rate compared to Spain and France.
* **Older customers** accounted for a large portion of churned customers, with middle-aged groups also contributing significantly.
* **Low satisfaction scores** (below 3) and the presence of **complaints** were strong indicators of churn.
* Customers with only **higher number of products** and those with **low account activity** were more likely to churn.
* Customers with **lesser number products** appeared more loyal and less likely to churn.

These patterns guided the deeper analysis that followed, where I quantified churn rates and examined specific drivers in more detail.

**Data Visualization**

To better communicate the patterns discovered during exploratory analysis, I created PivotCharts and other Excel-based visualizations. These charts highlight the distribution of churn across customer demographics, behavior, and engagement levels.

1. **Churn by Geography**

A clustered bar chart compared churn rates, churned customers and total customers across Spain, France, and Germany. The visualization revealed that **Germany had the highest churn rate (32%)**, significantly above Spain (16%) and France (14%). This suggests geographic factors may influence customer retention.

1. **Churn by Age Group**

A horizontal bar chart segmented customers into Young, Middle-aged, Old, and Very Old. The results showed that **middle-aged and older customers accounted for over 65% of total churn**, indicating that retention strategies should be tailored to these age groups.

1. **Satisfaction Score vs. Churn**

A combo column chart displayed the number of customers versus churn rates by satisfaction score (1–5). The visualization clearly showed that **customers with satisfaction scores of 1,2 and were far more likely to churn**, while those rating 3 demonstrated strong loyalty.

1. **Product Engagement**

A pie chart illustrated churn by number of products owned. Customers with **three or four products represented the majority of churn cases with about 83% and 100% churn rate respectively**, while those with lesser number of products were much less likely to leave. This emphasizes the importance of cross-selling and product engagement.

1. **Tenure and Activity Status**

A combo chart was used to examine tenure against churn rate where the columns showed the different tenure (1-7 years) and the line indicated the churn rate across these years. Churn rates spiked among customers with lower tenure (0–4 years), and inactive members were almost twice as likely to churn compared to active members.

**Findings and Insights**

The analysis uncovered clear patterns in customer churn behavior across demographics, financial attributes, product types, and customer experience indicators.

**1. Demographics and Geography**

* Age: There is a strong positive correlation between age and churn (r ≈ 0.50). Older customers are significantly more likely to leave the bank compared to younger ones. This suggests that loyalty decreases with age, and retention strategies must be tailored toward middle-aged and older customers.
* Geography: Customers in Germany exhibit the highest churn rates, far exceeding those in Spain and France. This indicates a region-specific issue that may be linked to local market dynamics, competition, or service delivery.

**2. Financial Attributes**

* Average Balance: Surprisingly, customers with higher account balances show higher churn rates. This highlights a risk of losing high-value customers, who are often the most profitable. A targeted retention strategy for this segment is critical.
* Credit Score: Customers with lower credit scores churn more frequently. This implies that financial stability plays a role in customer loyalty. These customers may feel underserved or excluded from premium services, leading to dissatisfaction and eventual churn.

**3. Product and Service Engagement**

* Card Type: Churn varies by product type. Diamond cardholders have the highest churn rate (≈ 21.8%), while Gold cardholders have the lowest (≈ 19.3%). This suggests that premium cardholders may not perceive enough value or benefit from their higher-tier products, warranting a review of card offerings and engagement strategies.
* Number of Products: Customers with three or more products exhibited very high churn (83% and above), while those with one or two products showed comparatively lower churn rates. This counterintuitive finding suggests that product bundling may not always lead to loyalty.
* Complaints: Customers who lodged complaints are significantly more likely to churn compared to those who did not. This indicates that unresolved or poorly managed complaints are a strong predictor of attrition. Improving complaint resolution processes could directly reduce churn.

**Key Implications**

* The bank is at risk of losing older and high-balance customers…” → “Design targeted retention programs for older and high-balance customers, such as loyalty perks or premium relationship managers.
* Regional disparities in churn rates call for localized market research and targeted retention interventions, particularly in Germany.
* Product value perception—especially for Diamond cardholders—requires urgent review.
* Customer experience management, especially around complaints, is one of the most actionable levers for reducing churn.

**Recommendations**

Based on the analysis, several targeted actions are recommended to address the drivers of churn and improve customer retention:

1. **Develop Retention Programs for Older and High-Balance Customers.**

Older customers and those with higher account balances show a greater tendency to churn. The bank should introduce loyalty programs, dedicated relationship managers, and exclusive perks tailored to these segments. This will help protect high-value clients who contribute significantly to profitability.

1. **Implement Localized Strategies in Germany.**

With Germany showing the highest churn rates, the bank should conduct market-specific surveys and feedback sessions to uncover the root causes. Tailored campaigns and service improvements focused on this market can reduce regional churn disparities.

1. **Reassess Premium Product Offerings.**

Diamond cardholders churn at higher rates than Gold cardholders, suggesting a gap between expectations and delivered value. The bank should review Diamond card benefits and consider enhancing rewards, flexibility, or exclusive services to improve customer satisfaction in this segment.

1. **Strengthen Complaint Resolution Systems**.

Customers who lodge complaints are highly likely to churn. The bank should establish faster resolution processes, invest in customer support training, and introduce proactive follow-up systems to ensure that dissatisfied customers feel heard and valued.

1. **Enhance Onboarding and Engagement for New Customers.**

Customers with shorter tenure (0–3 years) are more likely to churn. Structured onboarding programs, welcome packages, and early engagement strategies (such as personalized product recommendations) can help establish stronger customer relationships during the early lifecycle.

**Conclusion**

This project set out to uncover the reasons behind rising customer churn at the bank. By analyzing demographic, financial, and behavioral data, the analysis revealed that age, geography, account balance, product type, and customer complaints are key drivers of churn.

The findings indicate that older and high-balance customers, German customers, and Diamond cardholders represent the most at-risk groups. Dissatisfaction, low product engagement, and unresolved complaints were also strong predictors of churn.

By implementing the recommended retention strategies—ranging from loyalty programs and localized interventions to improved complaint handling—the bank can significantly reduce churn and safeguard its most valuable customer relationships.

Looking forward, the bank can build on this analysis by developing predictive churn models using advanced tools such as Power BI, Python, or machine learning. This would enable real-time identification of at-risk customers and allow for proactive, data-driven retention strategies.