Problem Statement: Developing Predictive Models to Identify At-Risk Customers and Reduce Churn Rate

- As a Data Analyst, the project aims to delve into extensive datasets from both banking and telecom domains to understand customer churn dynamics.

- By leveraging various customer-related features such as demographics, transaction history, and activity status, the goal is to analyze patterns and build predictive models capable of forecasting customer churn.

- Through comprehensive data analysis, feature engineering, and model development, the project seeks to empower businesses with actionable insights to implement targeted retention strategies and enhance customer loyalty.

Key Features:

Customer Information:

- **RowNumber:** Unique identifier for each row.
- **CustomerId:** Unique identifier for each customer.
- **CreditScore:** The credit score of the customer.
- **GeographyID:** Identifier for the geographical location of the customer.
- **GenderID:** Identifier for the gender of the customer.
- **Age:** Age of the customer.
- **Tenure:** Number of years the customer has been with the bank or telecom company.
- **Balance:** Current balance in the customer's account.
- **NumOfProducts**: Number of products the customer has with the company.
- **HasCrCard:** Binary variable indicating whether the customer has a credit card (1 for yes, 0 for no).
- **IsActiveMember:** Binary variable indicating whether the customer is an active member (1 for yes, 0 for no).
- **EstimatedSalary:** Estimated salary of the customer.
- **Exited:** Binary variable indicating whether the customer has exited (1 for yes, 0 for no).
- **Bank DOJ:** Date of joining the bank.

Geography:

- **GeographyID:** Unique identifier for geographical locations.
- **GeographyLocation:** Location names corresponding to GeographyID.

Gender:

- **GenderID:** Unique identifier for gender.
- **GenderCategory:** Gender categories corresponding to GenderID.

Customer Exits:

- **ExitID:** Unique identifier for exit categories.
- **ExitCategory:** Exit categories corresponding to ExitID.

Credit Card:

- **CreditID:** Unique identifier for credit card categories.
- **Category:** Credit card categories corresponding to CreditID.

Active Customers:

- **ActiveID:** Unique identifier for active customer categories.
- **ActiveCategory:** Active customer categories corresponding to ActiveID.

Analysis Objectives:

Identifying Key Churn Drivers:

- Determine which factors contribute most significantly to customer churn within the banking and telecom industries.
- Analyze the correlation between different customer attributes and the likelihood of churn.
- Identify patterns or trends that distinguish churned customers from those who remain active.

Segmentation of Customer Base:

- Segment customers based on their demographic characteristics, transactional behavior, and activity status.
- Explore distinct customer segments and their respective churn rates.
- Identify high-value segments that are more prone to churn and those that are more loyal.

Predictive Modeling for Churn Prediction:

- Develop predictive models using machine learning algorithms to forecast which customers are likely to churn in the future.
- Evaluate the performance of various models and select the most accurate and reliable one for deployment.
- Assess the predictive power of different features and their impact on model performance.

Customer Lifetime Value (CLV) Analysis:

- Calculate the CLV for different customer segments to understand the revenue potential associated with each group.
- Determine how churn rates affect the CLV of different customer segments.
- Explore strategies to maximize CLV while minimizing churn.

Retention Strategy Recommendations:

- Generate actionable insights and recommendations to improve customer retention based on analysis findings.
- Develop targeted retention campaigns tailored to specific customer segments and their churn risk levels.
- Evaluate the potential effectiveness of retention initiatives through simulations or A/B testing.

Continuous Monitoring and Iterative Improvement:

- Establish mechanisms for ongoing monitoring of churn rates and customer behavior patterns.
- Implement feedback loops to continuously refine predictive models and retention strategies based on real-time data.
- Track the impact of implemented strategies on reducing churn and increasing customer loyalty over time.

Note: By focusing on these analysis objectives, the project aims to empower businesses in the banking and telecom sectors to proactively address customer churn, optimize retention efforts, and ultimately enhance overall customer satisfaction and profitability.

DAX Functions Implementation

Active Members

```
ActiveMembers = CALCULATE(COUNT(Bank_Churn[CustomerId]), 'Active
customers'[ActiveCategory] = "Active member")
```

Churn percentage

```
Churn% =
var EC = [Exit Customers]
var TC = [Total Customers]
var churnper = DIVIDE(EC, TC )
RETURN churnper
```

Credit Card Holders

```
Credit Card Holders = CALCULATE(COUNT(Bank_Churn[CustomerId]), 'Credit card'[Category] = "credit card holder")
```

Exit Customers

```
Exit Customers = CALCULATE(COUNT(CustomerInfo[CustomerId]), 'Customer Exit'[ExitCategory] = "Exit")
```

Inactive members

```
Inactive members = CALCULATE(COUNT(Bank_Churn[CustomerId]), 'Active customers'[ActiveCategory] = "Inactive Member")
```

Non Credit Card Holders

```
Non credit card holders = CALCULATE(COUNT(Bank_Churn[CustomerId]), 'Credit card'[Category] = "non credit card holder")
```

Previous month exit customers

```
Previous month exit customers = CALCULATE([Exit Customers], PREVIOUSMONTH('Date Master'[Date]))
```

Retain Customers

```
Retain customers = [Total Customers] - [Exit Customers]
```

Total Customers

```
Total Customers = COUNT(Bank_Churn[CustomerId])
```