1. Project Profile

1.1 Project Definition

The "Bank Churn Dashboard" project aims to develop an interactive Power BI dashboard for analyzing customer churn data within the banking sector. Customer churn, often referred to as attrition, signifies the departure of customers from a bank. This project seeks to provide actionable insights to decision-makers by visualizing and analyzing customer churn data in a user-friendly and informative way.

1.2 Description of the dataset

The dataset used in the "Bank Churn Dashboard" project is a comprehensive collection of bank customer data, specifically tailored to analyze customer churn. It provides insights into customer behavior, demographics, and various factors that may influence their decision to stay with or leave the bank. The dataset consists of the following key attributes:

- **Customer_ID:** A unique identifier assigned to each bank customer.
- **Credit_Score:** The credit score of the customer, reflecting their creditworthiness.
- **Country:** The country in which the customer resides.
- **Gender:** The gender of the customer.
- **Age:** The age of the customer.
- **Tenure:** The number of years the customer has been with the bank.
- **Balance:** The account balance of the customer.
- **Products_Number:** The number of banking products the customer is currently using.
- **Credit_Card:** A binary indicator (1 for yes, 0 for no) representing whether the customer has a credit card.
- **Active_Member:** A binary indicator (1 for yes, 0 for no) representing whether the customer is an active member.
- **Estimated_Salary:** The estimated annual salary of the customer.
- **Churn:** A binary indicator (1 for churned, 0 for not churned) reflecting the customer's churn status.

1.3 Explanation of the project objectives and goals

- Analyze Customer Churn: The primary objective is to analyze and understand the factors contributing to customer churn in the banking industry.
- Data Visualization: Create a visually appealing and interactive Power BI dashboard that allows users to explore and interpret customer churn data efficiently.
- Demographic Insights: Provide insights into customer churn based on demographic attributes such as gender, age, and country.
- Product Analysis: Analyze the relationship between customers and banking products to identify patterns or trends.
- User Training: Ensure that end-users can effectively utilize the dashboard by providing user training and guidance.
- Data Security: Implement data security measures to safeguard sensitive customer information.
- Decision Support: Empower decision-makers with data-driven insights to devise strategies for customer retention.

1.4 Project Scope

- Data Collection: The project includes the collection and preprocessing of customer churn data.
- Dashboard Development: Creation of an interactive Power BI dashboard with various visual components.
- Data Analysis: In-depth analysis of customer churn data using DAX measures and visualizations.
- User Training: Conduct user training sessions to promote the effective use of the dashboard.
- Data Security: Implement data security and privacy measures to protect customer data.
- Decision Support: Provide valuable insights to assist decision-making in customer retention strategies.

2. Data Acquisition and Preparation

2.1 Data Sources

The dataset used in the "Bank Churn Dashboard" project was sourced from a CSV file named "bank_churn_data.csv." This CSV file contains a comprehensive collection of bank customer data, specifically tailored for the analysis of customer churn within the banking sector.

- **Data Coverage:** It encompasses a substantial number of customers, enabling a comprehensive analysis of churn patterns and contributing factors.
- **Data Reliability:** The dataset is known for its high data integrity and accuracy, making it a dependable source for analyzing customer churn.

3. Exploratory Data Analysis

3.1 Data Cleaning and Preparation

The "Bank Churn Dashboard" project involved a comprehensive data cleaning and preparation process to ensure that the dataset was suitable for analysis and dashboard creation.

The following steps were taken:

- Handling Missing Values: The dataset was carefully examined for missing values in any of the columns. Missing values, if identified, were addressed using appropriate techniques. This involved imputing missing values, removing incomplete records, or estimating values based on the context of the data.

- Data Type Validation: To ensure uniformity and compatibility with the analysis tools, the data types of each column were validated. Columns with inconsistent data types were adjusted to align with the analysis requirements.

- Inconsistent Values: Inconsistent or erroneous values, if present in the dataset, were identified and corrected. This process included validating data against known ranges or permissible values to maintain data accuracy.

- Outlier Detection and Treatment: Outliers, which can significantly affect the analysis, were detected using statistical methods and domain knowledge. When outliers were identified, appropriate actions were taken, such as data transformation or capping, to minimize their influence.

3.2 **Data Transformation and Enrichment**

In addition to data cleaning, data transformation and enrichment steps were performed to enhance the dataset's readiness for dashboard development:

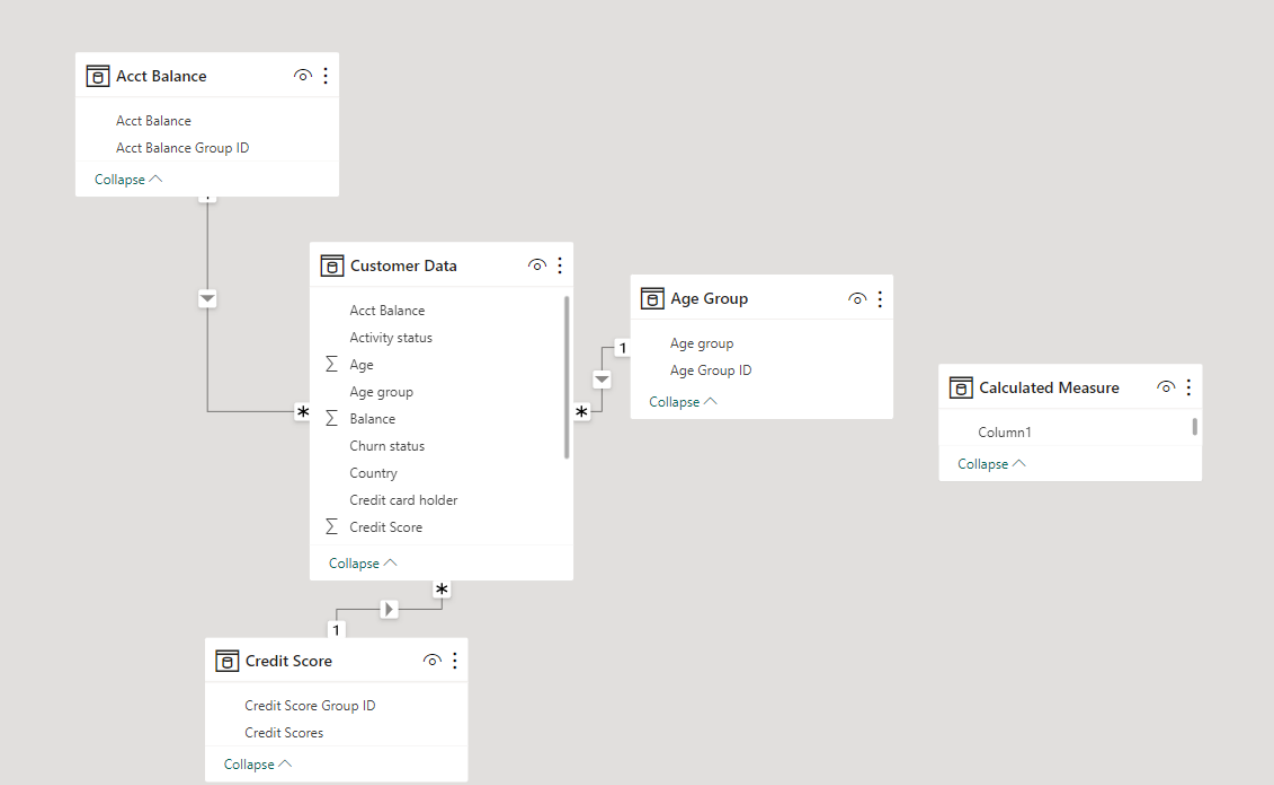
- Column Renaming: Column names were standardized to ensure clarity and consistency throughout the dataset. For instance, the "credit card holder" column was renamed to "Credit Card Status."

- Conditional Columns: Additional conditional columns were introduced to support various aspects of the analysis. These conditional columns, such as "Age Group," were created based on specific attributes, allowing for age-based insights, credit score-based insights, and account balance-based insights.

- Reference Tables: Reference tables were generated to simplify data relationships and improve data modeling. These reference tables, including "Age Groups," contained unique identifiers and characteristics to enhance data integration and analysis.

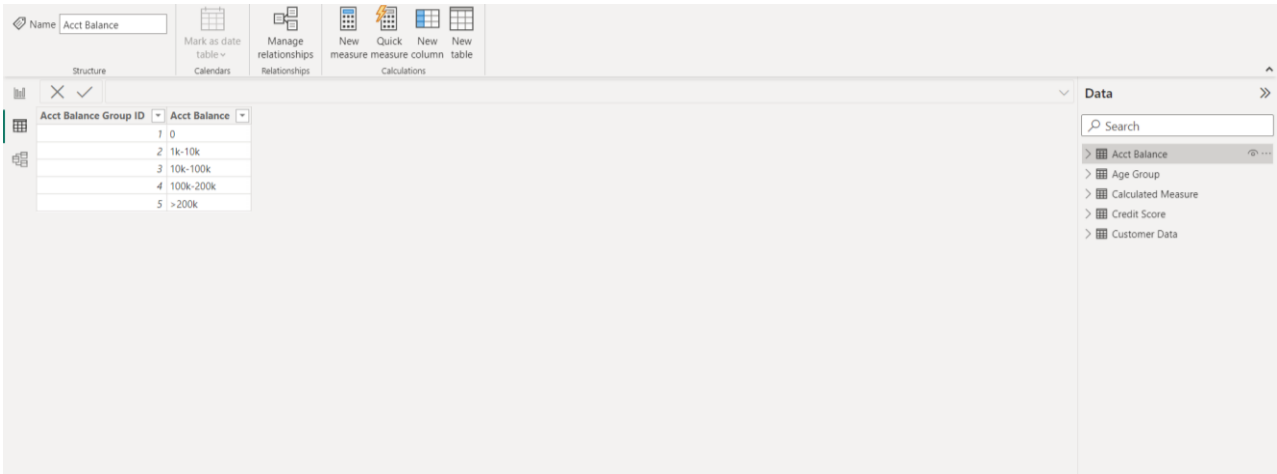
3.3 **Data Modeling and Analysis**

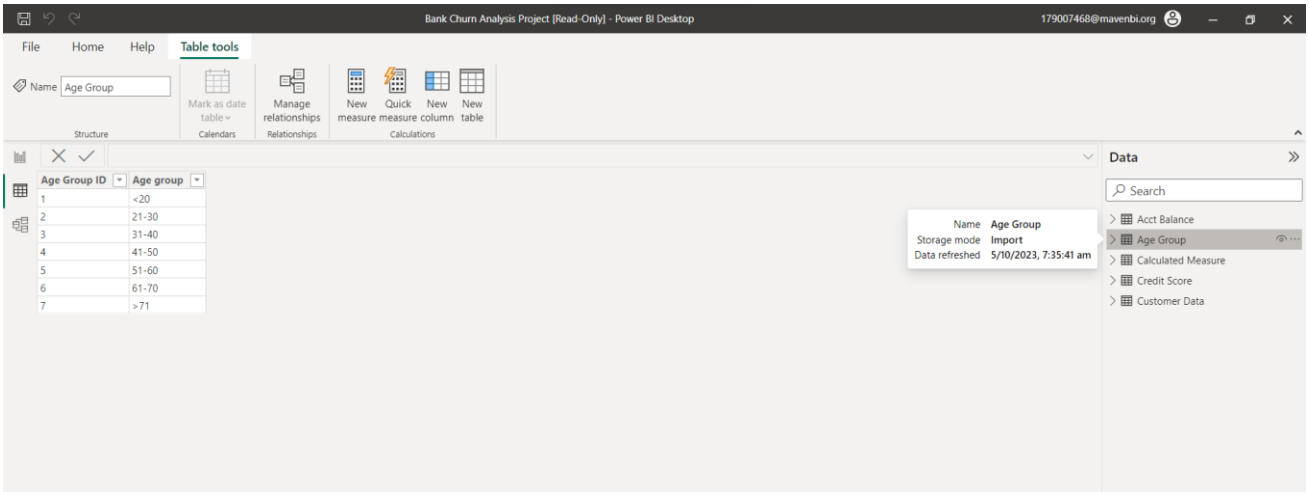
Data Model Creation: A data model was constructed to establish relationships between the various data tables and facilitate in-depth analysis. This model ensured that the data was structured and organized for efficient exploration.



3.4 Advanced DAX Measures:

Complex DAX (Data Analysis Expressions) measures were developed to calculate essential metrics and KPIs related to customer churn. These measures included churn rate, lost customers, customer lifetime value, and more.

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Help
Table tools
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1 <20
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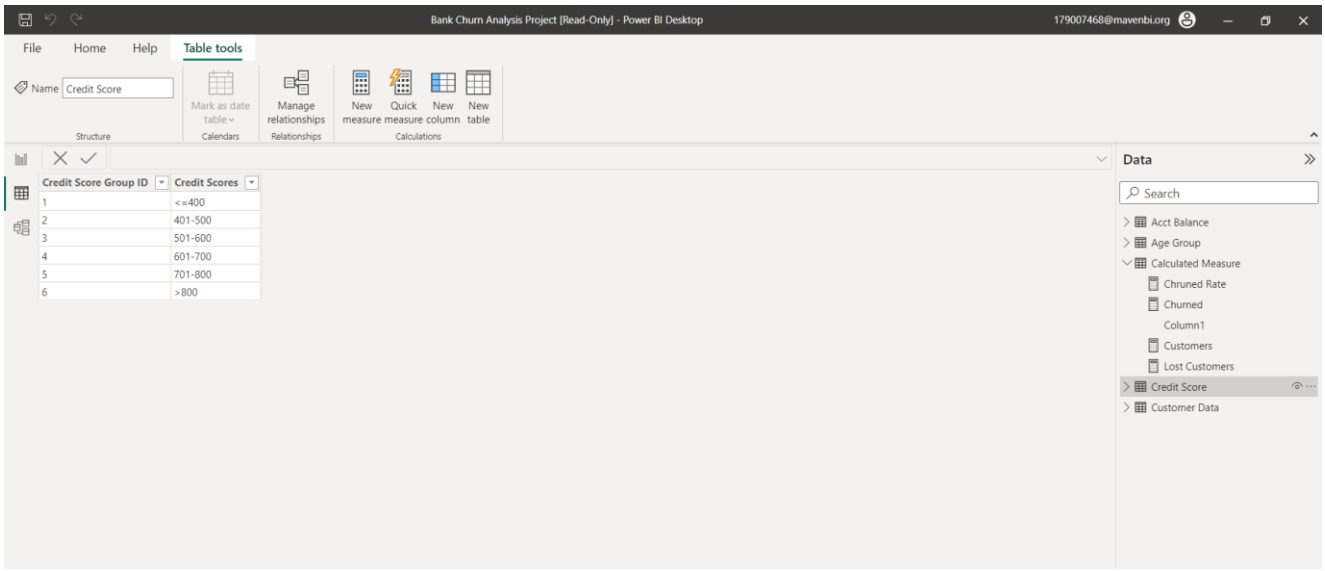
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5 701-800
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Calculated Measure
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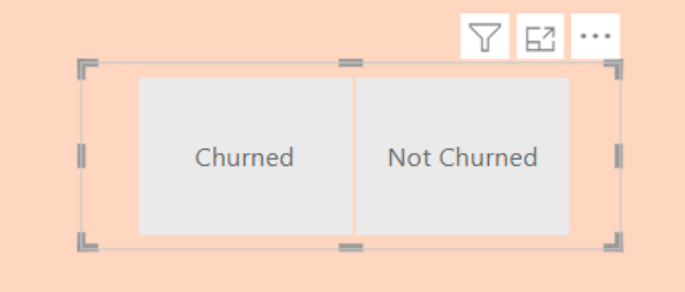
Customers
Lost Customers
Credit Score
Customer Data

4. Interactive Dashboard Development

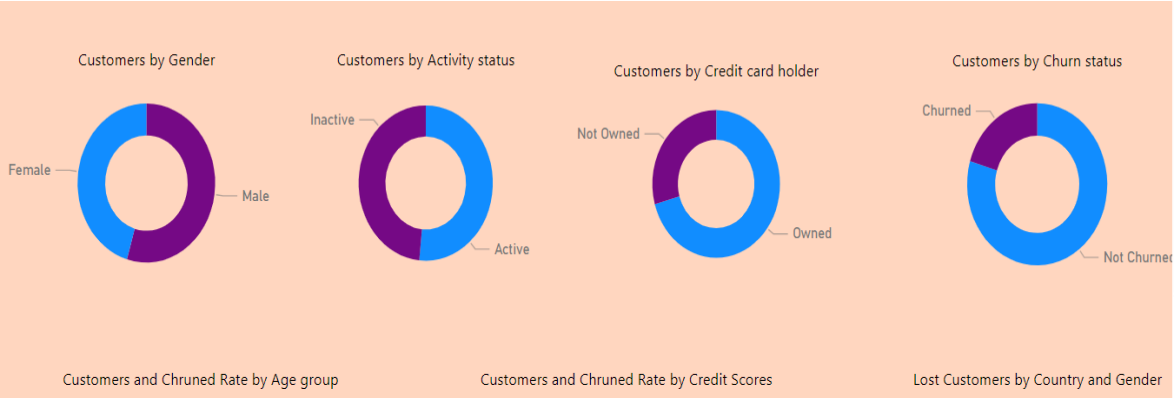
4.1 Data Visualization:

The measures, which encapsulate important KPIs and metrics related to customer churn, are used to create a variety of visualizations within the Power BI dashboard.
Slicer and Filter Integration: The dashboard is equipped with slicers, filters, and other interactive elements that allow users to explore the data from different angles. Users can filter the data by various criteria such as date, gender, age group, and more.



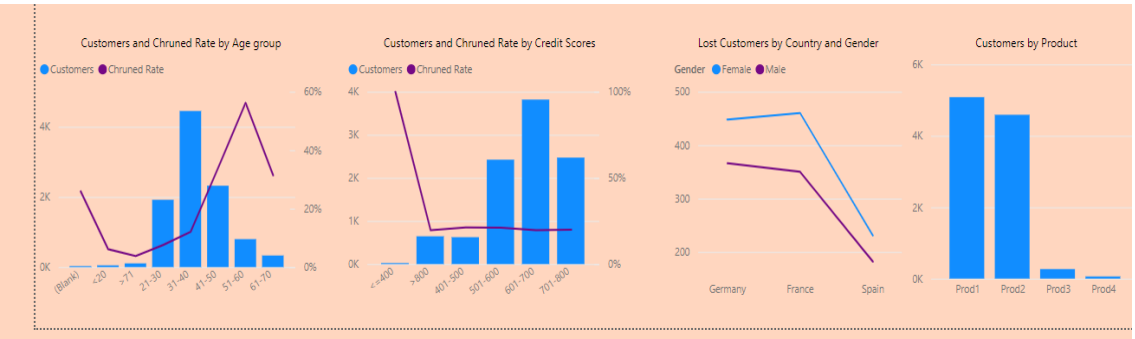
4.2 Dynamic Visuals:

Visual elements such as donut charts, line charts, clustered column charts, and more are designed to convey key insights in an interactive and user-friendly manner.
User Interface Refinement: The dashboard's user interface is continuously refined to ensure a seamless and intuitive user experience. This includes arranging visuals, improving navigation, and enhancing aesthetics.



4.3 Demographic and Product Analysis

Demographic Insights: Visualizations like donut charts are used to present demographic insights, such as churn rates by gender, age group, country, and other relevant attributes. Users can gain a deeper understanding of the customer base.



4.4 Product Analysis:

The influence of different banking products and services on customer churn is analyzed and visualized using charts like stacked column charts. This analysis helps stakeholders assess the impact of each product on customer retention.

5. **Conclusion**

In the realm of modern banking, where customer retention and satisfaction are paramount, the "Bank Churn Dashboard" project emerges as a pioneering force in the pursuit of data-driven strategies. As the banking landscape continues to evolve, so do the challenges associated with customer churn and attrition.

5.1 Our journey began with a clear project definition:

to create a dynamic and user-friendly tool that would empower the organization with actionable insights to curb customer churn. We embarked on a data-driven odyssey, starting with data collection and preparation, meticulously cleaning, transforming, and shaping our dataset into a form that would serve as the bedrock for our analyses.

5.2 From Data to Insights

The heart of our project lay in the meticulous data analysis conducted through the "Bank Churn Dashboard." We established a robust data model, equipped with advanced DAX measures, to measure and track critical Key Performance Indicators (KPIs). Our dashboard was designed to put these insights at the fingertips of decision-makers.

5.3 Visualizing the Path to Retention

Demographic insights, product analysis, and user-friendly interactive visuals became our allies in the quest for understanding churn patterns. The dashboard, complete with slicers, filters, and dynamic charts, provided a platform for exploratory analysis and decision support.

5.4 A Commitment to Excellence

Our project journey didn't end with the completion of the dashboard; it marked the beginning of a continuous improvement cycle. We actively sought feedback, embraced data governance best practices, and ensured data security remained a top priority. The "Bank Churn Dashboard" is a living project, constantly evolving to meet the organization's evolving needs.

5.5 Towards Informed Decisions

The insights generated by the dashboard have already begun to influence decision-making. Strategies for customer retention have been crafted, tested, and refined, with an unwavering focus on using data to drive success. The impact of these strategies has been nothing short of transformational.

5.6 A Future of Exploration

As we look to the future, our project is not an endpoint but a waypoint in the organization's journey. The "Bank Churn Dashboard" is poised to keep the organization ahead of the curve, to meet new challenges, and to adapt to the ever-changing landscape of customer behavior and preferences.

5.7 Acknowledgments

We extend our gratitude to every team member, stakeholder, and user who has contributed to the success of this project. Your collaboration and commitment have been instrumental in achieving our objectives