**Tableau project Documentation**

**Project Agenda :-**

* The Customer churn project about examining and understanding customer behavior to identify patterns and factors that contribute to customer attrition or churn.
* By analyzing customer churn, businesses can gain valuable insights into the reasons why customers leave, which helps them take proactive measures to retain customers and improve customer loyalty.
* The credit card division of the bank is experiencing poor performance. What are the underlying factors contributing to this outcome that we can cover through this project.
* This analysis will help the bank evaluate the customers who have stopped purchasing the credit card of the bank and figure out measures to reduce the bank’s customer loss rate.
* For this analysis I am using both Tableau and python. Tableau for data visualization and python for data pre-processing.
* Analyze the data to understand patterns, correlations, and trends related to churn. Visualizations and statistical techniques can help uncover insights about customer behavior and identify potential drivers of churn.

**Data Description:-**

* Customer Churn data set is related to bank customers. There are two types of customers existing and attrited customers.
* Existing customers refers who currently hold credit cards issued by the bank and maintaining the relationship with the bank.
* Attrited or Churn refers to the rate at which customers stop doing business with a company or cancel their subscriptions or services.
* The customer churn data set contains 10127 records and 20 columns
* In my analysis I am using most of the important columns in the data set
* The attrition flag column is very important for my analysis and every columns analyzed based on this attrition flag column.
* Analyze the data to understand patterns, and trends related to churn. Visualizations and statistical techniques can help uncover insights about customer behavior and identify potential drivers of churn. It will helpful to bank to reduce the customers loss rate.

**Interesting Question in my analysis:-**

1. Display the percentage of the attrited and the existing customers from the data.
2. Display gender-wise percentage of the attrited and the existing customers from the data.
3. Display region – wise percentage of the attrited and the existing customers from the data.
4. Display the percentage of the attrited and the existing customers for each card category.
5. Display the percentage of the attrited and the existing customers for each income category.

**Techniques :-**

**Pre-processing Techniques in python**

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| **Techniques** | **Explanation** |
| 1. Import panda’s library | It is used for data manipulation, analysis, and cleaning tasks, in data frame. |
| 1. Import statistics(m) | It is used for mathematical statistics calculations, such as mean, median, mode, variance, and standard deviation. |
| 1. Import tabulate(m) | It is used for creating formatted tables from tabular data. |
| 1. Head() | It is used to retrieve the first few rows of data, typically the top five rows by default. |
| 1. Info() | It provides a concise summary of the DataFrame, including information about the column names, data types, number of non-null values, and memory usage. |
| 1. Fillna() | It is used to fill missing or NaN (null) values in a pandas DataFrame or Series |
| 1. Dropna() | It is used to remove rows or columns containing missing or NaN (null) values from a pandas DataFrame |
| 1. Mean() | It is used to calculate the arithmetic mean or average of a set of numerical values. |
| 1. Median() | It is used to calculate the median value of a set of numerical values. The median is the middle value when the data is sorted in ascending or descending order, or the average of the two middle values if the data has an even number of elements. |
| 1. Mode() | It is used to calculate the mode value of a set of values. The mode represents the most frequently occurring value in the dataset. |
| 1. Isnull() | It checks for null values in a dataset and returns a boolean mask |
| 1. Sum() | It calculates the sum of numeric values in a sequence or along a specified |
| 1. For loop | It is used to iterate over a sequence |
| 1. Insert() | It inserts a new element at a specified index position within a list |

**Conclusion :-**

* If the bank manages to reduce the churned customer rate by 16%, it will subsequently decrease the rate at which customers are lost.
* There is a higher proportion of female customers in both the attrited and existing customer segments, the bank should prioritize targeting females for loan offerings with reduced interest rates. By doing so, the bank can foster stronger relationships with female customers, thereby increasing the likelihood of maintaining their loyalty for a longer duration.
* Considering that the attrited and existing customers are evenly distributed across regions, the bank will place a particular emphasis on England and Scotland. These two regions boast the highest customer count, making them a priority for the bank's focus and attention.
* Since a significant portion of customers prefer blue credit cards, increasing the production of blue cards would be advantageous for the bank to new customers.
* The bank observes a substantial number of customers falling within the income category of less than $40K, surpassing the count of customers in other income categories. These customers with incomes below $40K focusing then more advantageous to the bank.
* Some suggestions to bank management to decreases the churn customers.
* **Enhance customer experience**: Focus on providing exceptional customer services, personalized interactions, this can create a positive experience for customers. This can increase their satisfaction and loyalty to the bank.
* **Improve communication**: Regularly contact with customers through emails, newsletters, and social media. Informed about new offers, updates, and improvements to the bank's commitment to their needs.
* **Offer incentives and rewards**: Implement referral bonuses, or exclusive benefits for long-standing customers. Encourage them to stay with the bank by providing incentives for their continued support.
* **Conduct customer surveys**: Obtain feedback from churned customers to understand the reasons behind their departure. Use this information to identify areas for improvement and address any pin points or issues that led to their departure.