Rakamin Academy X syariah btpn

Credit Card Customer Analysis

BTPN Syariah Data Engineer

By:

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“I am a graduate of the Faculty of Petroleum Engineering UPN "Veteran" Yogyakarta, seeking an opportunity to apply skills in data analysis and data science. I am skilled in operating Python for data processing, visualization, and machine learning. Tableau for data reporting, and SQL. highly enthusiastic individual, eager to learn new things, and can work in a team or individually, “

01 BUSINESS OBJECTIVE

02 DATA EXPLORATION

03 INSIGHT AND VISUALIZATION

04 CONCLUSIONS AND RECOMMENDATIONS

01 BUSINESS OBJECTIVE

1. To ascertain the number of customers who have ceased utilizing credit card services.
2. Recognizing the factors that lead customers to cease using credit card services
3. Providing recommendations based on previously identified factors to minimize the number of customers discontinuing the utilization of services.

The complete query can be seen on GitHub
And The Dashboard can be seen on Tableau

02 DATA EXPLORATION

A. Create a Master Table

```
CREAT TABLE customer_data_history_new AS (
SELECT t1.clientnum, t2.status, t1.customer_age, t1.gender,
                t1.dependent_count, t3.education_level AS education,
                t4.marital_status AS marital, t1.income_category,
                t5.card_category, t1.months_on_book,
                t1.total_relationship_count,
                t1.months_inactive_12_mon,
                t1.contacts_count_12_mon, t1.credit_limit,
                t1.total_revolving_bal, t1.avg_open_to_buy,
                t1.total_trans_amt, t1.total_trans_tt,
                t1.avg_utilization_ratio
FROM customer_data_history AS t1
LEFT JOIN status AS t2
                ON t1.idstatus = t2.id
LEFT JOIN education AS t3
                ON t1.educationid = t3.id
LEFT JOIN marital AS t4
                ON t1.maritalid = t4.id
LEFT JOIN category AS t5
                ON t1.card_categoryid = t5.id
);
```

At this stage, a Master Table is created to consolidate all available tables, facilitating the forthcoming analysis process.

The entire table will undergo a LEFT JOIN operation with the 'customer_data_history' table as the reference table (t1). Among the tables involved in the LEFT JOIN are:

- ‘status’ (t2)
  t1.idstatus = t2.id
- ‘education’ (t3)
  t1.educationid = t3.id
- ‘Marital’ (t4)
  t1.maritalid = t4.id
- ‘category’ (t5)
  t1.card_categoryid = t5.id

The Master Table created is named 'customer_data _history_ new'

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B. Create Customer Churn Table

```
CREATE TABLE churn_data AS (
SELECT *,
        CASE
                WHEN customer_age <= 25 THEN 'below 26'
                WHEN customer_age <= 35 THEN '26-35'
                WHEN customer_age <= 45 THEN '36-45'
                WHEN customer_age <= 55 THEN '46-55'
                WHEN customer_age <= 65 THEN '56-65'
                WHEN customer_age > 65 THEN 'older than 65’
        END AS age_seg,
        ROUND((FLOOR(avg_utilization_ratio::decimal * 10)/10),1) AS utilization_seg,
        FLOOR(total_trans_amt::decimal/1000)*1000 AS total_trans_amt_seg,
FROM customer_data_history_new
WHERE status = 'Attrited Customer'
);
```

A new table called **'churn_data'** was created, which aims to filter the **Master Table ('customer_data_history_new')** only to contain churned customers. Apart from that, several new columns were also added to help with the further analysis process.

Some of the new columns created include:

- **‘age_seg’** = The objective is to classify the ages of customers.
- **‘utilization_seg’** = Performing segmentation of the 'avg_utilization_ratio' column based on its first decimal digit.
- **‘total_trans_amt_seg’** = Perform column segmentation based on the 'total_trans_amt' by grouping it according to multiples of 1000.

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C. Membuat Tabel Customer Percentage

Processing the **'customer_data_history_new'** table to determine the percentage of customers based on their status.

Query used

```
CREATE TABLE v_cust_percent AS
(
WITH t1 AS
        (
        SELECT status,
                COUNT(*) AS cust_count
        FROM customer_data_history_new
        GROUP BY status
        )

SELECT *,
          ROUND(((cust_count/(SELECT SUM(cust_count) FROM t1)) * 100), 2) AS percentage
FROM t1
);
```

Preview the created table

Status	Customer Count	%
Attrited Customer	1627	16.07
Existing Customer	8500	83.93

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And The Dashboard can be seen on Tableau

D. Create Tabel Utilization Count Table

Processing the **'churn_data'** table to calculate the number of customers based on their Utilization Rate segments.

Query used

```
CREATE TABLE v_utilization_count AS
(
        SELECT utilization_seg, COUNT(*) AS cust_count
        FROM churn_data
        GROUP BY utilization_seg
        ORDER BY utilization_seg
);
```

Preview the created table

Utilizarion Rate Segment	Customer Count
0	1068
0.1	121
0.2	89
0.3	69
0.4	52
0.5	46
0.6	45
0.7	42
0.8	71
0.9	24

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And The Dashboard can be seen on Tableau

E. Create Total Transaction Count Table

Processing the **'churn_data'** table to calculate the number of customers based on their Total Transaction segments.

Query used

```
CREATE TABLE v_total_trans_count AS
(
SELECT total_trans_amt_seg, COUNT(*) AS total_cust
FROM churn_data
GROUP BY total_trans_amt_seg
ORDER BY total_trans_amt_seg
);
```

Preview the created table

Total Transaction Segment	Total Customer
0	141
1000	330
2000	813
3000	34
4000	53
5000	31
6000	17
7000	55
8000	96
9000	47
10000	10

The complete query can be seen on GitHub
And The Dashboard can be seen on Tableau

F. Create Income Category Table

Processing the **'churn_data'** table to calculate the number of customers based on segmentation of Income Category and Gender.

Query used

```
CREATE TABLE v_income_cat_gender AS
(
SELECT gender, income_category, COUNT(*) AS cust_count
FROM churn_data
GROUP BY gender, income_category
ORDER BY gender, CASE
                    WHEN income_category ='Unknown' THEN 1
                    WHEN income_category ='Less than $40K' THEN 2
                    WHEN income_category ='$40K - $60K' THEN 3
                    WHEN income_category ='$60K - $80K' THEN 4
                    WHEN income_category ='$80K - $120K' THEN 5
                    WHEN income_category ='$120K +' THEN 6
                END
);
```

Preview the created table

Gender	Income Category	Customer Count
F	Unknown	182
F	Less than $40K	582
F	$40K - $60K	166
M	Unknown	5
M	Less than $40K	30
M	$40K - $60K	105
M	$60K - $80K	189
M	$80K - $120K	242
M	$120K +	126

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G. Create Customer Age Table

Processing the **'churn_data'** table to calculate the number of customers based on their age ranges.

Query used

```
CREATE TABLE v_age_range AS
(
SELECT age_seg, COUNT(*) cust_count
FROM churn_data
GROUP BY age_seg
ORDER BY age_seg
);
```

Preview the created table

Age Range	Customer Count
26-35	122
36-45	606
46-55	688
56-65	209
older than 65	2

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H. Create Education Table

Processing the 'churn_data' table to calculate the number of customers based on Education Level.

Query used

```
CREATE TABLE v_education AS
(
SELECT education, COUNT(*) cust_count
FROM churn_data
GROUP BY education
ORDER BY cust_count DESC
);
```

Preview the created table

education	Customer Count
Graduate	487
High School	306
Unknown	256
Uneducated	237
College	154
Doctorate	95
Post-Graduate	92

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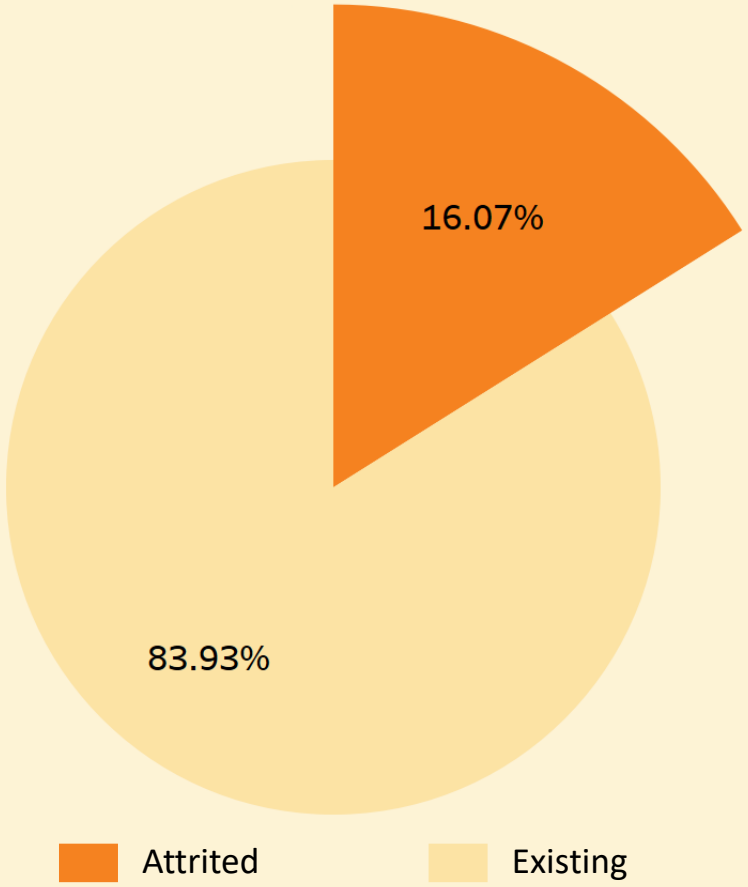
And The Dashboard can be seen on Tableau

03

INSIGHT AND VISUALIZATION

A. Customer Percentage



16% of the overall data sample stopped using credit card services

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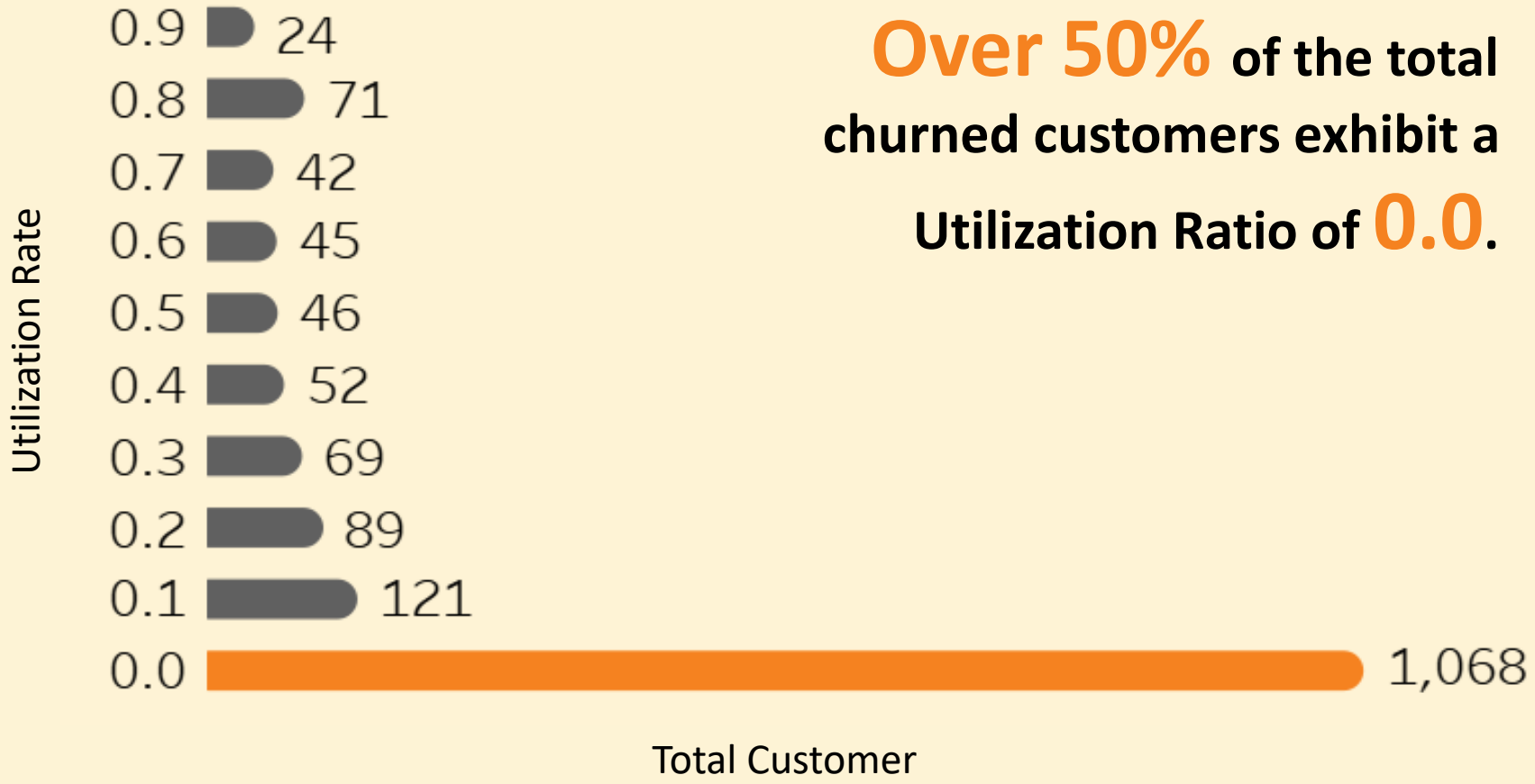
B. Utilization Rate



Over 50% **of the total churned customers exhibit a Utilization Ratio of 0.0.**

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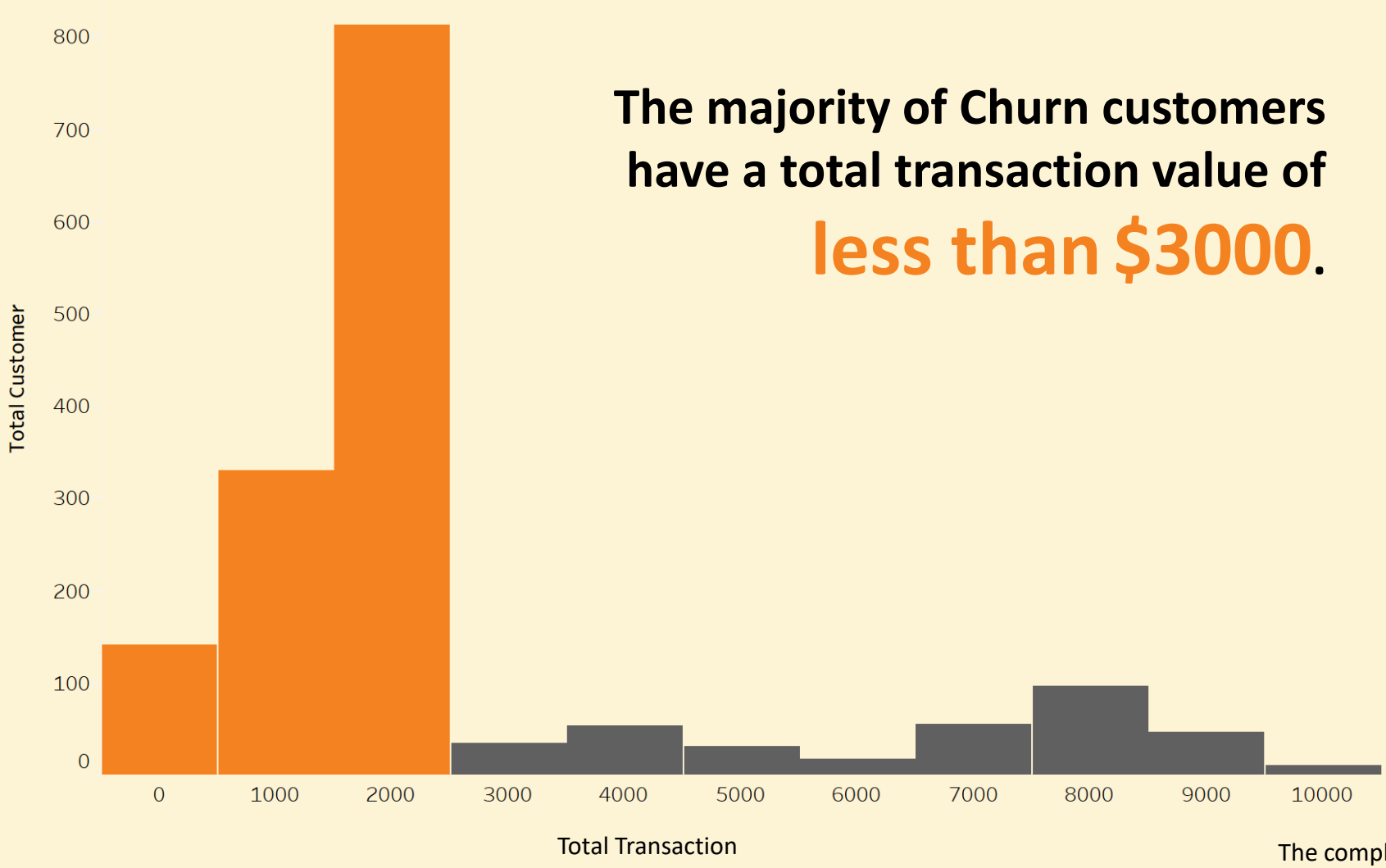
C. Total Transaction



The majority of Churn customers have a total transaction value of less than $3000.

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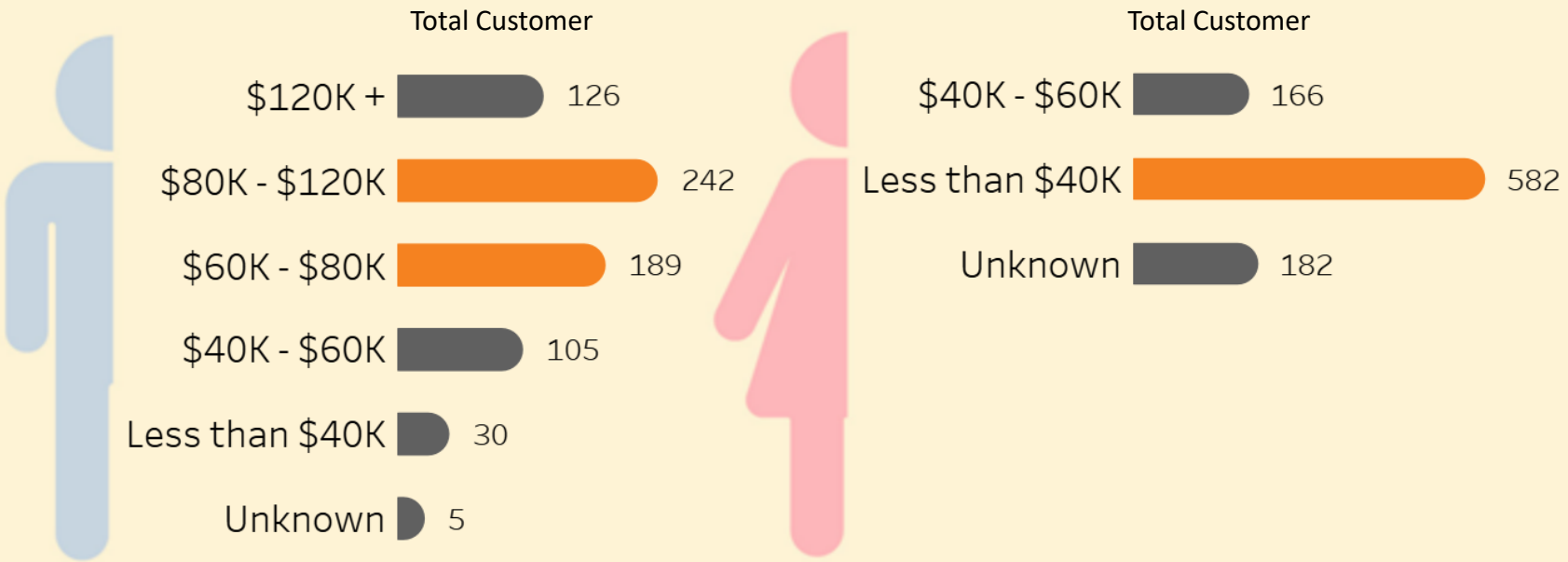
D. Income Category

Women with an income below $40K tend to have a higher churn rate, whereas, for Men, the likelihood of churn increases with higher income ($60K and Above).



The complete query can be seen on GitHub
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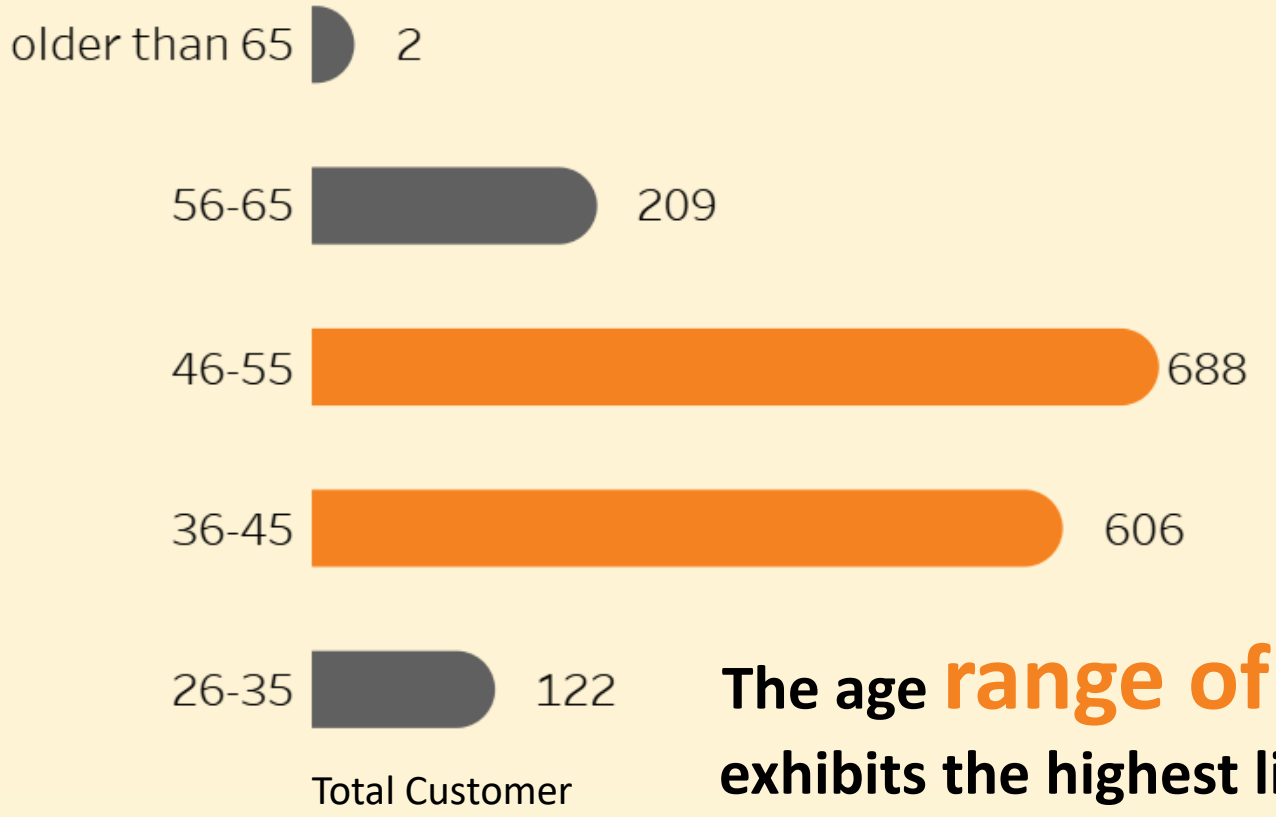
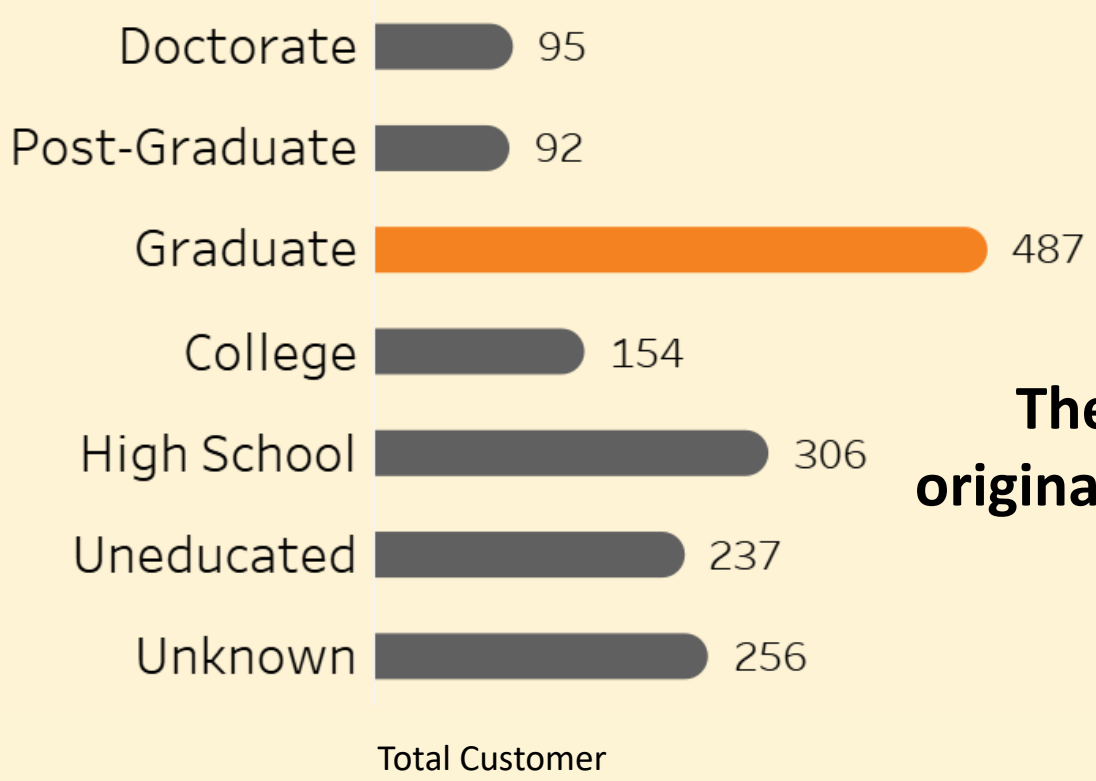
E. Customer Age



The age range of 36-55 exhibits the highest likelihood of churn.

The complete query can be seen on GitHub
And The Dashboard can be seen on Tableau

F. Education



The highest churn rate originates from customers with a Graduate education level.

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04 CONCLUSIONS AND RECOMMENDATIONS

1. The current customer churn rate stands at 16% of the total user base. It is imperative to formulate a strategy that fosters increased customer retention within the service.
2. To bolster customer engagement, a viable approach involves instituting a rewards system wherein points are granted for each transaction conducted with a credit card. These accrued points can subsequently be exchanged for specific rewards.
3. The primary cause of customer churn predominantly lies in a diminished utilization rate, often reaching as low as 0.0. This occurrence can be ascribed to customers' low interest in engaging credit card services for their transactions.
4. Through partnerships with diverse marketplaces to provide enticing promotions, it is expected that the Utilization Rate will experience an increase.

5. Customers who cease using credit cards typically exhibit total transactions below $3000. The imposition of high service interest rates is likely one of the contributing factors that deter customers from utilizing credit cards, particularly for substantial transactions.
6. Adjusting the credit interest rates can be undertaken to enhance interest and encourage continued usage of the credit card.
7. For female customers, an income of $40,000 or below poses a higher potential for churn. In contrast, for male customers, the probability of churn increases with the rise in income levels.
8. Improving customer service by offering access to financial consultants to assist in the effective management of their income.
9. The age range 36-55 contributes the most to Churn.

10. Providing insurance packages and additional protection, especially for customers aged 46 years and over.
11. Customers with a 'Graduate' education level are the largest contributors to customers who stop using credit card services.
12. Providing special offers for transactions related to education, such as books, courses, certifications, workshops and seminars, with the hope that customers with a relatively high level of education will be more interested in using credit card services.
13. Improving the security of the banking system to increase customer trust.
14. Strengthening mobile banking services so that they can cover most banking services and customer financial activities.

THANK YOU