

Case Study: Customer Churn Prediction For Digital Dining Solution.

Outlines:

1. Problem Statement
2. Data Description
3. Generate Hypothesis
4. Insights
5. Creation of churn_label feature
5. Final conclusion

1. Problem Statement:

The Case Study is about Digital Dining in the restaurant industry. This Dining is facing a challenge of customer churn and wants us to help him predict customer churn to help prevent it, improve customer retention and to enhance the restaurant industry's customer engagement and satisfaction.

2. Data Description:

- **Customer Data Table:**

Customer_id: Unique ID for each Customer.

Customer_name: Customer's name

Email: Customer's Email

Phone_number: Customer's Phone number

Join_date: The Date of the customer's joining

Loyalty_status: status are {Gold, Silver, Bronze,etc..}

- **Order History Table:**

Order_id: unique ID for each order

Customer_id: Customer's unique ID

Order_date: contains the date of the order

Order_total: total price of each order

Feedback_rating: contains the ratings from 1 to 5

- **Customer Interaction Table:**

Interaction_id: Each Interaction unique ID

Customer_id: Customer's unique ID

Interaction_date: date of each interaction

Interaction_type: type of interactions {complaint, inquiry or Feedback}

- **Loyalty Program Table:**

Customer_id: Customer's unique ID

Loyalty_points: Points earned by each customer

Last_reward_claimed: the date of the last reward was earned by the customer

- **Churn Prediction Table:**

Customer_id: customer's unique ID

Frequency_of_visits: the number of times each customer has visited.

Avg_time_spent: the average time spent by each customer

Avg_order: average total order per customer

Days_since_joining: which represents the number of days since the customer has joined minus the last order of each customer.
last order date minus each customer joining date.

recency_in_days : which indicates the number of days since the last order for each customer.

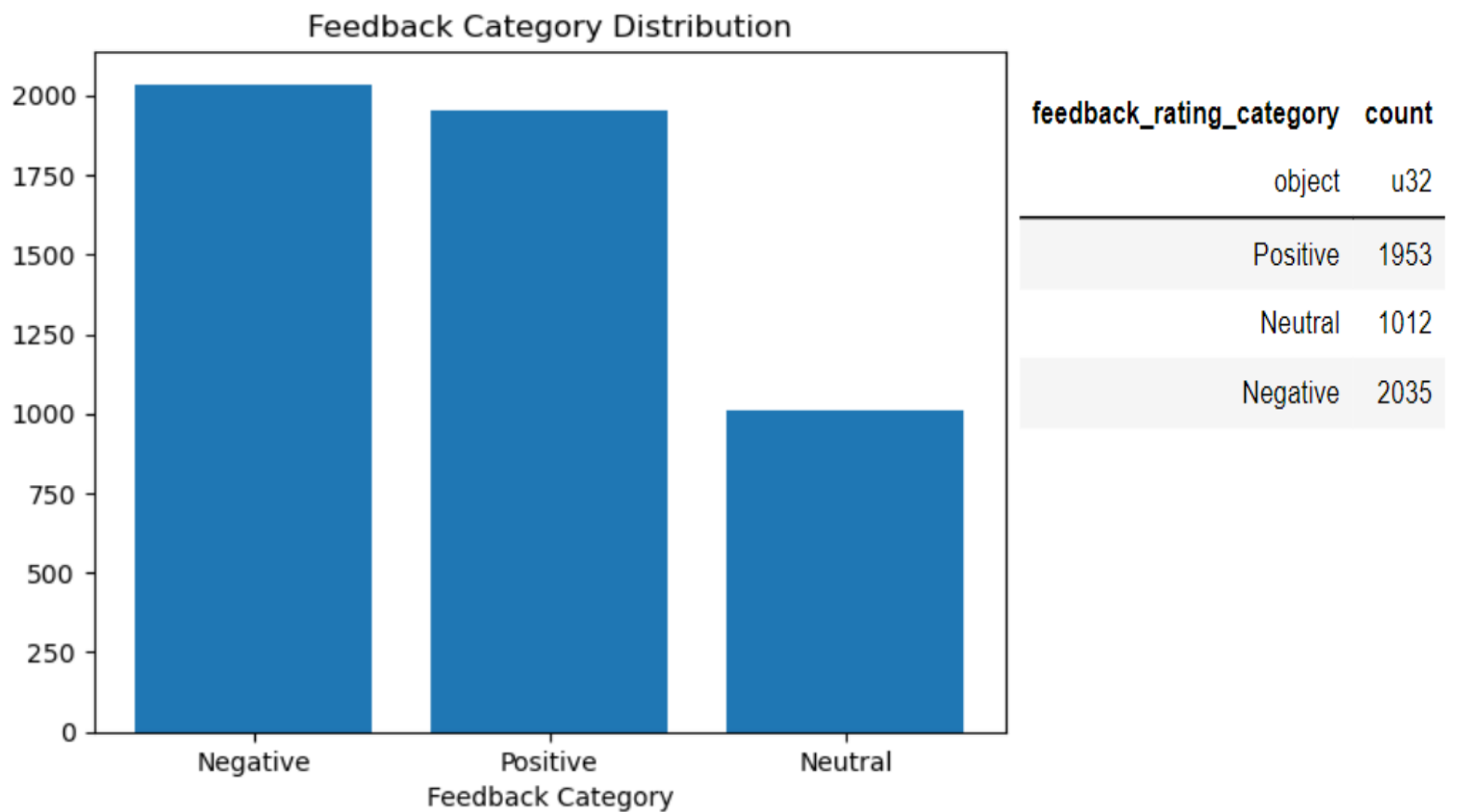
Churn_label: 0 indicates won't churn and 1 will churn

3. Generated Hypothesis:

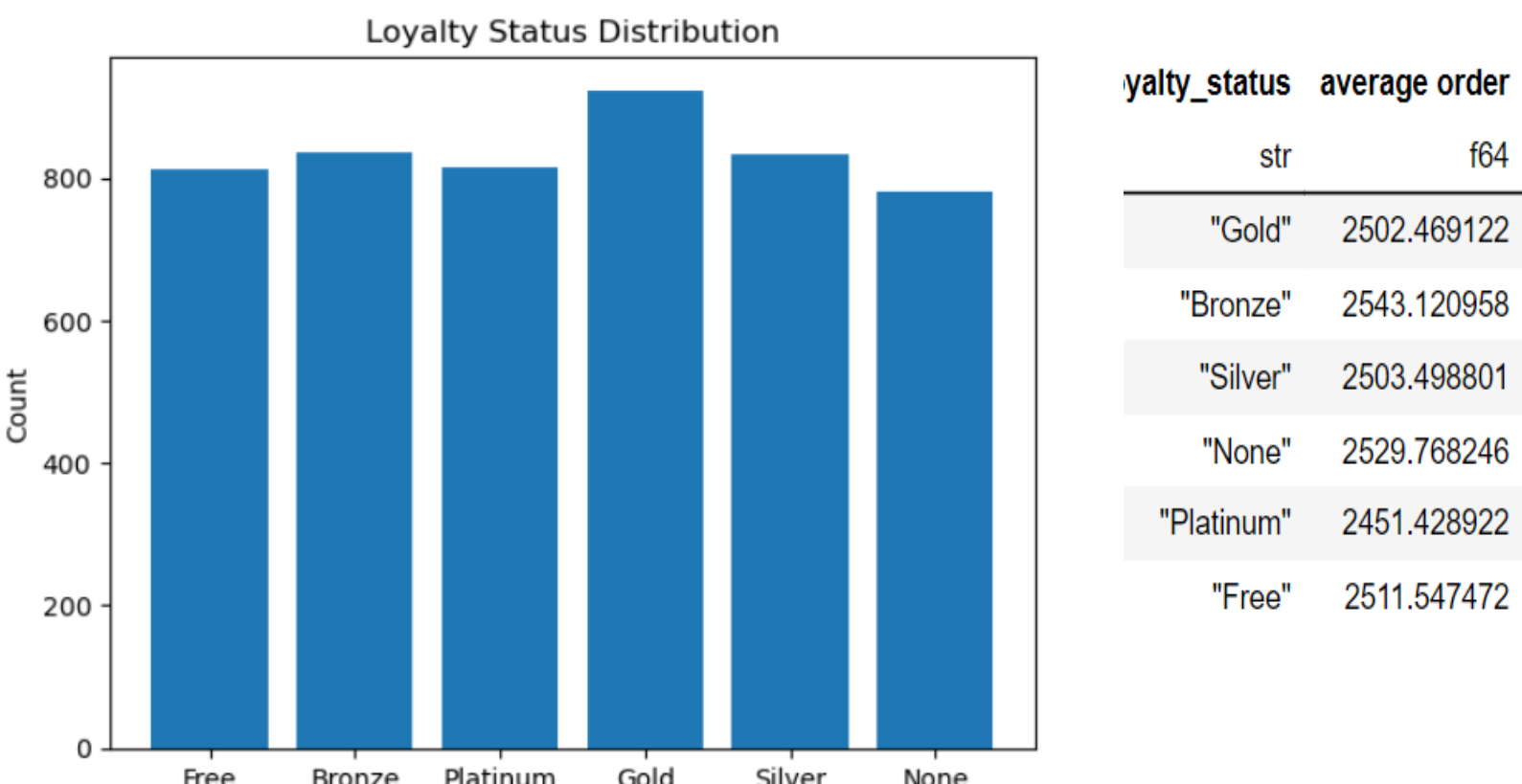
- 1) Using recency_in_days feature indicates customers with minimum recency would be less likely to churn.
- 2) Using days_since_joining feature and recency_days_feature together:
IF the customer has high days_since_joining AND has low recency_in_days which will indicate that the customer is 'Old and Loyal'.
- 3) Using the recency_in_days ,visit_frequency and days_since_joining:
IF the customer has low days_since_joining which means 'New Customer' And has low recency_in_days 'means has come recently' AND high frequency visits which will indicate a new Loyal customer and less likely to churn.
- 4) Customers who have more complaints or negative feedback are more likely to churn.
- 5) What is the percentage of the regular customers and once customers?
- 6) Higher average order might indicate that the customer is loyal and has lower churn likelihood.
- 7) older customer and hasn't interact recently will probably has higher churn likelihood
- 8) On average how much customers spend by their loyalty category.
- 9) Is there a correlation between the time spent per visit and the feedback rating?
- 10) Is there a relationship between the loyalty status and the recency of last interaction?
This can help determine if customers with higher loyalty status tend to have more recent interactions with the restaurant.
- 11) Do customers who frequently claim rewards have higher loyalty points? This can provide insights into the effectiveness of the loyalty program in customer engagement.

4. Insights:

1)Table that shows the count of customers in each feedback category:



2) Table that shows the average order total for each loyalty status:



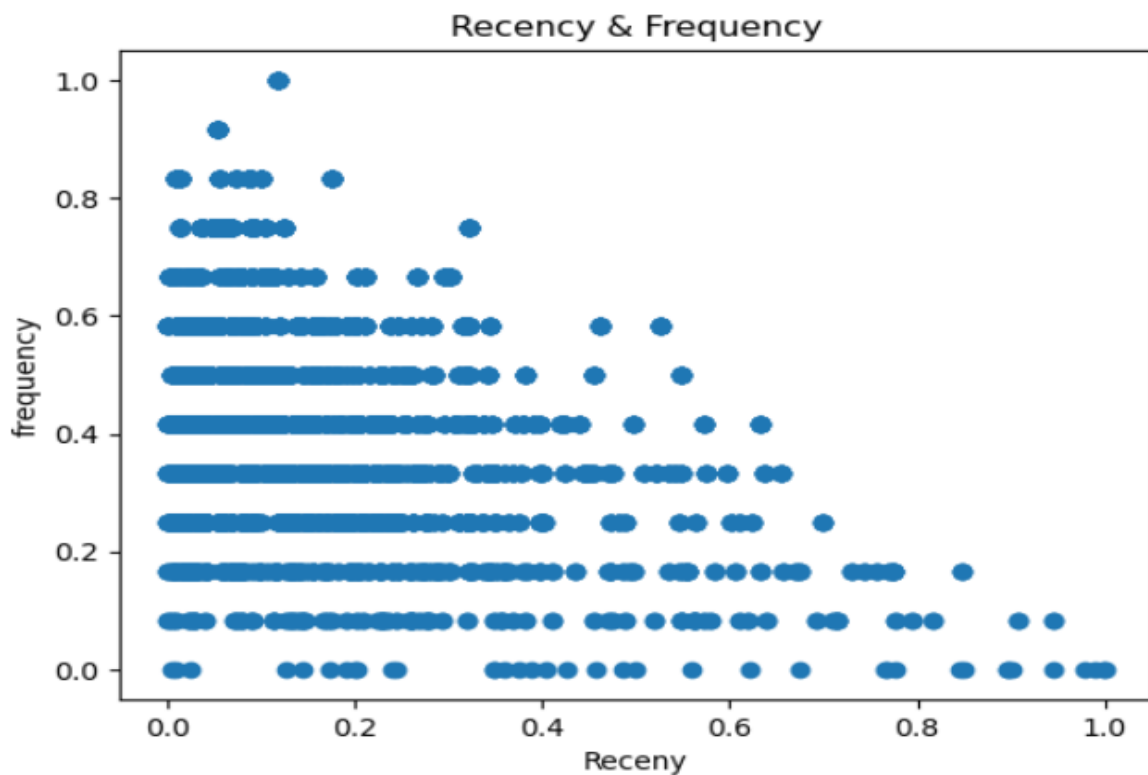
3) Correlation between the features in the churn prediction table:

recency	been_customer	visit_frequency	average_time_spent	avg_order
f64	f64	f64	f64	f64
1.0	-0.343437	-0.340691	-0.010912	0.020845
-0.343437	1.0	0.24778	0.016745	0.00629
-0.340691	0.24778	1.0	0.041811	-0.051299
-0.010912	0.016745	0.041811	1.0	0.02492
0.020845	0.00629	-0.051299	0.02492	1.0

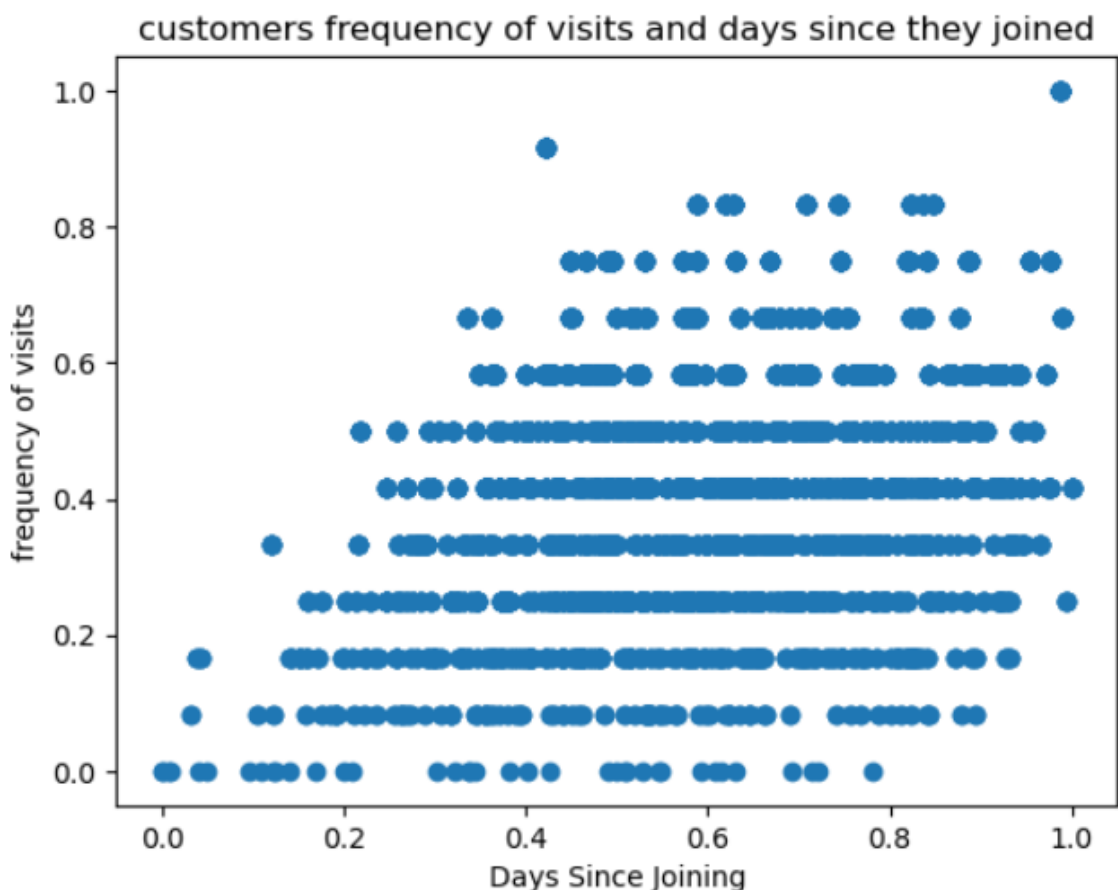
4) This scatter plot shows the negative correlation of -0.3 between the number of days since the last order and since when he has been a customer.



5) This Scatter plot represents negative correlation of -0.3
And indicates people that ordered recently came more frequently.



6) This scatter plot represents a positive correlation on 0.24 between the days_since_joining and frequency of visits: the older the customer is the more frequent he came.



5. Tested Conditions to create the churn_label feature:

If the customer will churn:

Churn = 1

If the customer won't churn:

Churn = 0

- If the customer has ordered recently and has been a member for a while customer which will indicate a loyal customer won't churn the value will be 0
- If the customer has ordered recently and he has come frequently which will indicate a new frequent customer that is less likely to churn and the value will be 0.
- If the customer has high Average Order and high Frequency visits will be less likely to churn and the value will be 0.
- Customers who are spending more time are less likely to churn