TELECOM CUSTOMER CHURN PREDICTION

*Did you know that attracting a new customer **costs five times** as much as keeping an existing one?*

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1. Introduction

- What is Customer Churn?

Customer churn is defined as when customers or subscribers discontinue doing business with a firm or service.

Customers in the telecom industry can choose from a variety of service providers and actively switch from one to the next. The telecommunications business has an annual churn rate of 15-25 percent in this highly competitive market.

Individualized customer retention is tough because most firms have many customers and can't afford to devote much time to each of them. The costs would be too great, outweighing the additional revenue. However, if a corporation could forecast which customers are likely to leave ahead of time, it could focus customer retention efforts only on these "high risk" clients. The ultimate goal is to expand its coverage area and retrieve more customers' loyalty. The core to succeed in this market lies in the customer itself.

Customer churn is a critical metric because it is much less expensive to retain existing customers than it is to acquire new customers.

To reduce customer churn, telecom companies need to predict which customers are at high risk of churn.

To detect early signs of potential churn, one must first develop a holistic view of the customers and their interactions across numerous channels, including store/branch visits, product purchase histories, customer service calls, Web-based transactions, and social media interactions, to mention a few.

As a result, by addressing churn, these businesses may not only preserve their market position but also grow and thrive. More customers they have in their network, the lower the cost of initiation and the larger the profit. As

a result, the company's key focus for success is reducing client attrition and implementing effective retention strategy.

- Objectives

I will explore the data and try to answer some questions like:

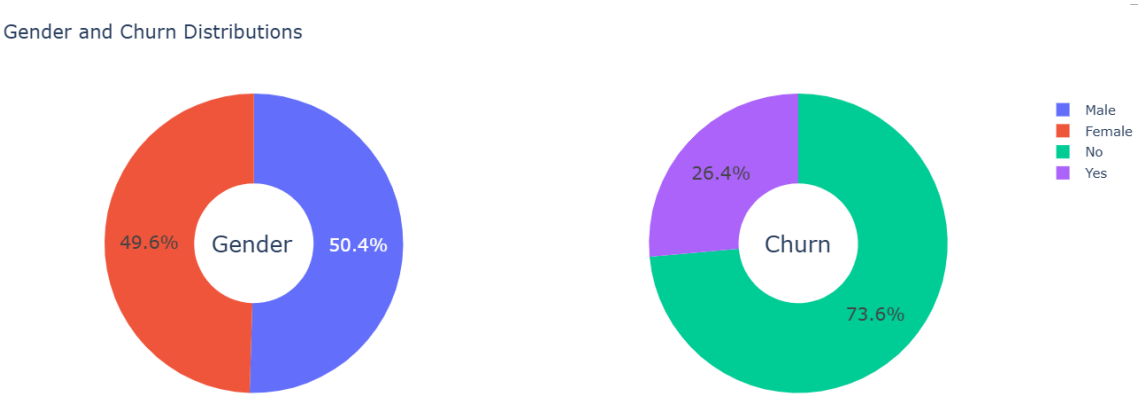
- What's the % of Churn Customers and customers that keep in with the active services?
- Are there any patterns in Churn Customers based on the gender?
- Are there any patterns/preference in Churn Customers based on the type of service provided?
- What's the most profitable service type?
- Which features and services are most profitable?
- Many more questions that will arise during the analysis

2. Understanding the data

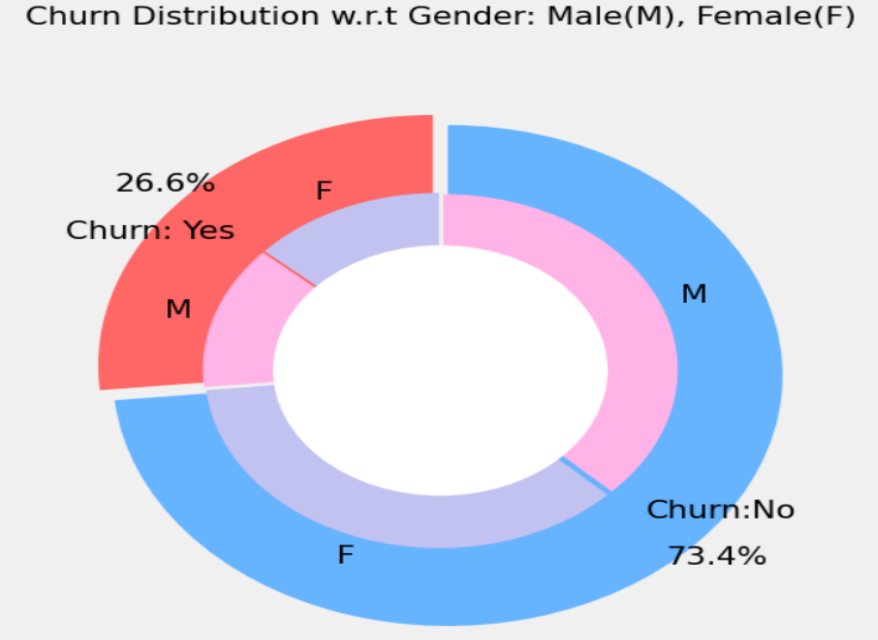
- Each row represents a customer, each column contains customer's attributes described on the column Metadata.
- The data set includes information about:
  - **Customers who left within the last month** – the column is called Churn
  - **Services that each customer has signed up for** – phone, multiple lines, internet, online security, online backup, device protection, tech support, and streaming TV and movies
  - **Customer account information** - how long they've been a customer, contract, payment method, paperless billing, monthly charges, and total charges
  - **Demographic info about customers** – gender, age range, and if they have partners and dependents
- The target we will use to guide the exploration is **Churn**

3. Data Visualization

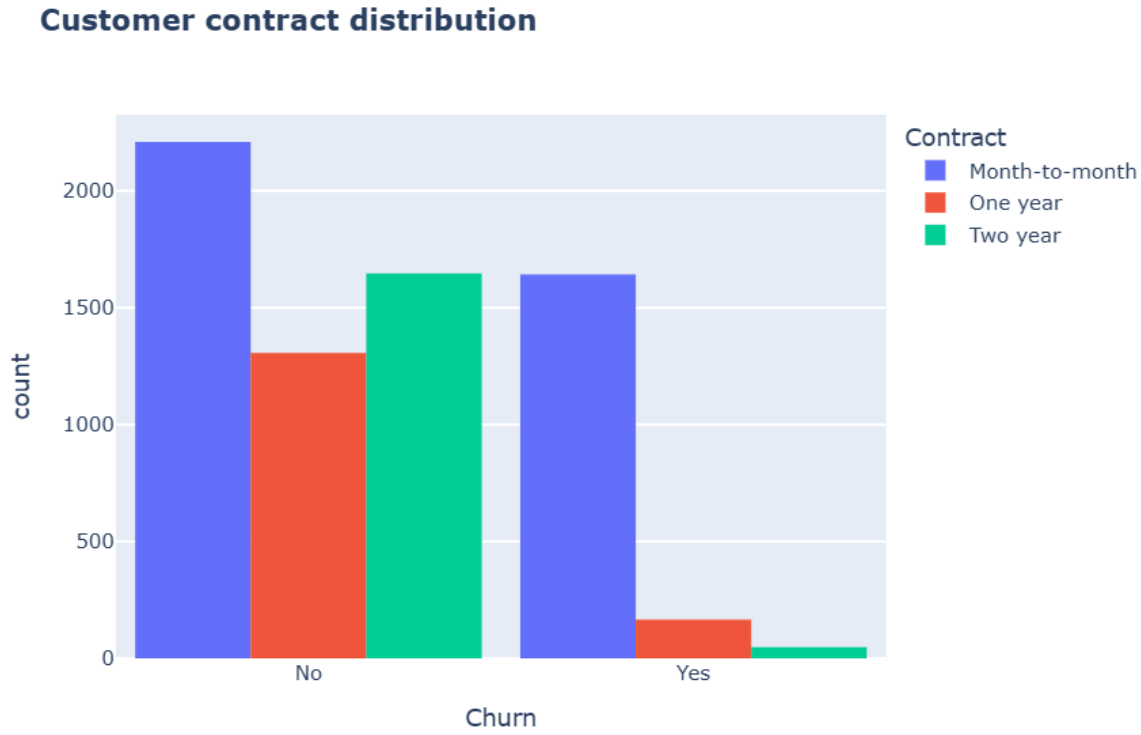
1. 26.6 % of customers switched to another firm.
2. Customers are 49.5 % female and 50.5 % male.



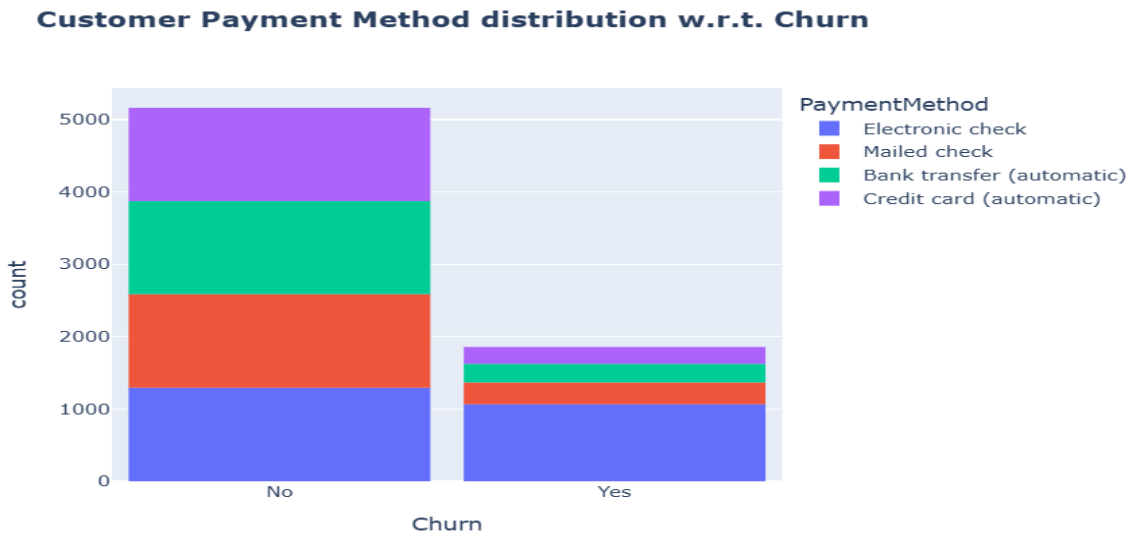
3. The analysis shows that gender has no significant impact on customers' decision to change their service provider. Both males and females exhibit similar churn behavior.



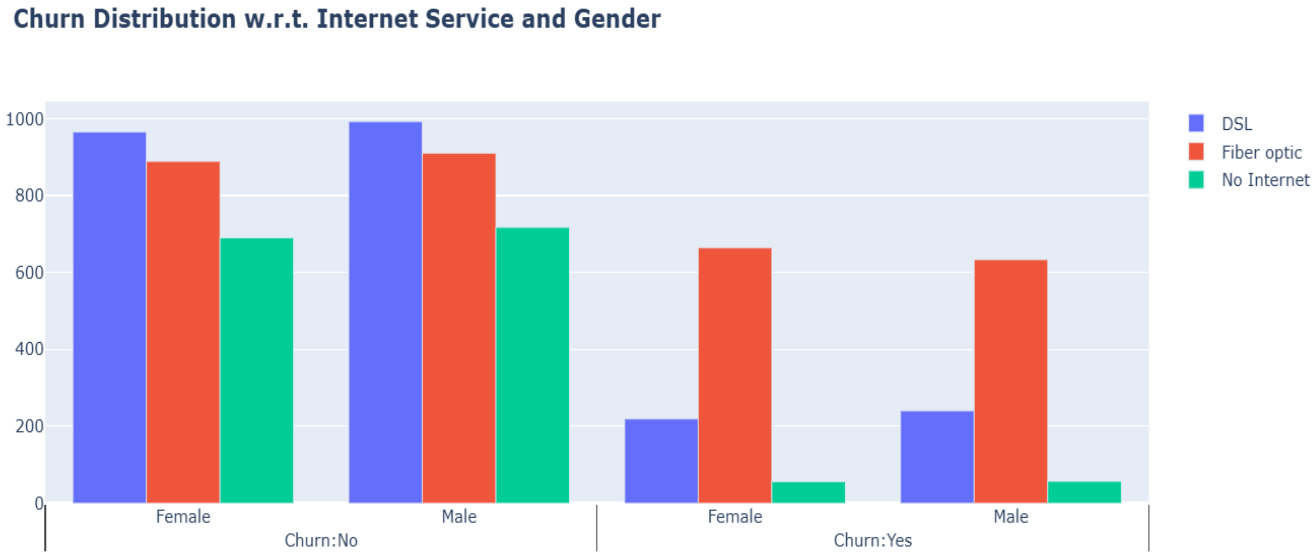
4. About 75% of customer with Month-to-Month Contract opted to move out as compared to 13% of customers with One Year Contract and 3% with Two Year Contract



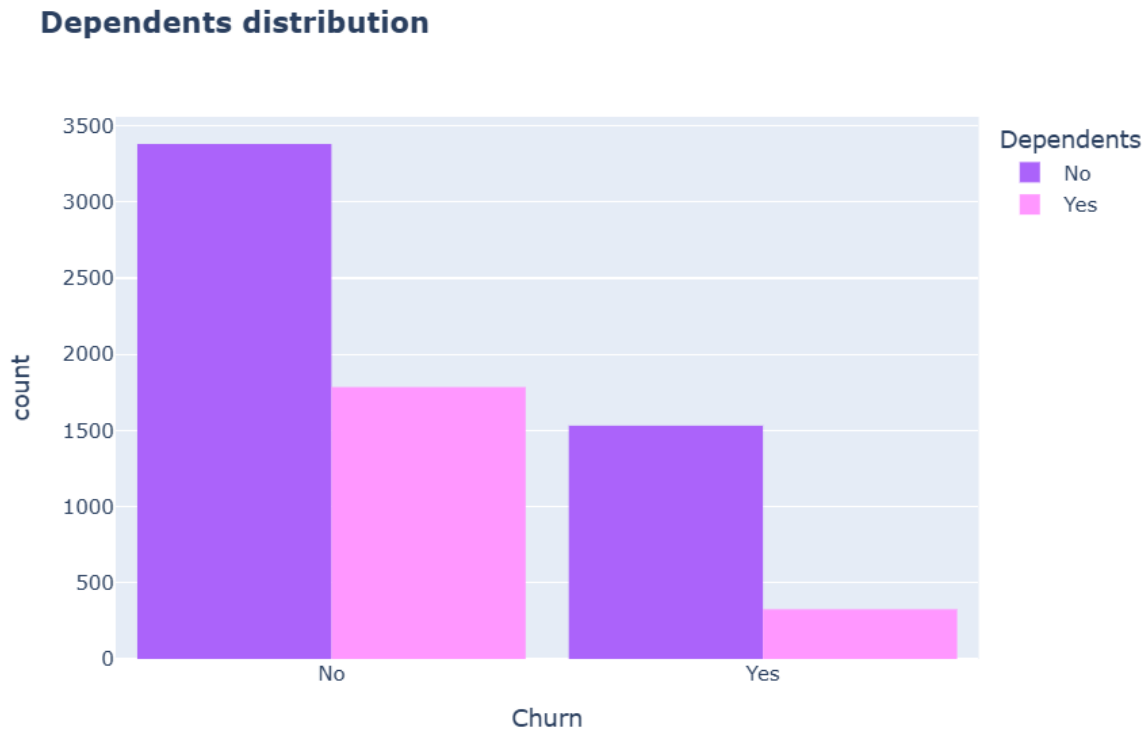
5. Major customers who moved out were having Electronic Check as Payment Method. Customers who opted for Credit-Card automatic transfer or Bank Automatic Transfer and Mailed Check as Payment Method were less likely to move out.



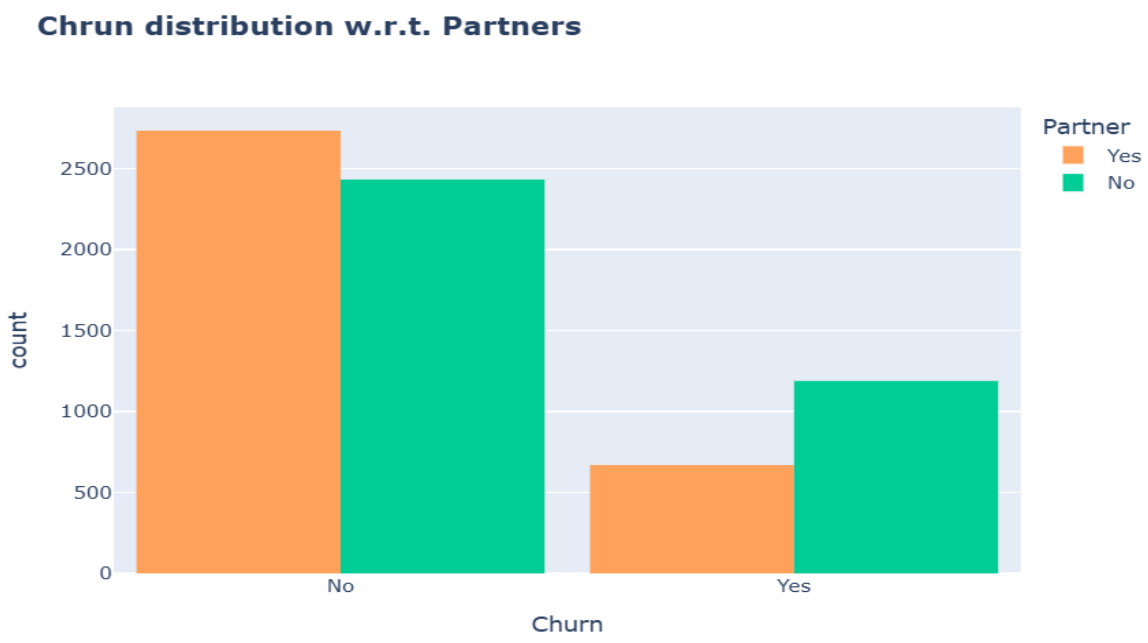
6. A lot of customers choose the Fiber optic service and it's also evident that the customers who use Fiber optic have high churn rate, this might suggest a dissatisfaction with this type of internet service.
7. Customers having DSL service are majority in number and have less churn rate compared to Fiber optic service.



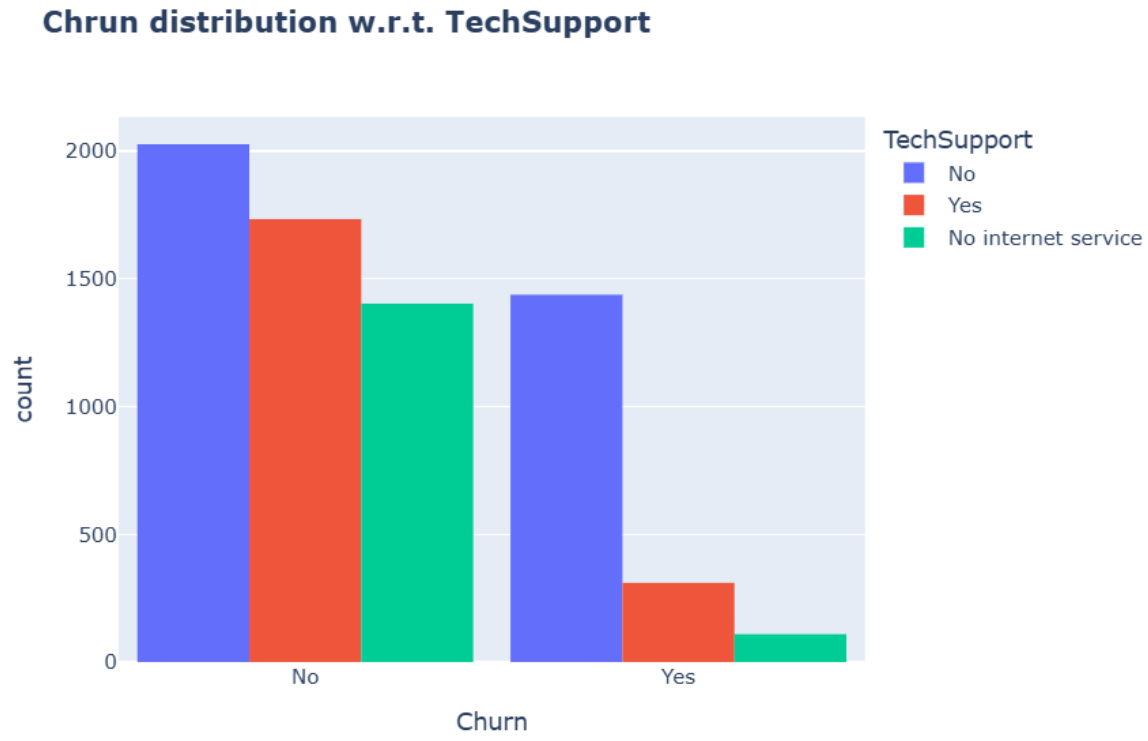
8. Customers without dependents are more likely to churn



9. Customers that doesn't have partners are more likely to churn

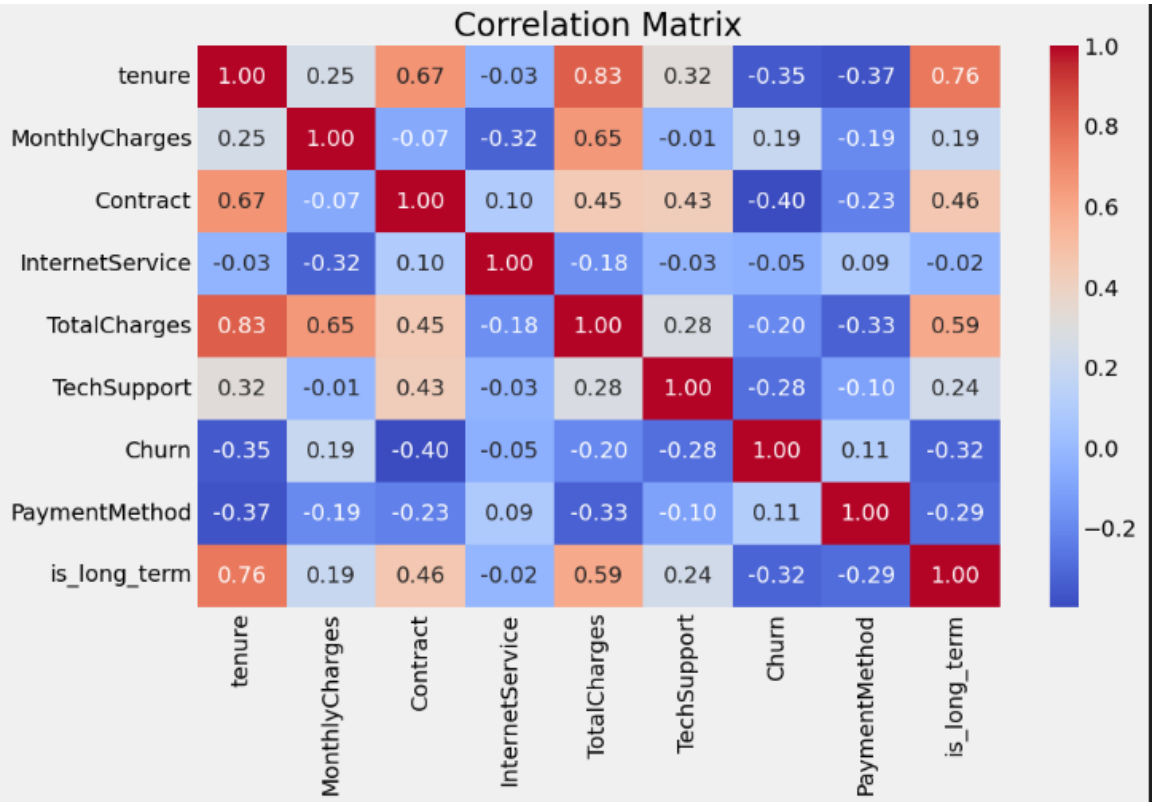


10. Customers with no Tech Support are most likely to migrate to another service provider.



Correlation between columns

- Churn decreases as tenure increases.
- Long-term contracts strongly reduce churn.
- Higher total charges are linked to lower churn.
- Having tech support lowers churn.
- Higher monthly charges slightly increase churn.
- Certain payment methods slightly increase churn.
- Contract type and tenure show the strongest negative correlations with churn.

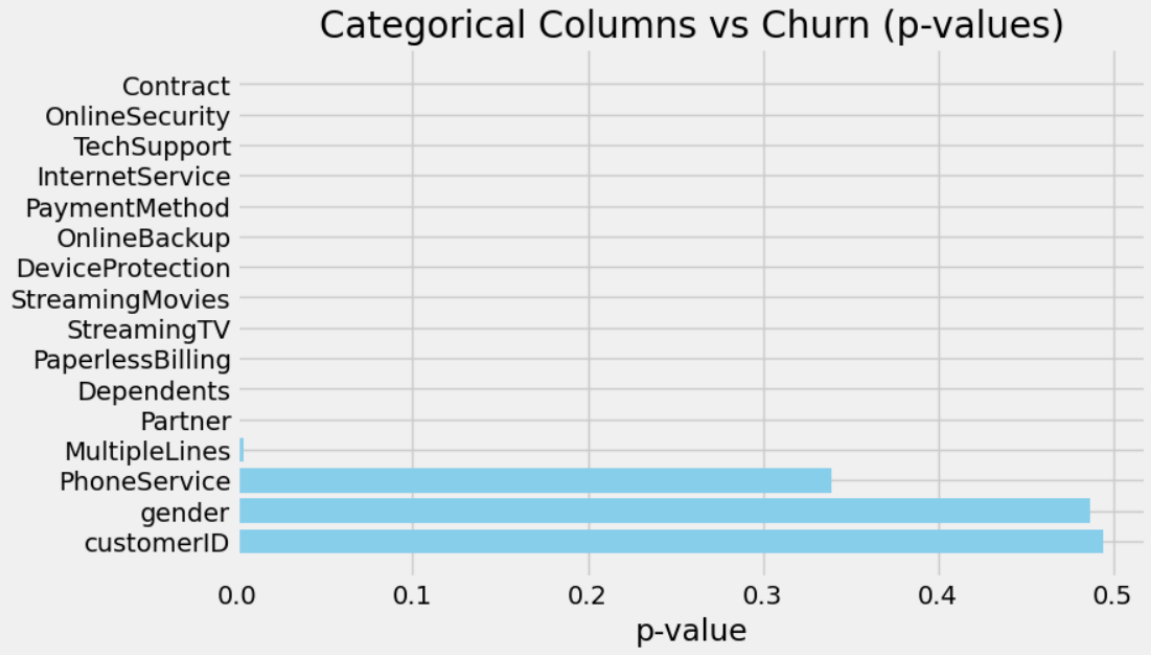


Feature Engineering

Feature Importance for chi2 test

After performing the Chi-Square test on categorical variables, we observed that gender (p-value = 0.479) and PhoneService (p-value = 0.366) have high p-values, indicating they are not significantly associated with customer churn. Therefore, we decided to drop these two columns also with

customerID and MultipleLines from the dataset as they are unlikely to contribute to model performance.



New Feature

A new feature was added to mark customers who stayed longer than 12 months. This helps us better understand differences in behavior between short-term and long-term customers.