Telco Customer Churn

Executive Summary

1869 customers or 26,58% of the telco's 7032 customers have left the company.

Customers with a tenure of 1 to 5 months are the most likely to churn.

Our Fiber Optic not well performed. From 3096 customer who choose fiber optic 1297 is Churn

There's many of our customers is seing our compotitors

We must Improve existing product services to make our customer stay with us

We must adjust and make a better signal quality

Adjust our pricelist and make sure the exact price for each products

3

Table of Content

A company called Telco was founded in 2015.

Company Highlights

7032 Customers

3.549 Customers

3483 Customers

There are 1 - 72 tenure.

Total Billing Customer

$ 16.056.169

Services

Phone Service

6.352 customers

Internet Service

5.512 customers

Data Overview

The Telco customer churn data contains information about a telco company that provided home phone and Internet services. Dataset contains :

- Service 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 tenure, and total charges
- Demographic info about customers - gender, age range, and if they have partners and dependents.

Methodology

Defining Problem

Data Preparation
(Data Cleaning, Change Data Type)

Exploratory Data Analysis

Analysis
(Cluster Analysis, Customer Segmentation)

Insight & Recommendation

What is our problem?

26,58%

1869 customers or 26,58% from 7032 customers was Churn
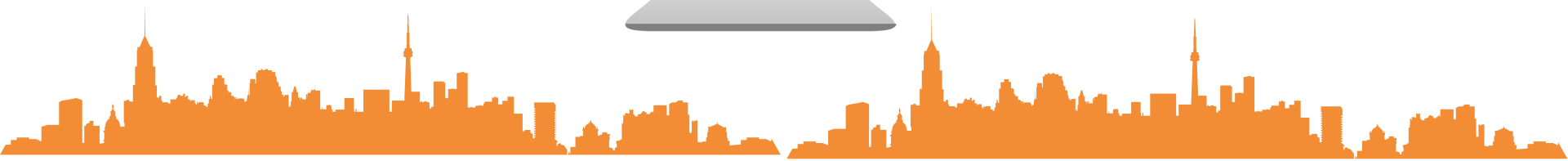
Find the characteristics of our Customer, then retain them with our good quality services and make some public campaign
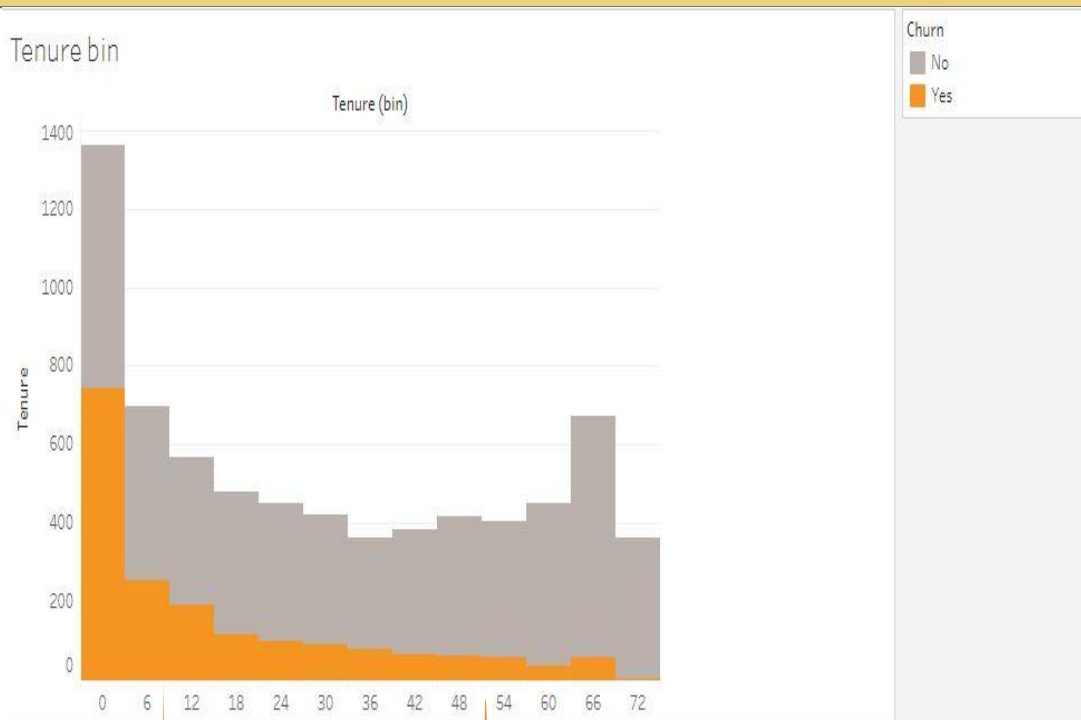
Root Cause Analysis
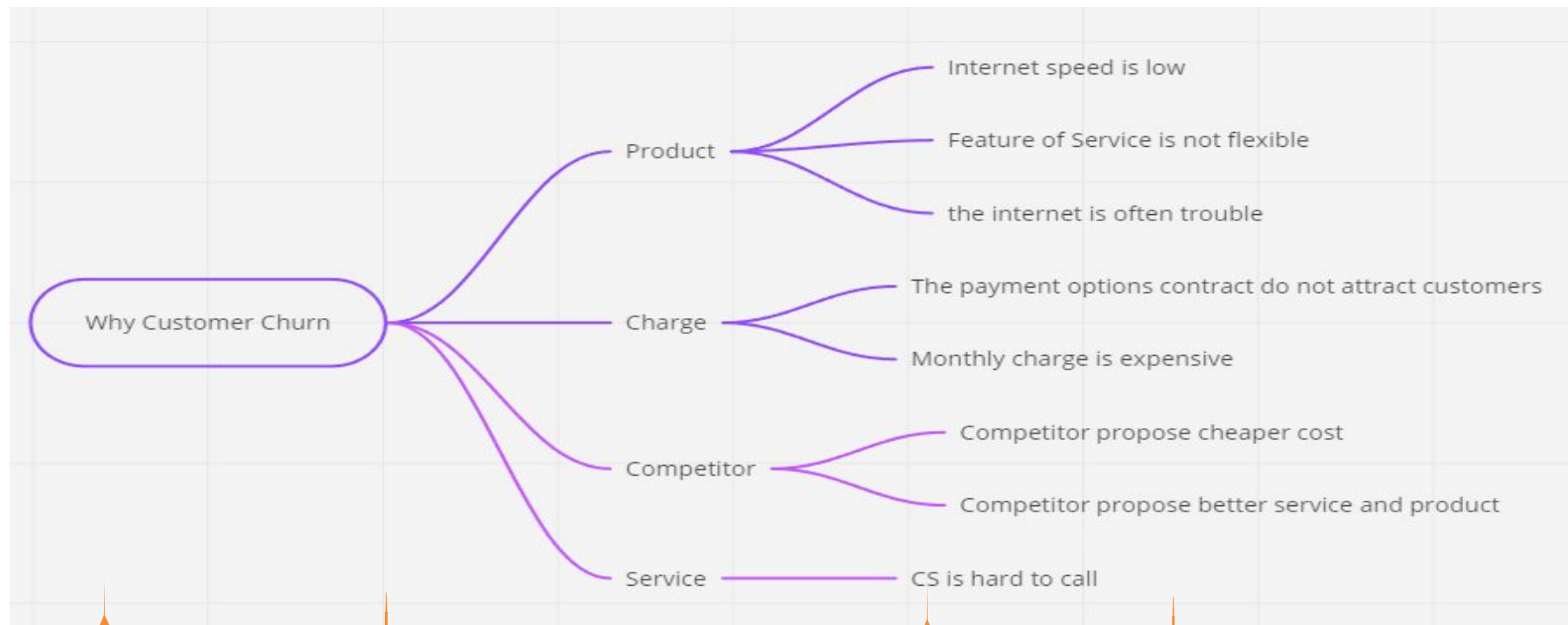
Exploratory Data Analysis

Most customer who churn are customers with tenure 1-5 month (New Customer)

- Tenure 1 months is the highest with **380** customers.
- On overall, **1-5** as we call new customer is the most highest to churn with **744** customers. Which is almost 39% for customer churn
- We can describe the customer with::

  <= 5 Month   = New Customer
  > 5 & <=12 Month   = Regular Customer
  > 12 <= 24 Month   = Prospect Customer
  > 24 Month   = Loyal Customer

- However there are still customer with 72 tenure is churn

Total Customer of Internet service users is 3,096 and 1,297 customers is churn

Internet Service

Churn
- No
- Yes

Intern..		
Fiber optic	1,297	1,799
DSL	459	1,957
No	113	1,407

Count of Churn
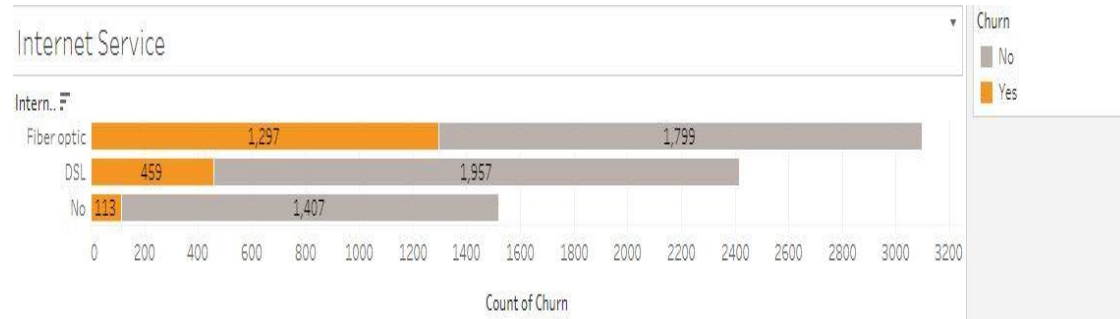
- Fiber Optic is the most Internet Service that customer pick, but The most customer churn in Internet Service is from Fiber optic.
- Fiber Optic is tend to have a bad quality for customer experience.
- Total DSL is **2,416** and **459** is churn.
- Total no using Internet Service is **1,520** and **113** is churn.

There are some Customers with < 10 tenure have a high MonthlyCharges
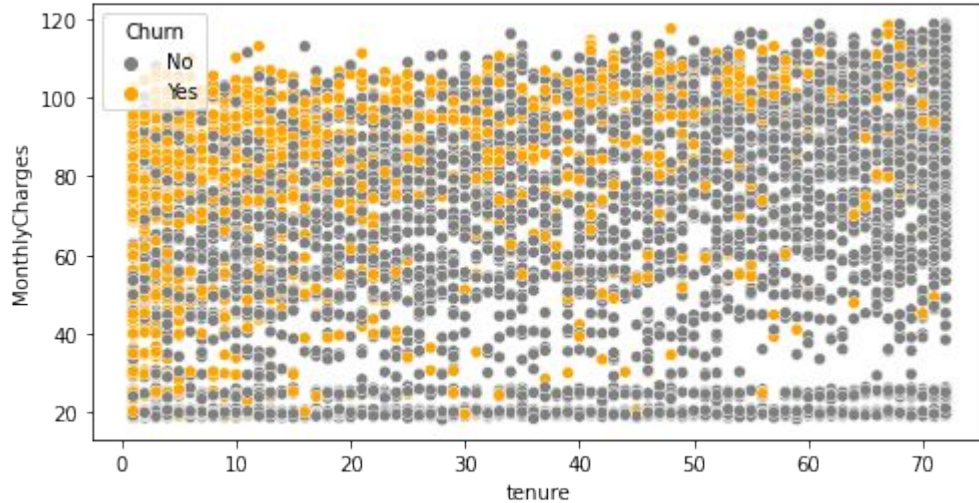
- There some customer with only 1 tenure but have MonthlyCharges almost $110, but after that the customer was churn
- It's mean that there's some new customer who just want to try all our product
- Therefore there's customer with 70 tenure but the MonthlyCharges is only around $20, it means that this customer only have 1 of our product for several years

Each telco company's product has a wide variety of prices.

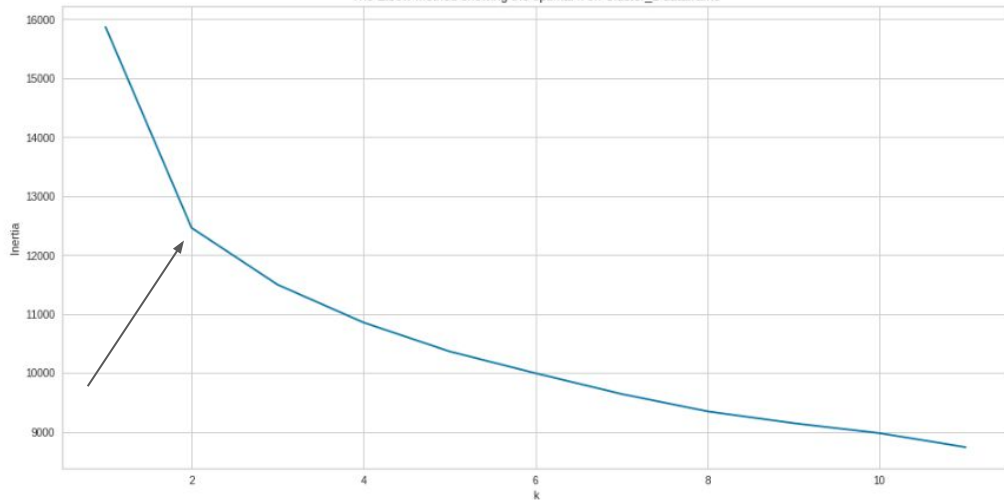| Service	Price		
	Min	Max	Mean
Phone Service	18.25	21.45	19.95
DSL	23.45	26.05	24.9
Fiber Optic	47.8	52.3	50.1
Multiple Line	3	7	5.01
Online Security	3.6	6.15	5.04
Online Backup	3.5	6.75	5.14
Device Protection	4.2	5.5	4.8
Tech Support	3.7	6.3	5.04
Streaming TV	8.5	11.5	10.3
Streaming Movies	9	11.6	10.1

- **Internet services** are generally costly. The most expensive option is **fiber optic**, with an average cost of **50.1**, while **DSL** costs **24.9**.
- The cost of **Phone Service**, with a minimum of 1**8.25** a maximum of **21.45**, and a mean of **19.95**.
- The typical cost of multiple lines, **Online Security**, **Online Backup**, and **Tech Support** is approximately **5**.
- The typical cost of **Streaming TV**, and **Streaming Movies** is approximately **10**.

Cluster Analysis

The Elbow Method showing the optimal k on Cluster_1 dataframe

```
# silhoute score for cluster_1

silhoutte_analysis(cluster_2,list(range(2,11)))

For n_clusters = 2 The average silhouette_score is : 0.21059678498701234
For n_clusters = 3 The average silhouette_score is : 0.14164373168076355
For n_clusters = 4 The average silhouette_score is : 0.12529370259448488
For n_clusters = 5 The average silhouette_score is : 0.12427619022655924
For n_clusters = 6 The average silhouette_score is : 0.11713867931538341
For n_clusters = 7 The average silhouette_score is : 0.12304046229950846
For n_clusters = 8 The average silhouette_score is : 0.11096116364458487
For n_clusters = 9 The average silhouette_score is : 0.10914062642753321
For n_clusters = 10 The average silhouette_score is : 0.11603706082469196
```

[15870.15483220611, 12460.415337556507, 11496.400065657608, 10853.66356767378, 10363.188100465486, 9993.02080354602, 9640.92120

We determine amount of cluster by used the highest silhouette score for n cluster

19

Characteristics of each cluster

GOLD

A loyal customer because the majority of customers in this cluster have a tenure of more than two years, and this cluster has all of the service, and as a result, this cluster is the largest contributor to the company by spending a large amount of money in the company based on the total charge

Recommendation

- Send a special appreciation or gift.
- If there are any new services, make them an exclusive offer.

SILVER

This cluster contains customers who want to test our services, or can be said new customers, who use telephone services, but are not very interested in Internet Services. So other services such as online backups to streaming movies do not use these services. This causes this cluster not to make a large contribution to the company's revenue

Recommendation

- Bundling Items (Cross Selling)
- Notification of new related products.
- Upselling to higher-priced products.

We Have Some Sugestion Recommendation for Company

1-5 tenure is our problem because customer churn is high.

We recommend the company to eliminate the option to sign up for a one-month contract then give a new customer special offer for try for free our services for 3 days

Fiber optic is the most expensive product ($50), and customers must also have phone service if they want fiber optic. Maybe the customer is dissatisfied with the quality of fiber optic for which they have already paid a high fee.

We need to improve fiber optic quality while also recommending price reductions.

Each Telco Company's product has a wide variety of prieces

We recommend fixing the price with a fix number

Expected Result :

Customers with a tenure of 1-5 months decreased by arround 10%

Expected Result :

Reduce fiber optic churn and retaining existing customers

Expected Result :

So that customers get the best possible price and the churn rate is reduced by about 3%

General Recommendation

We want to reduce churn rate

We recommend the company to build a strong predictive model to anticipate customer to churn

Expected Result :
Company know which new customer have tend to churn when new customer sign for new contract. So Company can approach another option for them

Our services is still cant dominate the market

We recommend company must create a campaign that is sustainable for longlast time

Expected Result :

Our Brand can well known in public, so we can deep dive more into the market

"...maintaining existing customers is a more important business issue than acquiring new customers."

Hung, . Chihli, Tsai and Chih-Fong, Vol. 34, 2008, pp. 780– 787.
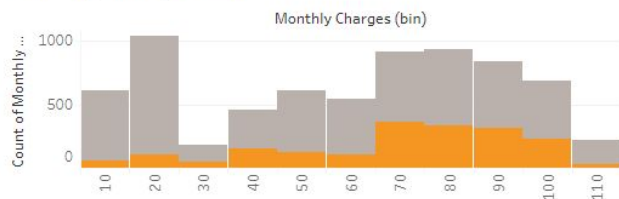
Appendix

You can find the dataset on Kaggle [here](#)
You can find Python code Analysis [here](#)
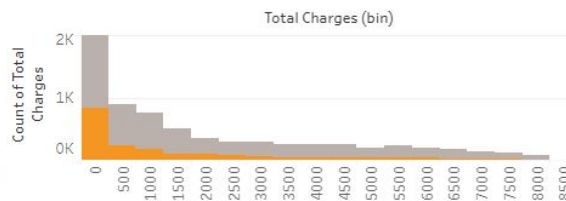You can find Tableau Dashboard [here](#)

DASHBOARD SUMMARY

Total Customers	Churn Customers	Average Monthly Charges	Average Total Charges	Total Charges	Total Charge for Churn Customer	Average Tenure
7,032	1,869	$64.80	$2,283	$16,056,169	$2,862,927	32.42 Months

Churn
No ▮ (grey)
Yes ▮ (orange)

Monthly Charges Bin

Monthly Charges (bin)

Total Charges bin

Total Charges (bin)

Tenure bin

Tenure (bin)

Phone Service

Phone ..

	Count of Churn
Yes	1,699 / 4,653
No	170 / 510

Internet Service

Intern..

	Count of Churn
Fiber optic	1,297 / 1,799
DSL	459 / 1,957
No	113 / 1,407