Telecom Customer Churn Prediction

Like any other industry, decisions in the Telecom industry are driven by data too. In fact, it is the industry with one of the largest and most segmented customer pools, ripe with massive churn, fierce competition and significant marketing presence.

While there are big players in the industry, they didn't get big overnight. And it's not that they don't strive hard to maintain where they are. In fact, one of the biggest challenges faced by these players are the changes in customer behaviour. It is true that the customer behaviour, when considered overall, doesn't change in a matter of days, months, or years. However, if not foreseen, it can heavily impact your hold in the market.

So, how can any telecom player leverage marketing analytics to understand and leverage customer behaviour? Let's understand by an example:

Industry Background

To give you some perspective, Airtel was the leader in the telecom market in India till 2017. However, things changed drastically when Reliance Jio was launched full-fledgedly in the market. The prices that Jio had offered forced the other players to bring down their own to meet the challenge that they were facing. Even though Jio didn't take the entire market of these players, a lot of customers moved to Jio when it was launched. As Jio expanded itself across the country, these firms were at a constant fear of losing their existing customers.

With the increased affordability of 4G services, India saw a huge surge in internet consumption. According to Airtel, the data consumption grew 10 times over a period of 10 months, which is huge. The primary reason for this increase was, of course, the tariffs that Jio had floated. The data that used to cost at around 200 rupees per GB during mid 2016, was available at 6 rupees per GB a year later.

With pricing having such a huge impact on customer behaviour, and the debts that they already had, other players had to find ways to get to the customers.

Since bringing down prices further was not a very viable solution, they started exploring different business models. For instance, partnering with mobile manufacturers, Over The Top, or OTT entertainment service providers, amongst

others. Even these business models were not decided randomly. For instance, consider Vodafone, which after its merger with Idea led the Telecom industry in the country. It launched Vodafone Red which offers its customers free membership of Amazon Prime Video for a year. Similarly, Airtel offered Prime Video benefits under its Airtel Infinity plan, and later offered 3 months of free Netflix subscription along with its postpaid services.

The reason why the telecom providers went with OTT services was because the increase in data consumption was driven primarily by video content.

Firms also partnered with handset manufacturers by making them more affordable against the purchase of a specific tariff plan for a specified period.

Other than these partnerships, firms also looked for different pricing strategies where they moved away from traditional revenue streams such as voice calling and text messages, and more towards data consumption.

At such trying times, where you are trying to find ways that can help you retain your existing customers, it becomes extremely important to understand and retain them.

Case Background

Imagine TalkTel is one of the leading telecommunication providers in India. Before diving into data to understand the customers better, let's first understand TalkTel a little better. Let's start with its product portfolio.

TalkTel has a strong presence across the country. It offers Broadband internet service that includes its fiber internet and dongle services. It also offers postpaid and prepaid plans, both in voice calls and data. It also offers DTH services under its TV packages. Other services include partnerships with OTT service providers and handset manufacturers.

All these services are also available as bundles for TalkTel's customers. A bundle essentially is when a firm offers more than just one of its services to its customers. Apart from obviously to tie the customer to its service, through bundling TalkTel aims at increasing switching costs for its consumers. Switching cost is the cost that the customer perceives when he or she thinks of switching to another provider.

Its customers are present across its entire portfolio. However, in order to avoid the loss of customers, it needs to understand them better.

Having understood TalkTel's product portfolio, let's understand **what are the key metrics that govern its business?**

First metric is the average revenue per user, also known as ARPU. Average revenue per user tells the story of how much money a company is making for each person using its service. It is synonymous to customer lifetime value. Generally, telecommunications companies that offer bundling services enjoy a higher ARPU.

Second metric is customer churn. Customer churn is defined in a similar fashion as you have studied throughout this program. This metric measures the number of subscribers who leave and obviously, a low churn rate is ideal. Companies that experience a high churn rate are under more pressure to generate revenue from other areas or gain new customers.

Third metric is subscriber growth rate. A telecommunications company's future revenue growth has much to do with its ability to grow its customer base and add new subscribers. Subscriber growth is, therefore, an extremely important metric. A steady subscriber growth rate indicates a competitive telecommunications company that is keeping up with technology trends, thereby keeping customers happy and attracting new customers.

Subscriber acquisition cost is very similar to customer acquisition cost. Although it seems straight-forward, subscriber acquisition cost has many layers. Of course, you're going to need to factor in money spent on marketing and advertising. But those aren't the only costs involved with gaining new subscribers. You also need to factor in commission costs to the people selling your product, as well as the costs involved with actually onboarding customers.

Coming to TalkTel, although the firm has a stronghold in the sector, its customers are gradually migrating to competition. If this churn doesn't stop, the firm will be in huge trouble.

So due to intense competition and the threat of going bust, it decides to hire you as the data analyst and come up with a strategy to counter this.

Why should companies focus on retention rather than new customer acquisition?

While it is important to focus on new client acquisition, it is equally and perhaps more important to focus on improving your relationships with your current customers. This

will help you improve your customer lifetime value. Customer lifetime value is the amount of net profit you receive from each customer.

As a data scientist in the marketing department of company X, help them design a CRM program to reach a given customer at the right time with relevant offers so as to enhance its customers retention and improve client loyalty.

Do you have a quantitative approach in your mind that can predict which of their existing customers are likely to discontinue their service and should be the target audience for this campaign?

In such scenarios, you develop a model for identifying the customers who are likely to churn and should be targeted for this campaign which brings us to our next section on **"Customer Churn Analysis"**.

Model Creation

1> Obtaining the Data:

There is an intense pressure from the pricing point. Under this huge competition that the firm is facing, there is a need to identify the customers who are likely to move on from the firm and immediately act to avoid it.

In order to build a propensity-to-churn model to predict customer churns, the firm goes beyond just the service that a customer was using. It also considers other factors such as what kind of internet service did the customer use, whether the billing with the customer was paperless or not, what was the payment method that the customer used, whether the customer had dependents, and what was the contract duration the customer was in with the firm.

Since a lot of these are categorical variables, the firm had to numerically transform these.

Let's say you have been given this dataset (details below) with more than 7K customers and 16 columns / variables where each row represents a customer and each column contains customer's attributes:

- customerID
- gender (female, male)

- SeniorCitizen (Whether the customer is a senior citizen or not (1, 0))
- Partner (Whether the customer has a partner or not (1, 0))
- Dependents (Whether the customer has dependents or not (1, 0))
- tenure (Number of months the customer has stayed with the company)
- PhoneService (Whether the customer has a phone service or not (1, 0))
- MultipleLines (Whether the customer has multiple lines or not (1, 0)
- InternetService (Customer's internet service provider (DSL, Fiber optic, No)
- streamingService (Whether the customer has streaming service or not (1, 0)
- Contract (The contract term of the customer (0 - Month-to-month, 1- One year, 2 - Two year)
- PaperlessBilling (Whether the customer has paperless billing or not (1, 0))
- PaymentMethod (The customer's payment method (Electronic check, Mailed check, Bank transfer (automatic), Credit card (automatic)))
- MonthlyCharges (The amount charged to the customer monthly—numeric)
- TotalCharges (The total amount charged to the customer—numeric)
- Churn (Whether the customer churned or not (1 - Yes or 0 - No))