

Regional In-house Round

CASE BRIEF



On her way to work Praveena was looking through some of the emails that she received from the research desk the night before. Most of the information was already known to her, but as the taxi was idling through the peak morning traffic she didn't mind browsing through some of them. One of the latest research emails read:

"India is currently the world's second-largest telecommunications market and has registered strong growth in the past decade and half. The Indian mobile economy is growing rapidly and will contribute substantially to India's gross domestic product (GDP). Driven by strong adoption of data consumption on handheld devices, the total mobile services market revenue in India is expected to touch US\$ 37 billion in 2017 (source: <http://www.ibef.org>).

Industry observers have predicted that the next wave of growth will come from rural areas. Hence, mobile operators are expected to focus more on programs targeted at improving penetration in rural markets. We may see resurgence of rural focussed campaigns and first time internet users on mobile may surprise the industry with data and VAS consumption (source: <http://flytxt.com>).

India has always been a highly price sensitive market. However, the market has witnessed significant uptake of value added services; particularly that of entertainment and social networking applications. The Indian market is expected to move towards LTE and 4G. Operators can leverage the power of data and analytics to enhance customer experience & value perception, thereby differentiating themselves from competition.

As the market matures and competition intensifies, operators will have to differentiate their services with respect to customer focus, personalization and delivering tailored offers. Capabilities that are built over big data analytics and campaign management will be increasingly important for Indian telecom operators. (source: <http://flytxt.com>)"

Praveena was reflecting about the strategy update meeting scheduled later in the day. Her company is a major player in the mobile market but has been one of



the late entrants. Her portfolio is straddled with low ARPU (Average Revenue Per User) and a customer base that is usually considered "sub-prime". On top of that, her team is also struggling to cross sell value added services to increase ARPU and possibly reduce churn. There have been a few emails from the contact centre and service heads about customer complaints, about price for value added internet services being higher than competition. She drafted a quick note to her analytics team while still in the cab.

Hi Shreya

Can you please provide me a quick update about the internet usage of our portfolio? What is the base line usage of internet services? Do we know how many heavy users and light users we have in the portfolio? Need your help in getting a quick view of the as-is scenario with regards to internet usage.

Regards,

Praveena

Shreya, who was always an early starter was already in her office and saw the mail popping up in her mail box. She manages the insights and data sciences team for the past one year, but in her heart of hearts she loves quants so much that she still wants to delve deeper into analytical problems and solve them herself. So once the mail popped up, she wanted to download a sample data from the server and get down right into solving the problem. But somehow she resisted her urge of getting into data right away; rather wanted one of her new recruits to delve into the data while she provides him the perspective of the business problem around the data. She knows that performing this analysis on the entire portfolio will require accessing the big data environment and the new analyst does not have the skill to do that. So she advised him to get going with a smaller representative sample data. Shreya knows that most of the times what Praveena puts in the mail is just the tip of the iceberg; so she went on thinking a bit deeper on the problem, while the new analyst Alok got ahead crunching the numbers and providing Praveena the immediate information that she needed. Hence, she set up a quick 30 minutes catch up with her after the strategy meeting. In the meeting, the following key points came up as a follow up from the strategy meeting.

- Overall ARPU for the portfolio has been stable; however, data ARPU has been going down
- It is a perception that the data plans are not priced appropriately which is leading to customer churn
- There is a need to come up with more creative data plans to gain market share and retain customers
- Are there possible strategies of customizing the data plan based on the usage pattern of subscribers?

- Is it possible to create a measure of customer value based on data usage?
- Is it possible to have an indication of future customer value?

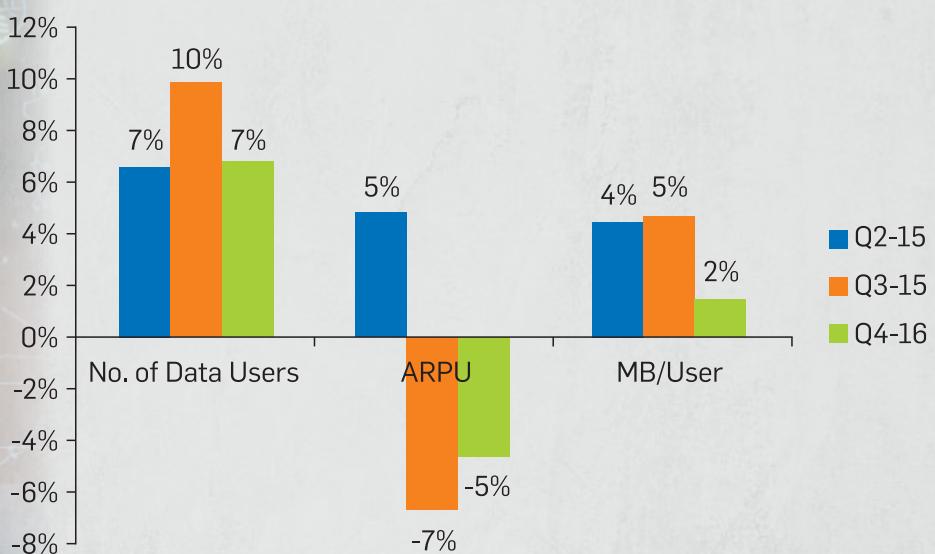
At an overall level, the business head wanted to know if it is possible to adopt a pricing based on a customer's usage pattern so as to drive higher ARPU from data.

Back at her desk, Shreya looked at some of the initial charts created by Alok which clearly showed a few key trends:

- Number of data users have been growing between 7-10% over last 3 quarters
- ARPU has declined over last two quarters
- Data Usage/User is stagnant at low single digit growth for last 3-4 quarters

The chart below is an example:

Chart-1: Overall trend



She also looked at the sample data, it contained some of the key aggregated fields that are important for performing the initial analysis; these included:

- Revenue per customer
- Data Usage in the form of number of KB or MB of data usage
- Usage on smartphone or others
- No. of days the customer has used data services
- Indicator for 2G or 3G latching

- Oscillator or consistent usage, which indicated the usage behaviour over the last 4 months



Alok has taken a small random (but representative) sample of about 60,000 subscribers, which according to Shreya is acceptable. Given the objective, she had to decide on whether to leverage a supervised or an un-supervised learning technique for creating the segments. She also provided Alok some guidelines around the segmentation. Each segment should be homogeneous within and heterogeneous across segments, appropriate measures should be arrived at to determine the effectiveness of the segmentation. In addition, the segments are also expected to be stable across time. However, some amount of migration of a customer between segments may provide valuable information about changes in customer behaviour. What is predominant on Shreya's mind is the big question on value demonstration – "How do I show that the segmentation would add business value?"

While she realized that this basic data is probably enough for conducting a first-cut analysis, she would need a more comprehensive set of information for performing a deeper analysis. It will be critical for Alok to create a list of additional data sources and fields which are required for the more comprehensive analysis.

It was already late evening but Shreya decided to create a list of to-do's for the next one week:

- Identify the unique segments within the customer base
- Test the effectiveness of the segmentation
- Identify the possibility of predicting future revenue using this limited data
- Understand how the results can be used for creating targeted offers or pricing
- Identify the additional data sources and data fields that should be explored

She thought that there are possibly more items that she should consider but felt that this may be enough for the time being.

DATA OVERVIEW

This section provides an overview of the data that has been provided for analysis. The data provides month-on-month information for the following fields for 4 calendar months.

- Revenue per customer
- Data Usage in the form of number of KB or MB of data usage
- Usage on smartphone or others
- No. of days the customer has used data services
- Indicator for 2G or 3G latching

It also contains one consolidated indicator for type of usage (consistent vs. oscillating usage). Each row represents the information for one particular user.

QUESTIONS AND POSSIBLE EXPLORATIONS

- In the context of the Indian telecom market and the stated changes within the subscriber base, what are the possible Business Key Performance Indicators (KPIs) that can be impacted through a data driven strategy?
- What is the assessment of the as-is scenario based on the data provided? What should be some of the baseline KPIs that can be tracked to identify any positive impact of a data driven strategy?
- What are the derived characteristics or features that can be created using the data that has been provided?
- What are the possible analytic methodologies that can be leveraged for building the segmentation?
- Is it possible to build a predictive model using the data? If yes what should be the outcome and how can one determine the quality of such a model?
- What are the segments that can be identified using the data that has been provided? How can one assess the quality and robustness of the segmentation (essentially how can one know that the segmentation is "acceptable from a business and analytics perspective"?)
- What should be the additional data sources and data elements that can be explored to build a more robust analysis? What are some of the additional analytic objectives that be achieved using such additional data?

In case one would like to replicate the analysis for more than 30 Million customers using all transaction data for the last 24 months (and any other data elements identified above) what should be the tools and infrastructure that will be required?