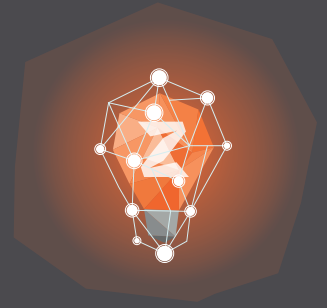


# Keep Your Customers Loyal using Data Science



## Summary

***" A small percentage increase in customer retention will result in a much bigger percentage increase in the company's valuation."***

Customer churn is an important aspect of any business, especially within the retail and banking sectors. Understanding when customers lose interest or leave for competitors/-competing products is vital to the health of a business. By knowing and predicting customer churn, businesses can be proactive in offering better customer service and ultimately retaining them.

A large publicly traded Midwestern savings bank was facing similar issues when it saw a trend of highly valuable customers leaving for other competitive banks. With its rich experience in data sciences and machine learning, DataFactZ built a prediction model that could predict a potential customer churn event. This vital knowledge allowed decision makers at the bank to compile targeted offers and packages that retained those customers. Below we will take a deep-dive into our client's problem, and DataFactZ's solution.

## Problem Statement

"High-valued savings" accounts are bank accounts with interest rates designed to attract big clients. These interest rates vary for every customer, but a small change in the interest rate is enough for customers to move their balances elsewhere. To mitigate this, some banks also offer plans like parallel investments at no cost to the customers. As a result,

banks take great losses when customers churn, and then have a harder time gaining them back. In order to prevent customers from churning to competitors, our client needed to predict a potential churn event. Existing infrastructure and data, however, were only able to do so much.

Before DataFactZ stepped in, our client had no mechanism or methodology in place to predict churn events. Their solution was to assign a customer-relations officer to a group of high-value customers, and constantly monitor that group for any activity on the accounts. Any signs of customer activity would lead a relations-officer to check-in and see if the bank could offer better services, or even one-time benefit offers. These interactions and benefits were often hit-or-miss, because the officer could never know the full intentions of customers. Not surprisingly, this methodology cost our client a considerable amount of capital.

Even on occasions when relations-officers managed to glean information about a customer's intentions, it was already too late to save the churn event.

What our client needed was a standardized process where churn events could be predicted well in advance, and allow the bank to make informed and customized decisions for each customer.

## Implementation strategy

This is where DataFactZ, with its experience and knowledge in data sciences, stepped in to help. DataFactZ built a prediction model that could help businesses make timely and informed decisions that reduced customer churn rates.

When it came to implementation, DataFactZ's approach was to dive in head first by attending on-site office meetings with both business and data handling teams. The first step was

to help our client understand the business processes and data fields used in data modeling.

Here, data sets were taken out of the bank's traditional databases and moved into secured and encrypted S3 buckets. A memory intensive machine with statistical tools like Python, R, and Rapid miner was set up and connected to the S3 buckets to access the data.

The next phase of the project included cleansing the data using R and Python where null values and data points that didn't contribute to the model were moved out of scope. The relevant data points were placed back into S3 buckets for modelling purposes.

Rapid Miner was used extensively for data modeling. Rapid Miner interacted with data on S3 and with some external data sources to predict a customer churn. Several machine-learning algorithms were applied and the best fitting algorithm was chosen based on various performances and tests.

Our model was also built with an extra protective layer that allowed the model to automatically ignore redundant values, when accidentally fed the data by the unsuspecting client.

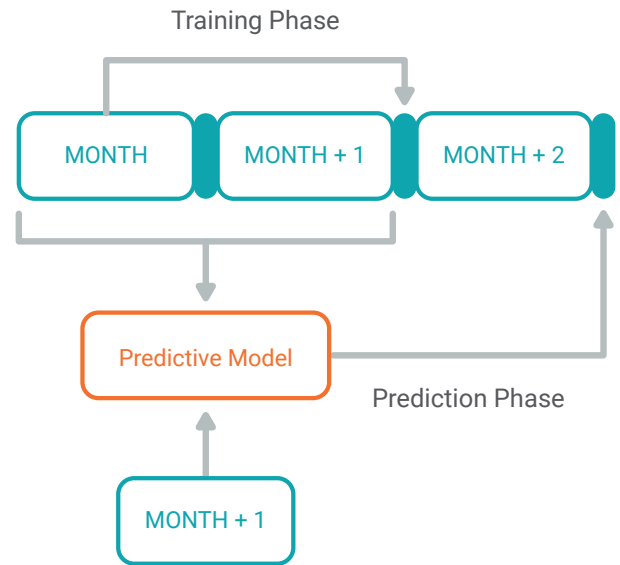
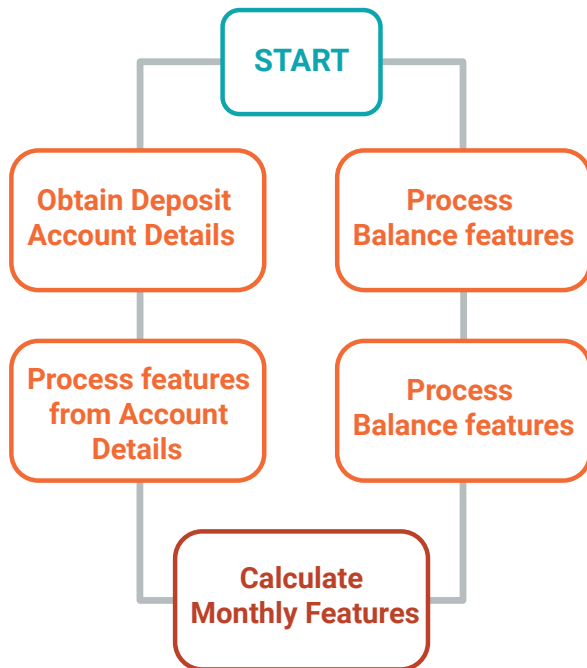
## Outcome

CRISP-DM methodology then followed through to standardize the implementation. Many statistical and mathematical models were evaluated competitively, and followed by validation and stress tests to reach desired results.

The final model was selected and converted into a SAS model and deployed into the production environment. Our client could now run the production model whenever it needed to, and use the predicted churn events to decide on promotional offers and customer interactions.

The winning criteria were decided on a confusion matrix that was weighed after a thorough discussion with the client. Its overall success went above and beyond expectations in its first few runs of the production model. Subsequent decisions made by the bank were informed and justified based on the predictions that the model presented.

*"When your data is mixed with our science, watch the magic happen!"*



## THE NEXT STEP



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