Forecasting & Risk Modelling

Case Study

Internet Company

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1: Background

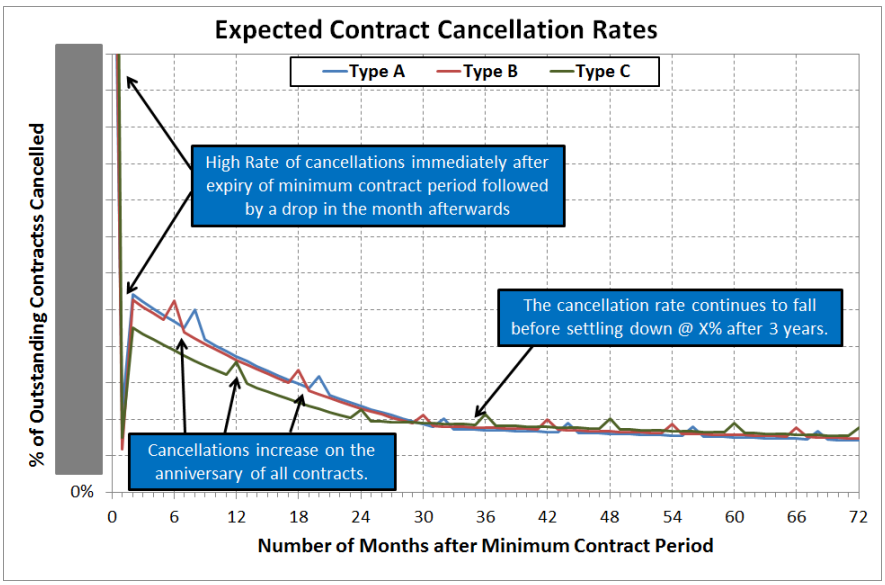
This company is a leading provider of internet services to many businesses. These are sold via service contracts which incur a monthly fee. All contracts come with a minimum term varying between 1 & 12 months but after that customers can cancel by giving a month's notice. The nature of SEO is that not all customers will want to pay for such services every month and so the company expect to have a certain number of cancellations every month. However, the number of cancellations each month is not static and can vary quite considerably. Some of the factors that cause this variation include the number of new contracts sold each month, the minimum terms of each contract and the monthly fee payable.

2: Why the company came to us

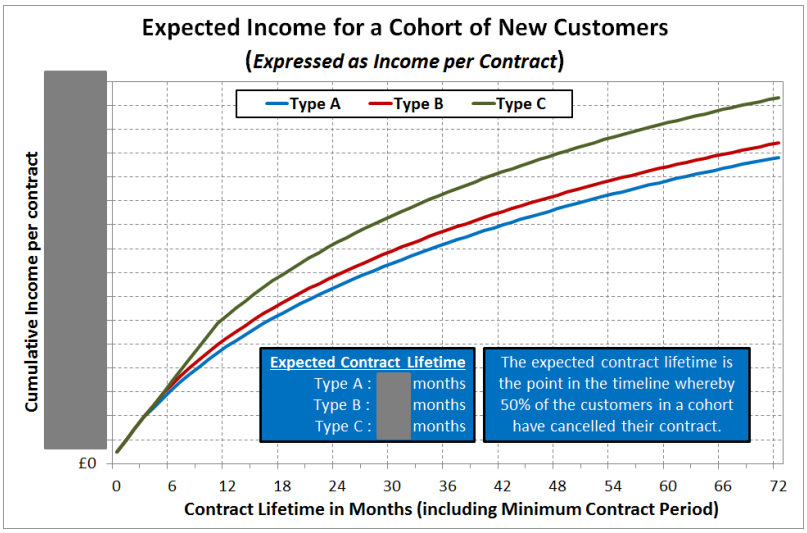
Due to the variation in the number of cancellations each month, it was difficult for the company to interpret whether the number of cancellations in the latest month was to be expected or was higher or lower than normal. They realised that this question could only be answered by a statistician and so they approached us. They wanted a model that was robust enough to be used in-house on a day to day basis and did not require rocket science to understand. Since one of our strengths is being able to keep complex statistical models simple and easily used & understood by non-statisticians, we were delighted to be of assistance.

3: The Solution

Using a technique known as Generalised Linear Modelling, we were able to construct a model which equated the monthly cancellation rate for 3 different types of contracts as a function of the number of months that a client had been with the company plus other factors such as price. Using this model, we built a forecasting tool that dynamically updated the probability of cancellation every month for each contract.

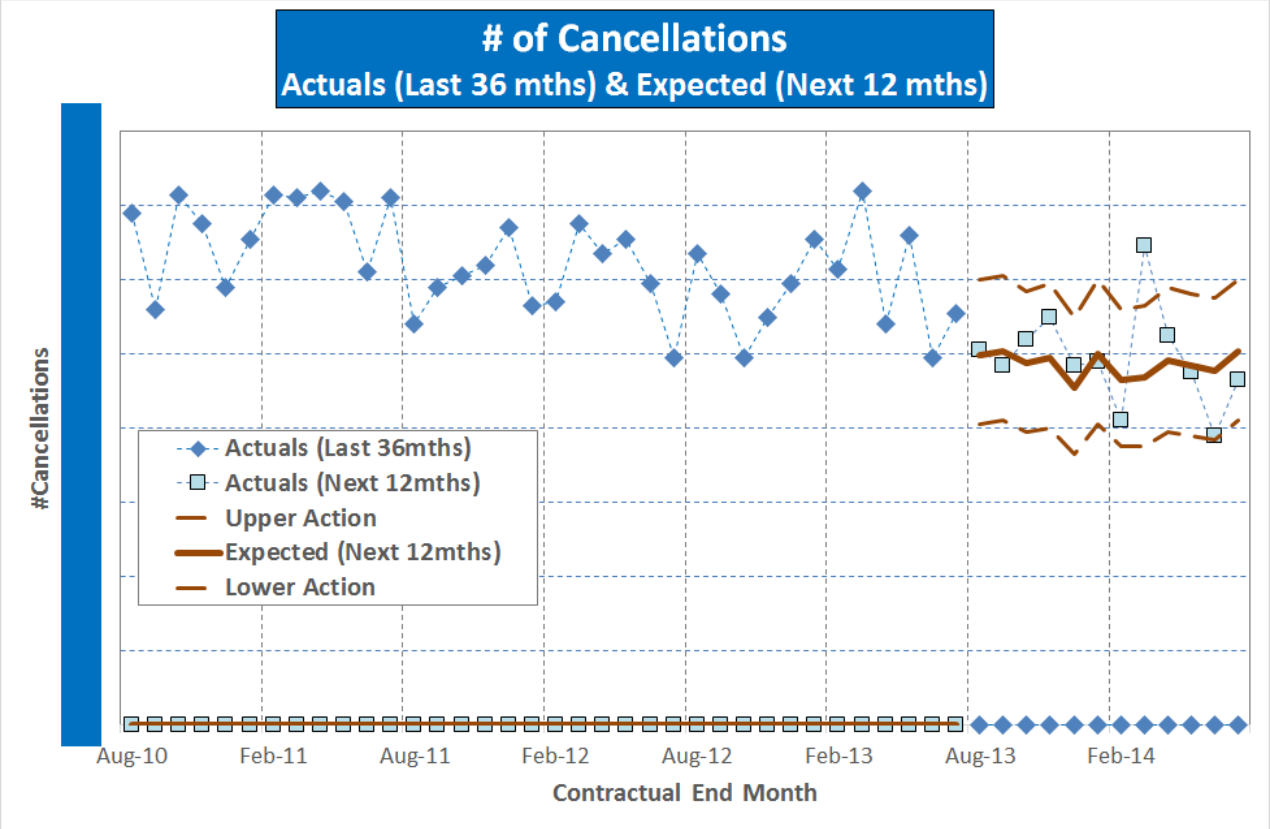


This model could also be used to estimate the expected income for a new group customers. So if the company sold a certain number of contracts next month, the cancellation rate model could then be used to predict how many contracts would be still be alive after a certain number of months. By multiplying this by the standard monthly fee, we then created these curves which showed what the expected income per contract would be over the lifetime of a cohort of contracts.



4: The Results

The most important output was to have an expected number of cancellations from their existing customers over the next 12 months. This would allow the company to observe whether the actual number of cancellations was higher or lower than expected and to take action accordingly. We built an easy to use tool which could be updated every month with new data by their members of staff and automatically update the forecasts. An example of the forecast is shown in the chart.



It is interesting to note in this example that the expected number of cancellations is actually lower than the history over the previous 36 months. Had an average of the last 36 months been used as a forecast, the actuals would have been mostly below this crude forecast and would have incorrectly led the company to believe that they were doing better than expected when in fact they were performing in line with expectations.

Our client has been extremely satisfied with the performance of the Forecasting Model. Since they first started using it back in 2008, they have been making critical business decisions based on the robust forecasts the models which they would not have been able to make otherwise. In recent years, the model has shown that they have become better at customer retention after a succession of months where the actual number of cancellations was below expectations.