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Case Study //

Churn Analysis for a Direct Bank – with an Eye for the Right Timing

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Management Summary

Keywords

✓ Customer churn analysis, ✓ Recovery, ✓ Churn management, ✓ Customer analytics, ✓ Data mining

Goals

✓ Reliable, early, and point-in-time detection of customers liable to churn

Approach

✓ Thorough analysis of historical customer (churn) behavior
✓ Individual, time-specific churn analysis
✓ Forecast of customers liable to churn using innovative data mining methods

Results

✓ Specific starting points for efficient churn management, especially for the early detection of customer churn
✓ Derivation of customer-specific marketing measures to prevent churn with the right training

Initial Situation

The willingness of customers in the banking sector to switch to other financial service providers has increased significantly over the past years due to the wide range of alternative finance products and competing providers. Typical churn rates now lie between 10 and 30%. For the banks affected, churn results in high costs in the form of lost profits – and this not only means the loss of income from the customers themselves (possibly for the entire customer lifetime), but also from other value contributions, for example, potential recommendations.

Yet, systematic recovery is still a rarity in the banking world today, although experience shows that the probability of successfully winning back a lost customer is encouragingly high. What's more, the comparatively low costs make recovery even more attractive: In the financial service sector, the cost of recovering a former customer is usually just a third of the cost of acquiring a new one. This is mainly due to the fact that former customers are already familiar with the company in question and its product offering and service quality. In addition, banks know a lot about their former customers – for example, how they use the products, their creditworthiness, the complaints they have made, and their preferences. This makes them easier to address than new customers.

The churn analysis performed by mayato for a direct bank and outlined below uses these existing customer datasets to forecast the probability of churn for customers who are still active. It therefore focuses on the ultimate challenge in churn management: preventing churn before it happens and, associated with this, successfully identifying the active customers who should be contacted preemptively.

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Data mining for the early detection of customer churn

The question of whether a customer will defect – or churn – is frequently treated as a classification problem and, in data mining, is often modeled with "conventional" forecasting techniques such as decision trees, random forests, regression procedure, or neural networks. These techniques learn to differentiate between typical churners (class 1) and typical non-churners (class 0) based on a large number of example customers. The model can subsequently be applied to non-classified customers, where the churn probability is calculated individually based on the differentiation pattern learnt.

The right timing – the key to success

However, with this type of modeling and the exclusive consideration of churn probability, the right timing is neglected as an important factor for the targeted deployment of churn prevention measures. It can even be counterproductive – for example, if a bank contacts a potential churner at the wrong point in time and this person then decides to become an ex-customer earlier than he or she originally intended.

Particularly in the case of services with contracts running for a number of years – such as financing contracts or installment loans (banks), phone contracts (telecommunication providers), and electricity and gas contracts (energy companies) – the right timing for recovery is of key importance. Ideally, the question of whether a customer will terminate his or her contract should therefore be supplemented with the question of when he or she is likely to do so.

mayato therefore developed an innovative analysis approach that forecasts the most probable time a specific customer will stop being a customer several months in advance. By including this additional information in the churn analysis, it is possible to answer the following questions, for example:

- Will customer A churn? If yes, at what point in time is this most likely?
- For which customers is the risk that they will terminate a contract the greatest? What about in three or four months' time?
- What factors have the biggest positive influence on long-term customer loyalty?
- How much time passes before a certain percentage (10%, 20%, 50% …) of all current customers has churned? What are the figures like when different customer groups are compared directly?
- In general, are certain customer groups or segments more loyal?
- Which direct marketing and recovery campaigns were particularly effective?

Churn analysis of installment loan customers

mayato investigated and answered all these questions as part of a churn analysis project for a major German direct bank. Some 300,000 installment loan customers with 60 descriptive characteristics were analyzed over a period of 12 years. In the case in question, this long observation period was advisable because installment loans have comparatively long and greatly differing durations, from just a few months to seven or even 11 years in exceptional circumstances. Furthermore, this timeframe contributed to the validity and stability of the results, because it was possible to, for example, consider changes in external economic circumstances over time.

Before the analysis: What is a churner?

For a churn analysis, numerous questions related to the subject matter must be clarified in advance, because the answers have a significant effect on the results. One of these questions relates to the precise

definition of a churner – or what makes a customer an ex-customer. If we look exclusively at the use of installment loan products, we can determine the following five types of (lost) customer:

- Customers who redeem their loan prematurely
- Customers who replace their old installment loan with a new one with a higher volume of credit
- Customers who have been granted extensions and who pay back their loan according to the new schedule
- Customers who can no longer pay back their loan due to financial difficulties
- Customers who pay back their loan as scheduled and terminate it in accordance with the contract

Because deliberate contract terminations are the focus of the investigation and customer intentions should thus be analyzed as a priority, customers who redeem their loan prematurely are put in a separate category than the other types of "ex-customer."

Analysis results: intuitive graphics about churn behavior

With this definition of a churner, the following churn structure of installment loan customers became apparent over the period in question (see Figure 1):

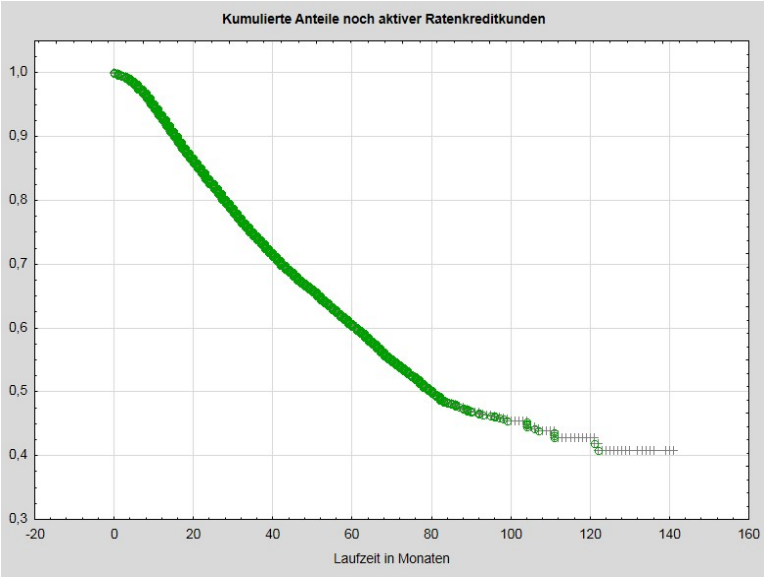

Figure 1: Cumulative proportions of still-active installment loan customers

In the graphic, we can see the cumulative proportions of still-active customers who have not yet terminated their loan after a certain period. The advantages of rendering the information in this way become particularly clear when we compare different customer groups. For example, in Figure 2, we can clearly recognize the differences between younger and older customers with regard to the termination of installment loans. Customers below the age of 30 (blue curve) redeem their installment loans significantly earlier than customers over the age of 30 (green curve) – which is easily recognizable in the fact that the curve for the still-active younger customers (blue) drops much faster than the curve for the still-active older customers (green).

You can use such graphics to verify hypotheses about the tendency of various customer groups to churn, and you can also be guided by the influence factors already identified in the analysis. Examples here are: How are female customers different than male customers, how are long-standing customers different than new customers, how are customers with short-term contracts different than customers with long-term contracts, or how do the users of certain product groups differ?

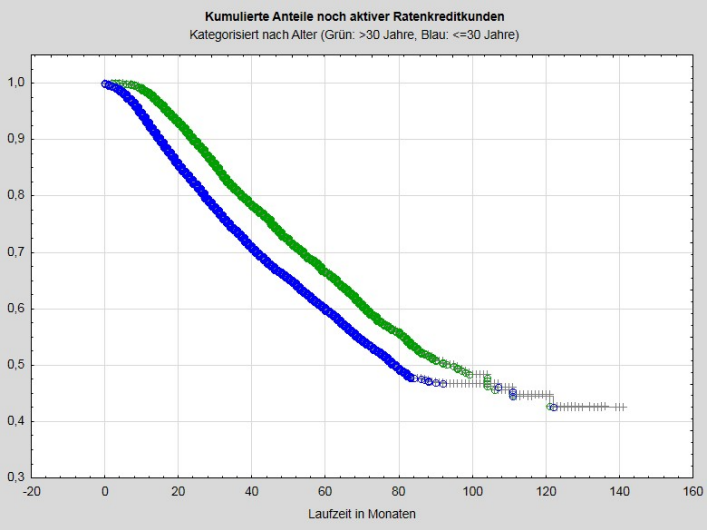

Figure 2: Cumulative proportions of still-active installment loan customers categorized according to age

To identify even more detailed churn patterns over a period of time at a glance, it has proven useful to depict the churn risk over time (see Figure 3).

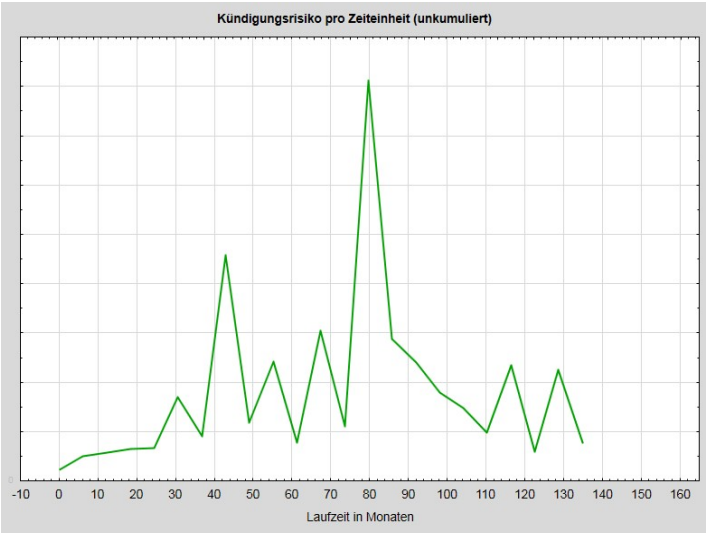

Figure 3: Churn risk per time unit (non-cumulative)

This graphic can be generated semi-automatically thanks to the implicit consideration of time in the mayato approach and thanks to the special data structure used in this case. The rendering is significantly more volatile and enables a much more detailed point-in-time analysis. In the case in question, we can see several sharp risk peaks (for example, at 42 and 80 months), where the churn risk is markedly higher. We therefore have a good basis to identify specific times suitable for launching recovery campaigns, for instance.

Successes and additional practical benefits

After the churn analysis was performed, customers were selected for whom a high churn risk over the next two months was identified in the analysis. These customers were contacted individually – with the result that significantly more customers could be persuaded not to terminate their loan contracts than was the case with previously performed churn prevention measures based on the bank's own analyses. In addition, there were some successful upselling measures. In some cases, the customers contacted took out new installment loans with higher volumes of credit.

The analysis results also turned up some surprising conclusions. For example, the attractiveness of the installment loan offering in each case played a much less significant role in the premature redemption of the loan than was previously assumed. What's more, the original term of the installment loan heavily influenced the risk of premature redemption. Furthermore, it was possible to identify a small but well definable customer group that typically even redeemed their installment loan shortly before the scheduled end of repayment.

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mayato GmbH empowers companies to capitalize on their information. Together with our customers, we develop and implement solutions in the areas of financial analytics, customer analytics, industry analytics, and IT security analytics.

A team of experienced process and technology consultants operates out of our offices in Berlin, Bielefeld, Mannheim, and Vienna. They analyze and optimize your business processes and work with you to determine the requirements for technical implementation. They assist you in selecting the right tools, develop successful strategies, and conceptualize tried-and-true modern architectures. And of course, mayato consultants also help with the practical side of implementing your chosen solutions. Technical standards and governance enable economical, effective projects and efficient operations in the long term.

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