

Explaining and Predicting Customer Churn

**Master in Business Analytics and
Big Data - Capstone Project**

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7th July 2022



Executive Summary

Business and problem description

The construction solutions and equipment provider ClientCo face a multitude of challenges. Weak sales online, a performance decline in Western Europe and Southeast Asia as well as liquidity problems are the main issues the company is confronted with in the client faced business.

Customer analysis

Based on a part of the company's sales spanning from 09/2017 to 09/2019 a detailed customer, product and transaction analysis was performed, in order to gain insights on client groups, retention, lifetime value and churn probability with the goal to make meaningful business recommendations to ClientCo.

Also, a RFM analysis was performed where the customers were divided into three different groups based on three KPIs: recency, frequency and monetary. This was done by using K-means clustering. Subsequently, the customers were segmented in five different customer groups based on the RFM scores, deriving from the features.

Usually about 40% of the clients become retained customers. However, looking only at clients that buy through the channel online, the number increases to about 60% showing the potential of this channel despite its relatively low share in revenues. Using the retention rates to explore the average lifetime for each client group (by main used channel) the life-time value for each customer was analysed showing a small group of clients making up a large amount of the company's revenue which can be considered as the most important client group.

Using the information generated from the other parts, the probability of churning was determined. This churn was determined by different thresholds based on the product group a client bought. Later a classification model was developed, taking multiple metrics into account, to predict if a client will churn or not with an accuracy of 95%. Having this information, specific clients can be targeted and possibly retained as active customers.

In a final step, two specific client groups (1. Conservative Core and 2. Digital Future) were segmented into subgroups, using unsupervised machine learning to make meaningful marketing recommendations and ultimately increase the company's revenue.

Recommendations

The ClientCo is facing several key challenges including insufficient availability of liquidity, the creation of a strong online presence, the prevention of regional business decline and the adaption of changing regulations that require more frequent assortment reviews.

Consequently, a two-fold strategy is recommended that combines a restructuring and a strategy refreshment part. The restructuring phase has the intention to strengthen the core body of the business. As part of this, a product cluster of 167,102 products was identified for removal that contributes USD 124 m in sales and 38 m units sold. In addition, a branch cluster of 58 branches was identified for closure that contributes USD 38 m in sales and 26 k units sold, therefore, USD 16 m marked as churned sales.

The strategy refreshment has the intention to identify the most important customer segments that need to be prioritized. For considering the characteristics and preferences of the actual customer base, a conservative core cluster combines the most relevant clients, making up to 5% of totals clients (8,669) and up to 50% of the total sales (USD 5.3 bn). For contemplating the emerging trend of digitisation, a digital cluster combines customers that are already

predominantly using online channels. This cluster combines 4% (3,786) of total customers and 8% (USD 717 m) of totals sales.

In general, all clusters in the conservative core show a low online exposure, which needs to be increased gradually during the next years. This can be done during customer contact by introducing the existing online platform and giving the right incentives.

The Digital Future segment shows a high adoption of the online channel. Therefore, it is important to extract their knowledge and understand the need of improvement. Ultimately, online purchase data should be used to enhance the future-oriented product portfolio, branch network and supply chain.

To implement the above-mentioned recommendations, an implementation roadmap was designed based on three main phases: Project kick-off, restructuring phase, strategy refreshment phase.

Following the link to the notebooks and datasets:

<https://drive.google.com/drive/folders/1sbh8qnM4bZ94kffF6tllyU3qySetuVSiy?usp=sharing>