Comparison of Decision Tree Algorithms in Identifying Bank Customers that are likely to Buy Credit Cards

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Abstract: Selling more to the existing customers is much more profitable than trying to acquire new customers. For this reason, companies conduct various campaigns to sell additional products to their customers. However, campaigns are costly and obtaining higher response rates in these campaigns is very desirable. For large companies having millions of customers, identifying those customers who are likely to buy a particular product is not an easy task. This is where the analytical customer relationship management (ACRM) and in particular data mining (DM) comes into the scene.

In predictive data mining, a set of rules that describe buying behavior of customers is learnt through a training set and as these rules are applied to product non-owners, the customers that are likely to buy it are predicted. For the learning process there are a number of classification algorithms available in the literature some of which are available also in some commercial packages. These algorithms include decision tree algorithms, artificial neural networks, genetic algorithms and regression.

In this study, we describe the steps of building a predictive modeling project and compare four of the decision tree algorithms (CART, C5.0, CHAID and QUEST) in their accuracy for predicting the customers who are likely to buy (or accept) a credit card. The experimental results indicate that the CHAID algorithm outperforms the others.

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