CUSTOMER CASE
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Early warning system for unpaid credits

What used to require a lot of mental effort from experts can now be made easier by software: decisions about the credit-worthiness of companies and individuals, for example. *By Mark Schröder, Computerworld*

ofwi Orell Füssli
Wirtschaftsinformationen

Long-standing data mining know-how by Dynelytics

Imagine that every financial institute already knew in advance exactly which potential borrowers would pay their debts on time and which ones wouldn't – the financial crisis probably would probably never have happened! With each credit request, lenders attempt to see into the future. Mathematicians, statisticians and demographers calculate, using data from different sources, how probable it is that the bank will recover its money. The economic information service, Teledata, is supported by a software solution.

A lot of (or too much) information

The figures abound: Teledata lists data from over half a million Swiss companies, 1.25 million professionals on the trade register and over 6.1 million private consumers. For each single credit request, dozens of additional items of information can be called up, for example shareholders, shareholdings, financial relations, signing authorities, etc. "Before, credit risk experts assessed each customer individually. With over 510,000 firms that is simply not possible", explains Markus Binzegger, CEO of Orell Füssli Wirtschaftsinformationen AG, which operates the Teledata online service. But demand is huge: "Financial ser-

vice providers currently check ten thousand credit requests per year. At Teledata alone we handle around 250,000 requests", explains Binzegger. Around 10,000 customers wanted to find a way to automate this process – and they found the statistical decision tree process of the SPSS Modeler analysis software (see chart).

Decision trees for credits

In co-operation with SPSS Switzerland specialists, Teledata developed an automated credit approval check. The roots of the decision tree form 37 credit-worthiness criteria, identified as significant for failure probability. In total, over 100 characteristics were considered, then analysed, assessed and sorted by credit risk experts. "Criteria were required which, based on historical data, could make predictions about the future", is how SPSS Partner Josef Schmid outlines the task. Specialists used their experiences and took a different look at the credit request process to find further important associations in the data. "One characteristic that influences the credit risk rating today is the number of times the company profile is requested in the Teledata portal", explains Binzegger,

by way of example. "There is a direct correlation between the bankruptcy probability of a company and the number of times a company profile is requested." In the run up to an insolvency, the page hits increase, reaching their peak at the time of the bankruptcy and then the number of requests falls again afterwards.

Typical models, such as the number of times a company profile is requested, were included by Orell Füssli in its selection criteria. Other characteristics are, for example, credit information, frequency of name changes, number of changes on the board of directors and bankruptcy filings. For each of the 100 characteristics, the prediction accuracy for bankruptcy was given. The 37 criteria with the highest probability values are today compiled in the decision tree model. Interactions between factors are also considered, for example the economic networking of companies, their management bodies and shareholdings. The result is a decision with three outcomes: credit-worthy, not credit-worthy or further examination required. "Our statistical model achieves a prognosis quality of around 80%", explains the CEO of Orell Füssli Wirtschaftsinformationen, Binzegger. "In eight out of ten cases we can correctly predict if a credit will be paid back." Which is more than any other expert can offer.

Machine versus human

Software does not replace experts, it simply makes work easier, Binzegger hastens to add. Using the model, companies and individuals are merely graded into risk classes. With this, companies can assess risks and

implement a precise examination of potentially at-risk customers. "For a financial service provider who is interested in powerful customers for credit or leasing offers, we can provide relevant detailed information", says Binzegger. How the buyer treats the data is their responsibility. The human factor usually comes into play here, because, according to the experience of Orell Füssli, without the judgement of a specialist, no decision can be made. After five years, Binzegger comes to an overall positive conclusion: "Data mining is very suitable for forecasting credit default risks." The project will not be over for a long time yet as, like the economy, it is constantly changing.

Fertiliser for the model tree

Address changes, staff turnover or the varied credit-worthiness of companies and individuals are only a few reasons why decision tree models have to be constantly verified. According to Binzegger, the 37 model criteria are in no way set in stone. "To improve the prediction quality of the credit risk rating, we regularly test new factors. This is because the result of the algorithm is easy to measure, but difficult to explain", confesses the manager of Orell Füssli. Even the experts find it hard to understand the interactions that are illustrated in this model. Model adaptations are therefore vital.

So much can go wrong, explains SPSS Partner Josef Schmid, who is a project advisor and trainer. If an unsuitable criterion is included in the decision tree, not only can the measured values for a particular firm change, but also the entire reference system can go awry. The credit ratings of all companies then

deteriorate, without there really having been any change. "To improve the models, it is essential to test alternative parameters, but the test results must be interpreted with caution", informs Schmid. Otherwise a company may fail the credit approval examination, even though it is in good economic health.

Orell Füssli Wirtschaftsinformationen knows something about the difficulties of complex statistical models. Today, Markus Binzegger and his team are continuously working on testing decision trees. "Thanks to automated processes, we can validate the model at least once a month using millions of data from the trade register", says Binzegger. Customers can be sure that, in the large majority of cases, information bought provides for reliable forecasting of credit-worthiness. ●

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