voicesense

CASE STUDY

KNIGHT CAPITAL GROUP

Predict Loan Default Risk

Knight

THE CHALLENGE

Despite using traditional financial assessment tools, Knight Capital (a U.S. lending company) experienced a 25% default rate on their loans. While they understood that client's defaults often resulted from real and unforeseen financial difficulties; they believed that many other defaults resulted from borrower' behavioral characteristics, such as high-risk takers, poor planning skills, impulsiveness, low integrity, or bad repayment habits—habits not identified by their financial approval, i.e. credit score, payment history, repayment capacity, financial strength.

Knight Capital wished to explore the possibility of assessing applicant's behavior characteristics early in the lending approval process. The ability to predict high risk borrowers would reduce their default rate.

Knight Capital was also aware that applicants would not voluntarily expose high-risk traits during their approval process.

THE SOLUTION

Knight Capital chose Voicesense to apply Behavior Prediction Vocal Analysis technology towards assessing high-risk personalities. Voicesense used their Loan Default Predictor tool to create risk classification scores for applicants based

on their voice.
The evaluation objective was to assess the accuracy of the Voicesense behavioral loan default predictive analysis.
A validation study consisting of 2843 phone interaction recordings of real customers that received loans was used to test the system.
Voicesense ran call recordings from actual loan approval conversations through their vocal analysis technology. These recordings were from customers whose loan period had already ended, thereby enabling Voicesense to use their Machine Learning to calibrate a predictive tool based upon knowledge of the default outcome (yes/no) for the approved loans.
The model was then applied to a blind testing sample. Knight Capital was then able to compare the predictive classifications from Voicesense to the actual default outcome.

RESULTS

Voicesense classified customers into three categories based upon default risk predictions: High, Neutral and Low Risk. About 20% of the borrowers were classified as High Risk, 60% as Neutral Risk and 20% as Low Risk.
The results demonstrated a default rate among the High Risk borrowers of greater than 50% higher than the Low Risk borrowers. Of the 429 borrowers classified as High Risk, 204 customers defaulted on their loan. Out of 420 borrowers assigned to the Low Risk group, 128 defaulted on their loans.

The assessment proved to be highly significant statistically and more importantly for Knight Capital, enabled them to identify High Risk loan applicants early in their process where they could apply stricter approval protocols.