



DATA MINING CASE STUDY: TELECOM

Churn Study

[Exclusive Ore Inc.](#)¹

A major Asian cellular telephone company ("TELCO") identified data mining as a key component of an aggressive marketing strategy. Their long-term goal is to apply data mining to churn (customer loyalty), direct mail, cross selling and customer lifetime value/profitability.

TELCO selected MineSet from SGI as their data mining software. In addition, they elected to conduct a pilot study to validate their ability to use data mining effectively and to improve their understanding of the process. The application selected for the pilot study was churn. Exclusive Ore was selected to lead the pilot project team that also included personnel from TELCO's Marketing department, TELCO's IT department, and SGI.

Several heterogeneous sources of information for the churn problem were identified by TELCO, many based on their hypotheses about why people churned. These sources included telephone usage, service and payment histories as well as relationship characteristics, e.g., phone brand/model, locale. The availability and consistency of the usage history was limited due to a recent change in operational systems, posing challenges for data selection and representation.

Exclusive Ore reviewed the proposed data extract, established naming conventions and recommended the inclusion of a number of additional attributes. The resulting data extract consisted of 1.2M customer records, each with approximately 225 attributes. The raw data was investigated for completeness and correctness using a number of MineSet's tools. 3-D visualizers were used to explore attribute relationships, both those identified by the column importance tool as well as hypotheses posed by TELCO.

Exclusive Ore worked with TELCO to convert the raw customer data into a customer "signature" record, identifying nearly 100 new variables which were derived from the extracted data. Reusable sessions were generated for transformation and data selection.

Model exploration focused on classification, primarily decision trees and evidence (Naïve-Bayes) models. The numerous models that were generated provided a forum to discuss the overall approach and alternative techniques. Models were built using different model parameters in an attempt to improve model quality as measured by accuracy, lift and ROI.

¹ To find out more about Exclusive Ore Inc., and its custom solutions to data warehouse, database and data mining problems, please go to www.exclusiveore.com or click [here](#).

SUMMARY

The pilot project at TELCO was an intensive exploration of data mining in general and the use of MineSet in particular.

The goals for the pilot were: to determine if appropriate data was available, to assess a data preparation methodology, to develop initial models for customer loyalty, and to raise the level of understanding of data mining at TELCO thereby enabling continued independent pursuit of the corporate data mining initiatives by TELCO.

The data preparation tasks raised awareness of the importance of data quality, data availability and issues of data representation. Model development covered a wide array of topics: how to generate a model, how to explore a model to gain new and useful knowledge and lastly - perhaps most importantly - how to evaluate a model.

At the end of the pilot study results were presented to upper management. The information produced by the Evidence model was determined to be so insightful that it was used as a key component of the presentation. Based on the results of the pilot study, management has endorsed the use of data mining at TELCO.

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