Chapter 61

DATA MINING FOR TARGET MARKETING

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Abstract  Targeting is the core of marketing management. It is concerned with offering the right product/service to the customer at the right time and using the proper channel. In this chapter we discuss how Data Mining modeling and analysis can support targeting applications. We focus on three types of targeting models: continuous-choice models, discrete-choice models and in-market timing models, discussing alternative modeling for each application and decision making. We also discuss a range of pitfalls that one needs to be aware of in implementing a data mining solution for a targeting problem.

Keywords: Targeting, predictive modeling, decision trees, clustering, survival analysis, in-market timing

1. Introduction

Targeting is at the core of marketing management. It is concerned with offering the right product to the customer at the right time and using the proper channel. Indeed, marketing has gone a long way from the mass marketing era where everybody was exposed to the same product, to today’s fragmented and diversified markets. The focus has changed from the product to the customer. Instead of increasing market share the objective has shifted to increasing customer share and enhancing customers’ loyalty and satisfaction. Recent developments in computer and database technologies are helping these goals by harnessing database marketing, Data Mining and more recently CRM technologies to better understand the customer thus approach her only with products and services that are keen to her. Various marketing metrics have been
developed to evaluate the effectiveness of marketing programs and keep track of the profit and costs of each individual customer.

From a Data Mining point of view, we classify the targeting problems into three main categories, according to the variable that we are attempting to predict (the dependent, the choice or the response variable) – discrete choice, continuous choice and in-market timing problems. Each type of problem requires a different type of model to solve.

Discrete choice problems are targeting problems where the response variable is discrete (integer value). The simplest is the binary choice model where the dependent variable assumes two values, usually 0 and 1, e.g.: 0 – do not buy, 1- buy (a product or service). A generalization is the multiple choice model where the dependent variable assumes more than 2 nominal values, e.g., 3 values: 0 – do not buy, 1 - buy a new car, 2 - buy a used car. A special case of a discrete choice is where the dependent variable assumes several discrete values which possess some type of order, or preference. An example in the automotive industry would be: 0- no buy, 1 – buy a compact car, 2 – buy an economy car, 3- buy a midsize car, 4 – buy a luxury car, where the order here is defined in terms of the car segment in increasing order of size.

Continuous choice problems are targeting problems where the choice variable is continuous. Examples are money spent on purchasing from a catalog, donations to charity, year-to-date interest paid on a loan/mortgage, and others. What makes continuous targeting problem in marketing special is the fact that the choice variable is non-negative, i.e., either the customer responds to the solicitation and purchases from the catalog or the customer declines the offer and spends nothing.

Mixed types of problems also exist. For example, continuous choice problems which are formulated as discrete choice models (binary or ordinal), and discrete choice models which are expressed as continuous choice problems (e.g., predicting the number of purchases, where the frequency of purchase assumes many discrete values 0,1,2,... and is thus approximated by a continuous choice).

In-Market timing problems are time-related targeting problems where the objective is to predict the time of next purchase of a product or service. For example, when the customer will be in the market to purchase a new car? When s/he is up to taking the next flight or next cruise trip? Etc.

In this chapter, we discuss how Data Mining modeling and analysis can support these targeting problems, ranging from segmentation-based targeting programs to detailed "one-to-one" programs. For each of models we also discuss the decision making process. Yet, this process is not risk free as there are many pitfalls that one needs to be aware of in building and implementing a targeting program based on Data Mining, which, if not cared for, could lead