



Model M^ud^Dle

Using mathematical models to predict direct marketing success can be a confusing process. Here are a few pointers to help you on your way to a successful modelling career.

By Richard Boire

We have all witnessed the explosive growth of database marketing which has occurred during the last several years.

This shift towards targetted marketing, rather than a traditional Madison Avenue mass marketing approach, is being caused by a newfound corporate emphasis on cost efficiency.

With targetted marketing, management can optimize revenues by developing specific products and tailoring specific offers according to the identified needs of each market segment.

The minimization of costs occurs through the distribution segment of the marketing mix, as companies either mail or telemarket their very best customers.

Obviously, the capability to do targetted marketing creates a need for more sophisticated tools. The use of mathematical models is becoming increasingly popular as marketers begin to understand the cost/benefit dynamics of these tools.

In order to benefit from modelling, marketers must understand how to evaluate a model's effectiveness. Since the marketer alone will be responsible for bottom-line results, he/she must comprehend the technical tools which impact results. This does not mean that a marketer must become a statistical whiz. The utilization of sound business analysis along with effective tracking will allow the marketer to properly evaluate models.

While it may sound intimidating, this can be accomplished by following a few pre-determined steps.

In any model evaluation, the first step is to clearly evaluate what the model is trying to do. An understanding of the model's objective will define how to evaluate its effectiveness.

For instance, a response model's objective is to determine the likely responders to a marketing campaign. Defining the success of this model is rather straightforward. The modelled names

should contain the most likely responders. This model, however, will not increase total revenues. There is always a limit of potential responders for a given product, a given message and a given offer. However, this model will optimize the cost side of the equation. This is achieved by optimizing revenues (orders) with fewer marketing dollars.

An attrition model, on the other hand, is developed with the objective of predicting which existing customers will not be future customers.

The success of this model is not as simple as the response model example. The ultimate goal of marketing is to reduce attrition. Yet the model alone will not reduce attrition. Its purpose is to identify high-risk attritors. The objective of marketing can only be accomplished by identifying the high-risk attritors and applying effective marketing promotions to retain them.

The development of cluster models represents another modelling application that can be used to increase overall revenues. Its goal is the identification of market segments and their specific needs. Once again, the goals of this model cannot be accomplished without a successful marketing plan.

Developing products and specific offers to the identified needs of market segments will ensure that the goal of revenue maximization is achieved.

In all these model applications, it is essential that the model's objective be clearly defined. With this knowledge, marketers can form an effective plan for evaluating a model.

In any evaluation, the model must address three issues:

- 1) How did the model perform against a control group?
- 2) How well did the model rank order?
- 3) Has the model deteriorated?

In resolving the first issue, we are essentially comparing the performance of the base with modelling versus the performance of the base without modelling. The control group should be statistically large enough to ensure that the results are valid and reliable at a 95 percent confidence interval.

Listed to the right are the results of an attrition model and response model versus their control groups.

Response Rate Model	
Model	3%
Control	1.5%

Attrition Rate Model	
Model	10%
Control	12%

It is evident without further analysis that the attrition model is unsuccessful. Its objective of identifying attritors is not being attained. Meanwhile, the response rate model at this particular point seems to be working. However, the evaluation of this model is not complete.

The comparison of the control versus the modelled cell represents the first part in model evaluation. The second part, which really addresses the second issue of model evaluation, determines how well the model rank orders names.

It is essential that marketers determine the rank-ordering capability from the control and not the modelled group. This will give marketers the ability to assess a model's effectiveness throughout the list universe. For example, if we had created our rank-order cells within the modelled group, we would never be able to evaluate the failed names portion, i.e. those names which were not mailed because they failed the model score.

Determining an appropriate sample size for this control is also critical. The objective in any sample size is to read each cell's

results with reliability and validity. In this particular case, we would select a sample size which would generate approximately 200 responders or 40 responders per cell.

In our response model example, a marketer has set up five cells within the control group. The five cells range from the highest predicted score to the lowest predicted score.

Predicted Score	Predicted Response Rate	Actual Response Rate
1 st Highest	8%	4.0%
2 nd Highest	6%	3.0%
3 rd Highest	3%	1.5%
4 th Highest	2%	1.0%
5 th Highest	1%	0.5%

One might say from these results that the model is not performing since there is some degree of variability between predicted results and actual results. However, this would be an incorrect conclusion. This would suggest that the model accurately predicts uncontrollable or unmodelable

factors such as the economy, seasonality, and the volatility of the direct mail business.

The model's objective is to target the most responsive names. By measuring the rank-orderability of the model, we can truly evaluate its success. In our particular case, the response rate model is a clear success.

The third issue of determining model deterioration involved ongoing tracking of the model's performance each time it is used in a marketing campaign. By monitoring the rank-ordering capability over time, the marketer can assess the trend in this model deterioration. With the information, the marketer can decide whether to continue applying the model or discontinue and inform the statistician that a new model is required. Generally speaking, the maximum longevity of a direct marketing model is two years.

The above discussion demonstrates that marketers must understand the objective of a particular model and how it can be tracked. With this understanding, technology is better utilized to achieve marketing goals.