

DATA MINING &
PREDICTIVE MODELING

▶ A PRACTICAL GUIDE
FOR RETAILERS AND
DIRECT MARKETERS

M A R K E T F O C U S D I R E C T

WHAT IS DATA MINING

UTILIZING ANALYSIS TO DISCOVER THE PROFITABLE GEMS HIDDEN IN CUSTOMER DATA BASES. ►

Data Mining is the process of analysing and extracting meaningful patterns and previously unknown and actionable information from large consolidated databases.

The results allow the marketer the ability to make sound business decisions from the results of the Data Mining in such a way as to improve the profitability of the business. Data Mining ranges from simple data queries to the most advanced type of data mining using sophisticated “machine learning” techniques.

There are two basic styles of Data Mining: *Hypothesis Testing* and *Knowledge Discovery*

Hypothesis Testing attempts to substantiate or disprove preconceived ideas, while *Knowledge Discovery* starts with the data and tries to get it to tell us something we didn't already know. These styles can be broken into four general categories:

Simple Queries

Stand Query Reporting (SQL)

On-Line Analytical Processing (OLAP),

Complex Analysis

Statistical Analysis

Knowledge Discovery.

Stand Query Reporting is a simple system of asking questions from the database, like “How many people did ...?”

On-Line Analytical Processing (OLAP) pre-groups the data so the relational data can be reported easily in one query. “How many of my customers shopped 1 time or 2 to 4 times, over the last year?”

Statistical Analysis uses historical data patterns to predict which customers are most likely to be your best customers over the next year.

Knowledge Discovery systems utilize artificial intelligence tools like neural networks and machine learning to create a model to answer the same questions as Statistical Analysis. The difference being that the Knowledge Discovery tools can find complex, non-linear relationships in the data used, whereas Statistical Analysis methods are typically limited to finding linear relationships.

A collection of Data Mining & Predictive Modeling solutions for Canadian marketers, the PinPoint Series provides a complete solution for all database mining, profiling & modeling problems based on four Data Mining modules:

- Response modeling
- Customer segmentation / Profiling
- Customer valuation
- Cross-selling

The contents of this folder is designed to give the marketer an overview of the power and capability of Data Mining and Predictive Modeling to produce valuable information for the purpose of creating better and more profitable Direct Marketing Campaigns.

THE MARKET FOCUS
PINPOINT DATA MINING
SYSTEM ►

RESPONSE MODELING

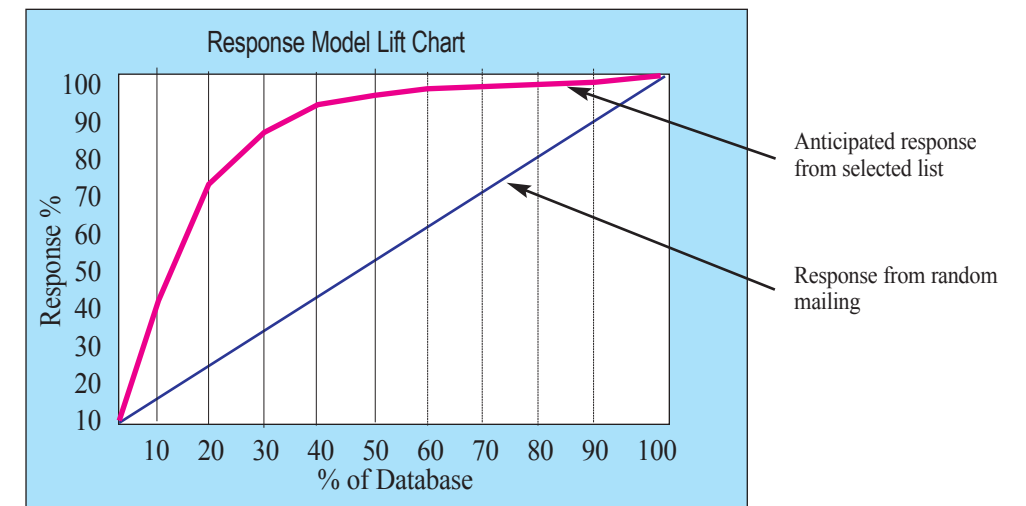
History repeats itself. ►

Response Modeling is the process of analysing previous purchasing behavior of customers over a logical period of time.

Customer response data, coupled with other pertinent and relevant data, such as demographic, geographic, and psychotropic information, is by far the most reliable source to reveal trends and tendencies of customer purchasing behavior and patterns. Response Modeling digs deep into the databases to correlate those patterns unobtainable any other way.

Modeling on response data results in improved customer response to direct marketing programs.

This is obtained by targeting *only prospects that are predicted as most likely to respond* to a particular advertisement or promotion. Instead of mailing to, or calling on (in the case of telemarketing) every prospect on a list or in a database, only the ones with a high probability of responding positively are selected. Randomness and subjectivity are removed from the list selection process.



BENEFITS OF RESPONSE MODELING ►

The benefits of Response Modeling are widely recognized as the following:

- Higher returns from smaller segments of database.
- Removal of “randomness” of direct mail.
- Higher response for equal dollars.
- Improved return on investment (ROI*) for marketing dollars.
- Improved inventory control and supply-side management.
- Improved customer relationships and retention.
- Savings on communication costs (mailing, printing costs, telephone calls etc.)

SEGMENTATION AND PROFILING

Getting to really understand your customer.

WHAT IS SEGMENTATION?



Segmentation and Profiling are advanced statistical methods of clustering, and producing decision trees which can be used to better understand customer segments and their purchasing behaviors.

Segmentation is the process of analysing the database and placing the customers in pigeon holes or clusters with other customers that exhibit similar purchasing patterns.

It is a broad term used to describe the partitioning of customers or prospects into distinct, non-overlapping groups.

The most important aspect of segmentation is that the segments or “clusters” can be defined to specifically meet the needs of the program of the particular marketer. The marketer no longer needs to rely on canned or predetermined, “off the shelf” clustering systems.

Customers can be separated into different groups based on attributes like age, income, gender, geographic locations, previous purchase history, predicted likelihood of purchasing a product, etc. People within the same segment are similar in certain aspects, while people from different segments are distinct. Once a number of clusters have been identified, each segment can be profiled to understand the customers within the segment and how that segment differs from other segments.

Examining prototypical members of a segment can provide a better understanding of people with the segment. The segments might be divided into which a customer is ranked. For example:

Customers tiered into segments like “highly profitable customer,” “above-average customers,” “average customer,” and “below-average customers.”

Products or services purchased by your customers are segmented (e.g., customers that purchase only product “A” versus customers that purchase only product “B” versus customers that purchase both products “A” and B)

Customers are clustered by tenure or length of time a person has been a customer, sales volume, frequency and geography of clusters

The possibilities are limitless. Segmentation allows the marketer to define exactly the groups to analyze and profile and that are unique to that marketer.

WHAT IS PROFILING?



Profiling is the process of identifying the characteristics of the customers that makeup the segmented clusters. Profiling allows you to totally understand the uniqueness of each cluster. By studying the characteristics and statistics of a group of people within a cluster or segment, you can draw conclusions to help target your marketing campaigns more effectively.

BENEFITS OF SEGMENTATION & PROFILING



For each cluster you can typically view:

- * Prototypical members that best represent people within that cluster. You can view the values for actual customers in the database (customers that best represent the segment are displayed first.) By examining these prototypes using the variables specified for analysis, you can increase your understanding of your different customer segments.

- * A list of variables ranked by the importance levels that most differentiate one cluster from another. By analyzing the key differentiating attributes, or the “average,” you can understand critical differences that can be leveraged in one-on-one marketing campaigns.

- * Customer tendencies for each cluster, - those variables and associated values that are typical within specific clusters and those values that are not common within that cluster. This highlights variables and values that best characterize customers within the cluster for easy understanding of the segment population.

- * Variable interactions that characterize a cluster by identifying variables and values explaining customers within a cluster. This analysis allows you to see what values account for large portions of the segment.

The benefits of Segmentation and Profiling are recognized as the following:

- * Establishment of customer clusters meaningful to specific marketers.
- * Improved understanding of customers or prospects for strategic marketing.
- * Identify prototype customer representative of each cluster.
- * Better understand characteristics differentiating of each cluster.
- * Identify groups of people to maximize upsell opportunities.
- * Identify your best customers to find similar prospects.
- * Identify opportunities for additional sales expansion.
- * Develop targeted communications directed at focused audiences.
- * Develop more effective customer retention programs.
- * Improved customer relationships and retention through “one-on-one” marketing messages.

In addition, by targeting your communications more effectively to prospects and existing clients, you improve and strengthen customer relationships. The customer may perceive more value in your communications (i.e., they receive information speaking directly to their interests).

CUSTOMER VALUATION

What's the customer worth?

WHAT IS CUSTOMER VALUATION? ►

Customer Valuation (or modeling customer value) is a process to predict the future value or profitability of a customer to your company, today.

Instead of targeting all prospects equally or providing the same incentive offers to everyone, you select only those individuals that meet specified profitability thresholds levels based on previous purchasing behavior, demographic, life-style, or psychotropic data.

Predicting the value of a customer can be an important part of deploying marketing campaigns. Two prospects may both have the same percentage of responding to your offer, but prospect "A" might generate \$10 in profits while prospect "B" might generate \$50 in profits. While the cost of acquiring each prospect might be the same, the impact to the bottom line is very different.

Predicting the value of future purchases or usage in the case of services will help you identify which prospects are most likely to respond and are most worthwhile targeting. Similarly, if you build an attrition model to identify those customers at risk for leaving your business (churn), a customer valuation model can identify those customers that are worth trying to salvage through a retention program.

CONSIDER THE CUSTOMER LIFE CYCLES. ►

In addition, the life cycle of customers typically varies greatly. That is, upon customer acquisition, the marketer may actually experience a net financial loss while expecting to recoup their losses and more over the lifetime of the customer. For example credit card companies spend money setting up an account, generating a credit card, mailing the customer numerous brochures, etc. If the credit card holder never activates his/her card, or seldom uses it to charge purchases, or deactivates the card soon thereafter, they may not be profitable customers. Valuation models can help predict the spending levels of consumers at different points in the life cycle or lifetime value.

Using a valuation model, you can:

- Use demographics and other available data to predict the spending levels of prospects and to target acquisition campaigns at the most profitable ones.
- Use purchase history and other information for "old" customers in your database to predict the future Life-Time Value of more recent customers.
- Identify and demonstrate appreciation (e.g., by implementing a preferred customer program) towards those customers who are predicted to generate the most profit.

BENEFITS OF CUSTOMER VALUATION



- Target retention programs at the profitable customers who might be at risk of churn or attrition and give an incentive or special offer of the appropriate "value" relative to their future profitability.
- Rank your customers by *predicted value* and then implement upsell programs to improve profitability of your second tier customers. Or implement different marketing programs to increase profitability of your currently least valuable customers as a new area for expansion of *Lifetime Value (LTV)*.

A simplified definition of LTV can be expressed as:

$$LTV = \text{Frequency of purchase} \times \text{Gross Margin} \times \text{Duration}$$

This equation basically says that a customer's lifetime value can be determined by their frequency of purchases times the gross margin or profit associated with such purchases times the length of time that customer remains loyal to your business.

The benefits of customer valuation are:

- Early identification of customers predicted to be most profitable over the long term.
- Identification of upsell prospects/opportunities.
- Identification of probable churn customers.
- Improved return on investment (ROI*) for marketing dollars.
- Improved preferred customer programs and customer retention.

* Return on investment (ROI) is a widely used measurement of investment effectiveness. It is typically computed as a ratio of generated profit (return) over the cost of program implementation (investment). A value of one represents a break-even campaign. Values greater than one represent profitable campaigns and values less than one mean losses were incurred.

CROSS SELLING

Generate more sales by selling what customers want to buy.



Cross Selling is the process of predicting what a customer will purchase based on previous purchasing history. If a customer has bought product "A" then he will probably buy product "B". (And it might as well be from you)

Cross Selling utilizes the knowledge of your existing customer base to create additional sales of products and/or services. By analyzing the groups of products or services that are commonly purchased together and analyzing each customer's affinity towards different products using historical data, you can maximize your selling potential.

When you use this purchase data of different products from your customer database and combining it with other variables like, demographic, life-style and psychotropic data, you can identify the products that are most likely to be of interest to each customer. In reverse, for each product or product group, you can generate a ranked list of the customers that are most likely to be attracted to that product. Then, instead of mailing to or calling (in the case of telemarketing) every customer in your database, you select only the ones with a high likelihood of responding positively.

Cross Selling is very similar to response modeling, except that you are targeting only existing customers, not new prospects, and you are creating a model that predicts a customer's affinity level to multiple products. Cross Selling is one of the important areas in database marketing where predictive data mining techniques can be successfully applied.

Targeted marketing campaigns can then follow two different courses:

- * To promote a specific product, by contacting only those customers that are most likely to purchase that product based on their prior purchases and demographics, etc.
- * To create specialized mailings customized for each customer, and mailing only the top ranked products that the model has identified as the products to which the customer is most likely to be attracted.

BENEFITS OF CROSS SELLING



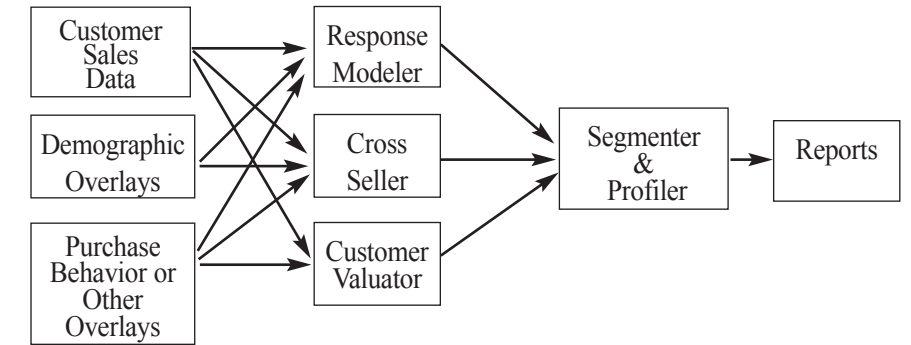
The benefits of cross sell modeling are widely recognized as the following:

- * Maximize up-sell opportunities while minimizing the higher costs of procuring new customers.
- * Generate more sales while spending the same amount, or fewer, marketing dollars.
- * Improved return on investment (ROI*) for marketing dollars.
- * Improved inventory control and supply-side management.
- * Improved customer relationships and retention.
- * Savings on communication costs (mailing, printing costs, telephone calls, etc.),

WORKING THE MODULES TOGETHER.



MFD PinPoint Segmenter and Profiler is a powerful module that can be used in conjunction with other PinPoint products.



MAKING DATA MINING WORK FOR THE MARKETER.



Marketers can use *Response Modeler* to predict likely buyers from non-buyers and then use the *Segmenter and Profiler* to compare the different tiers of predicted response. This can help you understand your customer base in order to communicate more effectively to them, as well as find more prospects like the top tiers.

Customer Valuator will then identify your most profitable customers. *Segmenter and Profiler* can help identify the attributes that differentiate them from your other customers.

This can create upsell opportunities as you target specific messages to your next tier of "best" customers to make them more profitable.

Cross Seller can then be utilized to identify likely candidates to purchase each of your products and services. Each segment can then be analyzed and profiled for maximum marketing effectiveness.

For more information on how Data Mining and Predictive Modeling can improve your direct marketing profitability contact:



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