

Database Marketing for Retailers: A Six-Step Program Using Point-of-Sale Purchase Information

*By Jim Wheaton
Principal, Wheaton Group*

*Original version of an article that appeared in The DMA's "Retail Council Newsletter,"
March 1998*

This article outlines a six-step database marketing program for driving incremental revenues and profits via purchase information captured at the point-of-sale. The article will conclude with a case study of how a \$1.5 million investment in a point-of-sale transaction database generated incremental revenue of \$207 million and incremental contribution to profit and overhead of \$23 million.

Customer Profiling – The First Step

Generally, it makes sense to begin by developing demographic and psychographic profiles of a retailer's customers. The idea is to feed this information to creative and marketing personnel so that they can begin to fine-tune promotional and merchandising strategies.

Overlay profiles offer marketers the unique opportunity to develop precise customer "portraits" using hundreds of individual, household and geographic-level data elements. Such detail is impossible with survey research. This is because the number of questions that would have to be asked would be so large that response rates would be drastically-depressed. Overlay profiles offer the additional advantage of quicker turnaround.

Two techniques are used:

- Univariate analysis offers variable-by-variable customer portraits for "age," "income," "marital status," "presence of children," and the like.
- Multivariate analysis often is more insightful. Here, statistical procedures are used to identify the combinations of variables that correspond to multiple audiences. An example will clarify the process:

Assume that the following characteristics are over-represented on an extract of diamond ring buyers: "young," "married," "affluent," and "male." It would be hazardous to conclude that the target audience is "young, married, affluent males." There just as likely could exist multiple audiences, such as:

- “Young (single) males (of various income levels)” who purchased an engagement ring.
- “Affluent couples (of various ages)” who bought a ring to commemorate an important wedding anniversary.

Customer Modeling – The Beginnings of Sophisticated Database Marketing

In the absence of a sophisticated database marketing program, retailers invariably waste fifty percent or more of their promotional dollars on contacts to unprofitable customers. Generally, segmentation is limited to crude Recency/Frequency/Monetary (“RFM”) Cells. Often, the replacement of RFM Cells with sophisticated, statistics-based predictive models frees up sufficient promotional dollars to self-fund a one-to-one differential marketing program.

Generally, two predictive models are created to rank-order customers by their predicted overall future purchase volume. One model is reserved for those customers with just one existing purchase (“single-buyers”) and a second for those with two or more existing purchases (“multi-buyers”). Among other reasons, this is done to economize on royalty charges for the use of supplemental demographic and psychographic overlay data. Here’s why:

- Single-buyers, by definition, have limited purchase information. All that exists is the recency, the order size and the product category of the solitary order, as well as miscellaneous secondary characteristics such as cash-versus-charge, and returns and exchange information. Therefore, overlay data often provide cost-effective incremental segmentation power.
- Multi-buyers, on the other hand, possess a wealth of purchase information. Therefore, overlay data provide very little incremental segmentation power; meaning, in turn, that they often are not cost-effective additions to the modeling process.

Product Affinity Analysis – Initial Progress Towards Tailored Messages

The profiling of customers and their subsequent rank-ordering by predicted overall future purchase volume is a solid start. It allows promotional and merchandising strategies to be fine-tuned. And, massive savings are achieved in promotional costs by eliminating contacts to unprofitable customers.

Nevertheless, all of this does not qualify as state-of-the-art database marketing. In order to attain such a level of sophistication, strategies must be developed to tailor the promotional message to each customer's transaction and demographic profile. Often, this process begins with a statistical technique known as product affinity analysis.

Most retailers offer a large number of SKU's, often with a broad range of price points and margins. In order to evolve towards matching the optimal promotional message to the needs of each individual customer, it is critical to understand which SKU's tend to be purchased together – either simultaneously or over time.

With this in mind, the transaction patterns of a large sample of multi-buyers are analyzed to determine the logical (positive and negative) relationships between SKU's. (Because of the inherent volatility of SKU's, it often is helpful to perform this analysis at the merchandise category level.) Using a statistical technique known as factor analysis, categories (or SKU's) are aggregated into a small but manageable number of tightly-clustered product affinity groups. These groups have the following characteristics:

- Within each, a purchase from a "member" category translates into a high probability of future purchase from that, or another, "member" category.
- Across each, purchase patterns are less consistent. In other words, many purchasers from a given affinity group will not have an inordinately-high probability of making a future purchase from any one of the remaining groups.

Product affinity analysis suggests that many customers view a retail outlet as being analogous to multiple specialty stores within a mini-mall. Customers often have strong loyalty to just a single “specialty store.” Although they periodically “visit” the remaining stores, the emotional attachment is not strong.

Product Affinity Analysis – Impetus to Multiple Specialized Predictive Models

Having identified the moral equivalent of multiple specialty stores within a mini-mall, the next step is to build corresponding specialized statistics-based predictive models. For every “store” customer, the appropriate model predicts the merchandise-specific future purchase volume.

Inevitably, this revolutionizes a retailer's promotional strategy. The single-buyer and multi-buyer overall-purchase models determine whom to promote, and the specialized “affinity” models what to promote. These affinity models drive the following types of initiatives:

- “General” sale flyers are customized for the first time. Ink-jet messages point to the specific merchandise that a given customer is most likely to purchase. Also, selective binding tailors the merchandise mix to the tastes of each customer.
- Specialty flyers are developed and targeted to the most loyal customers within a given affinity group.

- Special in-store events or standalone offers are created for the heaviest spenders within a given group. For large retailers, such a promotion can generate several million dollars in a single day off a promotional investment of less than one hundred thousand dollars.

Product Affinity Analysis – Impetus to Cross-Sell Modeling

Often, because of favorable price points and/or margins, one or two affinity groups are disproportionately lucrative to a retailer. This logically leads to the building of cross-sell predictive models to “mine” the balance of the customer database for likely-converters. The challenge, of course, is to identify that portion of customers with the highest conversion propensity. Often, supplementing historical purchase data with overlay demographics and psychographics provides a cost-effective improvement in discrimination.

Lifetime Value – Driving Promote/Do Not Promote Cross-Sell Decisions

A monetary investment must be made to convert a given customer to a highly-lucrative product affinity group. In order to determine the maximum level of investment, a lifetime (or “long-term”) value analysis must be performed on the affinity group. The results of the lifetime value analysis are then “matrixed” with the cross-sell model to determine whom to promote, as follows:

- The cross-sell model assigns a conversion probability to each customer.
- This conversion probability is multiplied by the lifetime value that will result if the conversion is successful.
- The result is the “Expected Lifetime Value” (i.e., “Cross-Sell Probability X Lifetime Value”).

A cross-sell contact is sent to every customer whose Expected Lifetime Value is higher than the cost of the contact.

The Six-Point Program – Return on Investment

One multi-billion dollar national retailer, with hundreds of outlets across the United States, pursued an aggressive program of point-of-sale transaction data to build a robust database of over eleven million active customers:

- Multiple point-of-sale data capture strategies were employed: computerized reverse telephone number lookup, credit card processing (proprietary as well as bank card), and check scanning.

- Over time, transaction-capture techniques advanced to the point that the database reflected over 90% of the retailer's multi-billion dollar annual sales volume.
- With an average order size of about \$80, detailed information on about 17 million orders and 25 million items were applied to the database each year.

Throughout an entire Fiscal Year, four test-panel promotional treatments were tracked versus a "holdout" panel that received no database-driven promotions. The holdout, of course, was exposed to all mass media such as FSI's, ROP and broadcast. These longitudinal tests were performed to determine Incremental Revenue as well as Contribution to Overhead and Profit from the database marketing program. The test panel results were then extrapolated to the full database.

For each of the four promotional treatments, the database generated estimated Incremental Revenue of between \$139.5 and 206.9 million. Corresponding Incremental Contribution ranged from \$12.9 to \$23.2 million. The cost of maintaining the database, including data hygiene, overlay data royalties, analytical research and strategic consulting, was only \$1.5 million.

Interestingly, these Incremental Revenue and Contribution numbers are understated:

- Because of the nature of the test structure, the contact strategy was suboptimal. All customers within the test panels were promoted regardless of qualification. Many customers who began the test period in marginal – but mailable – Predictive Model Segments subsequently migrated to unmailable Segments. Under normal circumstances, they would not have been promoted.
- On both the Revenue and Contribution side, the cost/benefit analysis did not take into consideration other uses of the database. Specifically, the database helped optimize FSI and ROP distribution, and assisted in store-site and merchandise placement decisions.

According to the client's intuitive estimate, the database's total annual contribution to the corporate bottom line using the best of the four promotional strategies was about \$30 million a year.

Jim Wheaton is a Principal at Wheaton Group, and can be reached at 919-969-8859 or jim.wheaton@wheatongroup.com. The firm specializes in direct marketing consulting and data mining, data quality assessment and assurance, and the delivery of cost-effective data warehouses and marts. Jim is also a Co-Founder of Data University www.datauniversity.org.