Case Study

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Applying RFM segmentation to the SilverMinds catalogue

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Abstract

This paper describes how a mail order company, SilverMinds Direct, was able to improve its revenues by over 5 per cent through better segmentation of its 250,000 customer database. RFM — recency, frequency and monetary value — segmentation was used. SilverMinds' mailing strategy was already quite efficient based on recency and frequency. This was improved by the addition of RFM scores. In addition, the RFM segmentation gave a low-cost and easy-to-use framework to find previously hidden opportunities.

This paper shows how a small company with limited analytical and statistical resources was able to extract greater value from its marketing database by RFM segmentation and analysis. The paper describes the methodology, rationale and results of SilverMinds' RFM segmentation project plus some of the other applications of the segmentation strategy. The project gave a return on investment (ROI) of over 20 times.

Keywords: RFM, recency, frequency, monetary value, segmentation, profiling

Introduction

SilverMinds Direct is a special-interest catalogue company which markets nostalgic and special-interest music (such as jazz, country, classical etc) to consumers on its 250,000-strong database. SilverMinds is a good example of the shift over the last ten years in the UK mail-order market from 'big book' agency catalogues to specialist catalogues.

SilverMinds' target market is the growing 50-plus grey market. Customer acquisition is primarily through media advertising and direct mail. The company test marketed in 1999, launched in 2000 and already has revenues of over £5m, reflecting its successful strategy. The vast majority of revenues are from the sales of CDs. In 2002 SilverMinds looked at how it could extract more value from its most valuable asset — its customer database.

Similar to many direct marketing companies, SilverMinds' revenues are mainly generated by mailings to existing customers. SilverMinds considered improving its customer database mailing performance by better data mining and statistical modelling. Reader's Digest and the lifestyle database companies have used regression and Chi-squared automatic interaction director (CHAID) for over 15 years to improve their mailing selections. But this can be expensive for smaller companies because it requires scarce analytical and statistical skills. The costs of employing this resource may be more than the derived financial benefit.

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For example, SilverMinds mails its customers with over 15 different mailings throughout the year. Therefore over 15 different regression or CHAID predictive models would have to be built, tested and analysed. It was decided that the benefit of the improved targeting might not justify the cost of the analytical work and its implementation, so a simpler route was chosen. Rather than building predictive models for each mailing, a more universal segmentation route was chosen which could be used across all mailings as well as for other applications. The costs could then be amortised across many different applications.

There are numerous types of segmentation.¹ RFM segmentation was chosen due to its simplicity and ease of use in the hope that it would deliver the required economic incremental gain or more financial benefit than cost.

How RFM works

Predicting behaviour

Past and current customer behaviour is the best predictor of future customer behaviour. This is the reason why direct marketing works. For example, customers who have purchased recently are more likely to buy again versus customers who have not purchased for some time. Customers who purchase frequently are more likely to buy again versus customers who have made just one or two purchases. Customers who have spent the most money in total are more likely to buy again. The most valuable customers tend to continue to become even more valuable. Recency is normally found to be the most predictive of the three variables, and monetary value the least.

RFM is closely related to another important direct marketing concept, lifetime value. Lifetime value is the expected net profit a customer will contribute to a business over the period of time a customer remains a customer. Because of the linkage to lifetime value, RFM techniques can be used as a proxy for the future profitability of a business. High RFM customers represent future business potential because the customers are more likely to buy again and have a high lifetime value. Low RFM customers represent less of a business opportunity and low lifetime value, and highlight that something needs to be done to increase their value.²

RFM segmentation

Methodology

One of the most straightforward RFM segmentation methods involves assigning a score of 1 to 5 for RFM to each record on the customer database. The coding used was recency 1 = over 24 months, 2 = 19–24 months, 3 = 13–18 months, 4 = 7–12 months and 5 = 0–6 months. This matched SilverMinds' existing recency bandings used for mailing selections. It was considered important not to throw away previous mailing results, but rather use the new segmentation as an enhancement to the existing selection methodology. For frequency one-time buyers were coded 1, two-time buyers 2, with up to five times plus being coded 5. Again, this simple formula could easily be transposed on to previous mailing selections. The score for monetary value was assigned by splitting the database into best 20 per cent total spend, next 20 per cent

and so on. The end result was each customer record being assigned one of 125 RFM scores from 1,1,1 to 5,5,5.³

Project development path

The following project development path was chosen to give the quickest wins and return on investment.

Project plan

- RFM score the customer database as described above.
- Analyse customer mailings to find where RFM scores would give the greatest discrimination and enhance mailing selections — for example, cut off at 3,2,4 records rather than 18 months recency.
- Enhance 1,1,1 records with variables derived from existing variables on the database — for example, type of music purchased, or customer age derived from age of music bought. A geodemographic system such as Acorn, Mosaic or Prizm could also be checked for economic incremental gain. Alternatively a predictive model based on a co-op database such as Abacus or Transactis could be tested.⁴
- Carry out RFM migration studies — for example, analyse how the 5,5,5 best customers deteriorate to see what can be done to retain their profitability. This analysis can then form the basis of future customer contact frequency decisions. Another example is tracking the development and lifetime value of direct-mail-recruited versus ‘off-the-page’-recruited customers to measure the acceptable customer acquisition costs for the different media. Typically direct-mail-recruited customers have a higher lifetime value and therefore should be given a higher allowable recruitment cost.
- Determine which activities attract high-value customers and focus on them to increase customer loyalty and profitability.

Analysis of database RFM scoring results

The 250,000 customer records on the database were RFM scored and the following results were found.

Database RFM profile

Recency versus frequency

The one-time buyers are fairly evenly spaced by recency, reflecting the steady growth of the business (Figure 1). The graph also shows that there are few customers who have bought more than twice who have not bought for over 12 or 18 months. Looking at the 0–6 months buyers, or recency = 5, there is a big drop off between one and two times buyers but a lower drop between two and three times and thereafter. Once a customer has bought twice they are more likely to stay loyal and go on to purchase three or more times. This highlights the often underestimated importance of a customer’s second purchase.

The best tactics to get a second order are to mail first-time buyers early and often. Bounce-backs and thank you letters can work well. Even thanking high-spend first-time buyers by phone can work. If a premium was used with the first order, another premium to get the second order should be tested.⁵

Figure 1: Customer counts for recency and frequency

Frequency versus monetary value

As would be expected, monetary value increases with frequency of purchase (Figure 2). The typical customer development path is that a one-time buyer starts in one of the bottom three quintiles for monetary value. This split of first-time buyers into three monetary spend levels was later found to be

Figure 2: Customer counts for frequency and monetary value

significant. The customer with their second purchase typically moves to the second highest 20 per cent monetary value. By their fourth purchase the customers are in the best 20 per cent monetary value group. Frequency is often considered to be very similar to monetary value, but this Figure demonstrates the difference between frequency and monetary value. It also highlights that there is additional useful information to be gained by using total monetary spend as well as frequency.

Recency versus monetary value

Figure 3 shows a distinct polarisation in the customer database. The highest total spend customers tend to be the most recent, and conversely lowest-spend customers the least recent. There are few over-24-month high-value customers ($R = 1, M = 5$). Similarly there are relatively few low-value most recent customers ($R = 5, M = 1$). High monetary spend implies a recent purchase or greater mail responsiveness. The mailing analysis and results later validated this finding. It was found that borderline mailing selections could be improved by only mailing the higher-spend customers.

RFM scoring mailing results

The RFM segmentation was analysed by a *post hoc* method. SilverMinds' computer bureau DataXpress RFM coded a number of the monthly customer mailings and the responses. SilverMinds' existing mailing segmentation was already quite efficient based on recency and frequency. Each mailing would typically involve over a dozen different manual selections. For example, a selection might be customers who had bought 18–24 months ago and had bought over three times.

With 250,000 customers on the database each of the 125 RFM codes or

Mailing response profile

Figure 3: Customer counts for recency and monetary value

High spend gave good response

cells contained an average of 2,000 customers. When analysing the smaller volume of responses to a mailing many of the RFM codes had less than 40 responses in each cell. These results were treated with caution due to their statistical unreliability. But if the results were combined with other RFM codes — for example, results for RFM codes 1,1,1 to 1,1,5 were collapsed or combined together — then the statistical reliability became less of an issue. By looking at each RFM dimension one at a time, the statistical significance of even small samples could be enhanced to a reasonably robust and reliable level.

A clear pattern emerged from the analysis. The response was much better for the RFM cells where the monetary spend was high. An explanation for this for first-time buyers could be that high-spend buyers were more committed or had been direct mail recruited or both. The important thing is that the RFM analysis enabled this to be discovered easily. Analysis of the mailing showed that if the worst-performing 15 per cent of the mailing or 20,000 records were not mailed and the next best 20,000 records which did not fall into the original mailing selection were mailed in their place this would result in about £25,000 more sales. The RFM codes to be dropped from the mailing selections were records just inside the previous mailing recency and frequency criteria which were in the bottom money cells. Similarly, the RFM codes to be added to the mailing selection were just outside the recency and frequency criteria and in the top money cells.

It is worth noting that up to this point nothing had actually been done except analysing the RFM coding of the database and mailing results. Simple use of Excel had enabled data exploration to uncover potential value in the customer database. This demonstrates how profiling and data analysis can enable a lot of learning relatively quickly and for little cost.

Mailing results

Validation

The analysis results were validated by initially mailing 50 per cent of the additional selections based on RFM scores and omitting 50 per cent of the RFM codes to be dropped. The results were close to those projected: the RFM selections gave a median result, half of the other selections were better and half worse.

Limitations of RFM

RFM does not tell one about the profitability, the potential of a customer or prospect and to what offer or communications the customer responded.

Most database analysis suffers from the inherent weakness that one does not know what one does not know. It is only possible to analyse the variables on the database, and they are not necessarily the most pertinent or relevant ones. Database marketers tend to overuse demographic and RFM or transactional/behavioural segmentation because the data are available. These variables then become the answer to everything. In other words, 'if you only have a hammer, everything looks like a nail'.

Demographics and behaviour, including RFM, account for perhaps 40–60 per cent of the reason why someone purchases a particular product or service. Demographics can tell, for example, that a person can afford to

**Importance of
market research**

buy a product or is in the right age group to remember a particular musician. The rest of the purchasing equation is driven by the buyer's attitudes, motivations and needs. While the customer database can give maybe up to half of the customer attitudes and needs profile — for example five-year-plus customers are brand loyal — further research is required truly to understand and define what is really going on.⁶

Conclusions

RFM is low cost . . .

By RFM coding the customer database a greater understanding of the SilverMinds' database was gained. RFM segmentation is a relatively cost-effective, quick and easy-to-use way to improve analysis and profiling of a customer database. RFM is a good 'lens' through which to analyse a database, and it can help discover a lot of useful, previously hidden knowledge and potential in the database.

The RFM coding could be used to enhance and refine mailing selections without having to throw away previous results and learning, thereby squeezing more value from the customer database through greater discrimination of selections, giving better control of campaigns.

RFM segmentation helps give an understanding of who are the best customers in the database, what behaviours they exhibit that make them the best customers and what behaviours the worst customers exhibit. Once this is known, it is possible to plan a strategy for getting more best customers and avoiding the worst.

A good segmentation strategy can provide a framework for the organisation to make more money by improving customer acquisition, retention, up-selling and cross-selling activities. Different types of customers can be managed differently across the various company customer touchpoints and through the customer life cycle. This enables allocation of different resources and investment levels to different customer segments so as to deliver superior value to distinct groups of customers.

. . . and high return

Because RFM segmentation is relatively straightforward to implement but fairly universal in its potential application, it can grow and develop with the company's needs. This case study demonstrates the benefits and ROI simple RFM segmentation can generate.

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