**RFM or propensity score – which wins out?**

RFM, or ‘recency frequency monetary value’ to give it its full name, has long been the targeting tool of choice for the home shopping industry; so we decided to give it a challenge by building as an alternative a propensity model using exactly the same data set.

An RFM score will describe the overall strength of the relationship between a business and a customer, but the question is whether we can improve on that by building a propensity score targeted at a specific purchase activity or category.

A great advantage of RFM scores is that because they are not proposition specific, they can be used across a wide range of applications; however, if the scale of any actual marketing selection is substantial enough, then the extra resource required to build the propensity score may be justified.

In addition, a propensity model can take into account not only RFM based information, but also things like age, gender and other demographic information that might be available on customers.

In this example we are dealing with data from a home shopping company with over 1m customers, and a large number of merchandise categories. We first used cluster analysis to group the merchandise categories into six high level merchandise groups.

The RFM score was then built on customers buying across all six merchandise groups whereas the propensity model was developed for one specific group. We used those who had purchased from the specific merchandise group in the previous three months as the target variable.

In order to compare the two targeting approaches, we selected deciles within the customer base by each method, and then looked at the proportion of actual buyers that we found within each decile.

|  |  |  |
| --- | --- | --- |
| **RFM segment/Model Decile** | **RFM segmentation** | **Targeted model** |
| 1 | 4.9% | 7.3% |
| 2 | 3.8% | 5.2% |
| 3 | 2.9% | 4.0% |
| 4 | 2.5% | 3.1% |
| 5 | 2.2% | 2.5% |
| 6 | 1.9% | 1.9% |
| 7 | 1.6% | 1.5% |
| 8 | 1.2% | 1.1% |
| 9 | 1.0% | 0.7% |
| 10 | 0.8% | 0.4% |

*This chart shows the percentage of buyers found in each decile of the customer base*

In reality most home shopping companies will only select the top one or two deciles for campaigns, and for this example the benefit of using a propensity model over an RFM is 49% for the top decile, and 43% for the top two deciles combined.

Another way of looking at the impact of different model techniques is to build a Gains Chart; this gives a graphical illustration of the difference between the two techniques.

*A Gains Chart showing the difference in response % between a propensity model and RFM for each decile*

Our conclusion is that where you have sufficient mailing volume to justify the not great cost of building a propensity model, then that is usually the right route to adopt.

To put all this into a commercial context, we have built a table below to show the difference in net value obtained from using propensity model scoring versus RFM, on different sizes of file. It appears that if the overall customer file from which the selections are made is 50,000 or more than the cost of the propensity model may be well justified.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Propensity** | Volume | Cost | Response | Orders | Av. order margin | Orders value |
| Decile 1 | 1000 | 750 | 7.3% | 73 | £25 | £1,825 |
| Decile 2 | 1000 | 750 | 5.2% | 52 | £25 | £1,300 |
| Totals | 2000 | 1500 |  | 125 |  | £3,125 |
|  |  |  |  |  |  |  |
| **RFM** | Volume | Cost | Response | Orders | Av. order margin | Orders value |
| Decile 1 | 1000 | 750 | 4.9% | 49 | £25 | £1,225 |
| Decile 2 | 1000 | 750 | 3.8% | 38 | £25 | £950 |
| Totals | 2000 | 1500 |  | 87 |  | £2,175 |
|  |  |  |  |  |  |  |
| **Propensity** | Volume | Cost | Response | Orders | Av. order margin | Orders value |
| Decile 1 | 5000 | 750 | 7.3% | 365 | £25 | £9,125 |
| Decile 2 | 5000 | 750 | 5.2% | 260 | £25 | £6,500 |
| Totals | 10000 | 1500 |  | 625 |  | £15,625 |
|  |  |  |  |  |  |  |
| **RFM** | Volume | Cost | Response | Orders | Av. order margin | Orders value |
| Decile 1 | 5000 | 750 | 4.9% | 245 | £25 | £6,125 |
| Decile 2 | 5000 | 750 | 3.8% | 190 | £25 | £4,750 |
| Totals | 10000 | 1500 |  | 435 |  | £10,875 |
|  |  |  |  |  |  |  |
| **Propensity** | Volume | Cost | Response | Orders | Av. order margin | Orders value |
| Decile 1 | 10000 | 750 | 7.3% | 730 | £25 | £18,250 |
| Decile 2 | 10000 | 750 | 5.2% | 520 | £25 | £13,000 |
| Totals | 20000 | 1500 |  | 1250 |  | £31,250 |
|  |  |  |  |  |  |  |
| **RFM** | Volume | Cost | Response | Orders | Av. order margin | Orders value |
| Decile 1 | 10000 | 750 | 4.9% | 490 | £25 | £12,250 |
| Decile 2 | 10000 | 750 | 3.8% | 380 | £25 | £9,500 |
| Totals | 20000 | 1500 |  | 870 |  | £21,750 |

*A chart to show the net order values obtained when using Propensity or RFM targeting techniques*