“turning data into dollars”

Tom’s Ten Data Tips – October 2007

Segmentation

Segmentation refers to the process of cutting up a heterogeneous population in chunks that themselves are considered to be more or less homogenous. The purpose is to identify subgroups who display similar behaviors and have similar needs. This makes the market more transparent and allows for a differentiated strategy per segment.

1. Use Segments For Treatments And Models For Targeting

Sometimes customer segments are used to enhance the targeting of a direct marketing campaign. This is bad practice! Since (in general) communication can easily be varied on a customer-by-customer basis, there is little point in lumping all customers within a segment together in a single target group. Data mining models are much better suited for this, and will therefore lead to higher response rates. A model decides *per case* who should get an offer and who not. Making this decision per segment is too crude.

2. Segmentation Can Be Externally Or Internally Driven

Although we generally use the word segmentation to mean market segmentation, this doesn’t hide the fact that many segmentations are internally driven rather than strictly market driven. And there is nothing wrong with that.

For management purposes, it can make a lot of sense to choose an organizational structure that relates to observed characteristics of the market (=segmentation). Of course this isn’t a strictly *customer* focused segmentation. In such cases the drive for the segmentation comes from the inside (organizational needs) rather than the outside (market and/or customer needs). This could imply separate BU’s for high value, low value, and maybe new customers, for instance.

3. Analytic Segmentation Provides A Better ‘Fit’

In many cases, segmentations are ‘designed’ by the business. We commonly call this “a priori” segmentation where a set of rules are issued by the business to create segments. This makes segment boundaries transparent and clear cut (see also tip# 4). The drawback

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invariably is that after the segmentation has been implemented, some customers wind up getting 'the wrong' treatment (and such discoveries keep getting made). Then exception rules for these cases are added to the (a priori) segmentation model, etc., ad infinitum.

If, on the other hand, the segmentation was devised by analytic means (like hierarchical clustering, K-means, etc.) there is a "natural" fit between the data and discovered segments. There will be much fewer amendments needed to the model. The downside here is that the segmentation *model* as a set of rules to allocate customers to segments might be less transparent and less intuitive. Also, "scoring" the model (allocating customers to segments) can pose more of an IT challenge. The fundamental reason for these distinctions is that a priori models are usually too simple and crude, given the "naturally" occurring complexities in the data.

4. Segments *Can* Overlap

Depending on the analytical techniques used or the a priori rules that have been designed, it is possible to have either *mutually exclusive* or *overlapping* segments. Techniques like Latent Class Analysis (LCA) *by nature* produce "overlapping" segments where one customer can belong to multiple segments. Both kinds of segmentations can be used successfully, although mutually exclusive segmentation tend to be slightly more transparent and intuitive to non-technical business people.

5. Clustering Works Bottom-Up, Decision Trees Work Top-Down

Principally, there are two ways to create segments by means of analytics: bottom-up or top-down. In a bottom-up approach, a single record is the starting point (also called "the seed"), and from there on similar records are merged with it to form clusters, or segments if you will. In a top-down approach, the entire population is split into subgroups by dividing and subdividing the group as a whole.

Examples of analytical techniques that can be used for a bottom-up approach are K-means clustering (e.g.: SAS FASTCLUS), or methods of case-based reasoning (CBR). Examples of top-down techniques are decision trees (newsletter July 2008), or hierarchical clustering.

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6. There Exists *No* Optimal Number Of Segments

One of the characteristics of segmentation is that there is no objective criterion to determine what constitutes exactly 'the right' number of clusters or segments. For clustering approaches like K-means there is simply no loss function to minimize so that one can set an 'optimal' number of segments.

From a business perspective, there is clearly a need to keep the number of segments tractable and actionable – too many segments simply make the process unwieldy. But except for keeping the number of segments limited, there is no ideal or best number. So neither from a statistical, nor from a business perspective can we know how many segments to choose.

7. Segments 'Deserve' Appropriate Naming

Regardless of whether an a priori or analytical segmentation was used, it is good practice to append elaborate profiling/descriptives to each segment. This will foster understanding and buy-in for the segmentation. Finding "appropriate" names and descriptions is laborious and largely creative work.

Nowadays organizations are obliged to disclose this kind of information when requested by the consumer. In light of this, 'considerate' naming should be chosen. A segment by the name of "Urban Spendthrifts" or "Homely Loners" might not be deemed a compliment by the subject. Not just because of the requirement of disclosure, but also because of priming of front-line staff you are better of picking more appropriate names.

8. Distinguish Demographic, Psychographic (Attitudinal), And Behavioral Segmentation

You can imagine a sliding scale running from static to dynamic segmentations. Demographic segmentations are most static and "fixed". Slightly less static would be psychographic or lifestyle segmentations. These are still rather static, albeit more based on attitudes and stated preferences rather than more or less fixed characteristics that make up demographic segmentations. The least stable are behavioral segmentations where aspects like product & service usage, loyalty, and profitability are taken into account.

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9. Mass Customization Is An Extension Of Segmentation

The internet and new information capabilities have reduced the distance between buyers and sellers, between customers and suppliers. Many traditional boundaries that historically would fence off markets have broken down. Both in terms of geography and in terms of layers in between manufacturers, distributors, wholesalers and retailers. All this has increased competitive pressures, simply because consumers have more (and better!) purchasing options.

Markets have responded by segmenting, and segments themselves are getting smaller and smaller. This extends towards micro segments and individual offerings. One of the trends in this flow is a move towards mass customization. The term was introduced by Davis in 1987 (Stan Davis – Future Perfect), he referred to it as a situation "when the same large number of customers can be reached as in mass markets of the industrial economy and simultaneously they can be treated individually as in the customized markets of pre-industrial economies." The topic of mass-customization could *itself* easily fill an entire newsletter.

10. Segmentation Can Serve Many Purposes

The topic "segmentation" merits many slants, depending on the objective it serves. It can serve an organizational purpose (see tip# 2) to align the internal organizational structure with the market structure.

More often, segmentation applies to matching an offer to demand in the market place. This could be for better product (development) planning and forecasting at the aggregate level. At the individual level, a segmented model can be used to optimize: different models or model types per segment and hence better overall prediction. It might be counter intuitive, btw, that the individual, segment specific models tend to have lower lift than a model for the entire population, yet together they outperform the single model. In these latter cases, segmentation is used to ensure better fulfillment of customer needs.

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