Point of View

Facing Reality with New Line Optimization Techniques

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Line Extensions Gone Wild

A well-known, global confectioner recently tried to build upon its core brand by extending into a variety of new flavors, healthy formulas and holiday versions. The results were disastrous. The company introduced too many varieties in too short a period of time and flooded the market. Retailers did not have enough space to stock all of the varieties, and became increasingly wary when the items they did stock did not move off the shelves. Most of the varieties were not well-received by consumers who, dissatisfied with their foray into a new variety, were not interested in trying yet another new variety. Sales for the confectioner dropped nearly 20% within two years and the company was forced to pay for some of the unsold goods that did not move off retail shelves. The company eventually abandoned most of the new varieties and has since followed a more modest line extension approach.

The confectioner spotlighted above followed a popular strategy among consumer packaged goods companies around the world: extend your most successful brands into new flavors, scents, and styles. Since the brands are popular already, companies endeavor to build upon their success by offering consumers more of the same in new varieties. After all, consumers are more likely to try new versions of familiar products than change their habits.[1] This logic, along with the increasing trend of retailers like Wal-Mart to stock only brands proven to be best-sellers, makes line extending a smart business move – when it is done correctly.

Before developing line extensions, companies need to consider three realities:

- **Corporate Realities...**There is a finite number of different items a company can feasibly manufacture, and there are only certain varieties that it will realistically be able to bring to market. Given these constraints, what is the optimum number of items a company should produce for a given product line, and which particular items?
- **Retailer Realities...**How many varieties will retailers stock? The reality is that the full product line will not always be available to the shopper – either because of stock outages or some retailers just not carrying the complete line. According to the GMA Direct Store Delivery Out-of-Stock Study [2002], consumers cannot find the products they want 7.4% of the time they shop. The more successful a product, the more likelihood of stock outages: According to the GMA study, the top 10% of the fastest moving items account for 45% of the out-of-stock products.
- **Consumer Realities...**Which varieties will have the greatest consumer appeal? Beyond appeal, savvy marketers are increasingly interested in which varieties in a line will be complements for one another versus substitutes. Historically, product lines were developed to offer variety to consumers. All of the items in the line were substitutes in that they each met the same consumer need but catered to different tastes and preferences in an effort to reach the broadest audience. Companies are now also seeking ways to meet different need states by extending consumer usage of their lines, especially for brands that have achieved their maximum reach potential. Extending consumer usage of a line increases revenue potential: If a line is expanded from three flavors to five flavors, the consumer will still buy X number of items per month because the flavors are all substitutable. However, if the company is able to define new consumer usage occasions for the line (such as eating breakfast on-the-go instead of at home), consumers might buy X + Y items per month because the line includes complementary items (at-home breakfast items and on-the-go breakfast items), not just substitutes.

Drawbacks of the Traditional TURF Approach

To meet the corporate, retailer and consumer challenges described above, marketers are seeking better line optimization solutions. The marketing research standard for addressing line optimization has been TURF,[2] which attempts to optimize a line by maximizing the number of consumers who would find their favorite items in the line. Although TURF is very good at guiding the manufacturer on the optimum *number* of items a line should include to reach the maximum target audience, it is less successful at providing definitive results as to *which* items to include in the line. Moreover, TURF falls short in uncovering what would happen to potentially interested consumers if one or more of the optimum items in the line were not in stock.

[1] Harry Balzer as referenced in "Consumers Want 'Familiar' New Products." Heller, L. July, 2006. Accessed at http://www.foodnavigator-usa.com/news/ng.asp?n=69295-npd-convenience

[2] TURF is an abbreviation for Total Unduplicated Reach and Frequency

In an attempt to improve TURF's ability to discriminate between lineups, some research approaches use purchase frequency to supplement the TURF data. These methods assume that consumers can truly gauge the frequency with which they buy specific SKUs within a line. However, we have learned through R&D conducted by Ipsos that although consumers are pretty good at estimating category level purchase frequency, and possibly brand purchase frequency, estimates of SKU purchase frequency are often over-stated, especially if the items are substitutes for each other. Therefore, asking purchase frequency often adds noise to the data – a lot of random error – rather than real discrimination. Furthermore, purchase frequency data at the SKU level often mirrors purchase intent scores: the higher performing SKUs are more likely to have the highest claimed purchase frequency. Thus, asking purchase frequency and purchase intent can be redundant. To the extent that real differences in purchase frequency are observed across SKUs, there is usually an underlying reason driving the difference – most likely a difference in usage. The bottom line is that using purchase frequency to discriminate between lineup alternatives can be misleading. Additional tools are needed to provide better discrimination and identify potential differences in usage.

Line Evolution®: Advanced Line Optimization that Confronts New Realities

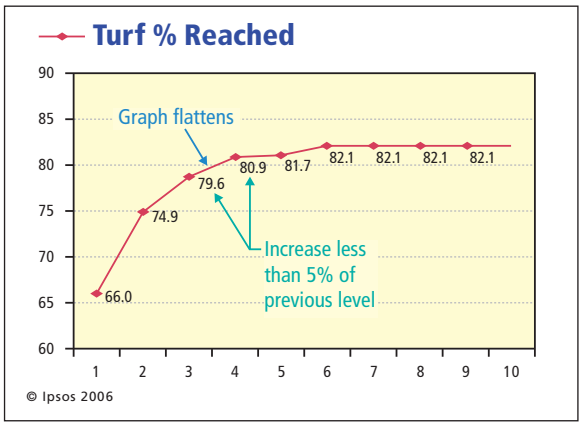
In response to the need for more refined and comprehensive solutions to line optimization, Ipsos developed the *Line Evolution®* line optimization methodology. *Line Evolution* utilizes more sophisticated techniques than TURF that better address corporate realities, retailer realities and consumer realities.

The Corporate Challenge: Identifying the Optimal Line Composition

Ipsos' *Line Evolution* improves line optimization by integrating Shapley Value into the TURF analysis. Shapley Value uses mathematical game theory to evaluate the effectiveness of alternative combinations of possible line items. Shapley Value is leveraged to optimize product lines and results in more actionable results than using TURF as a standalone technique or TURF in combination with purchase frequency.

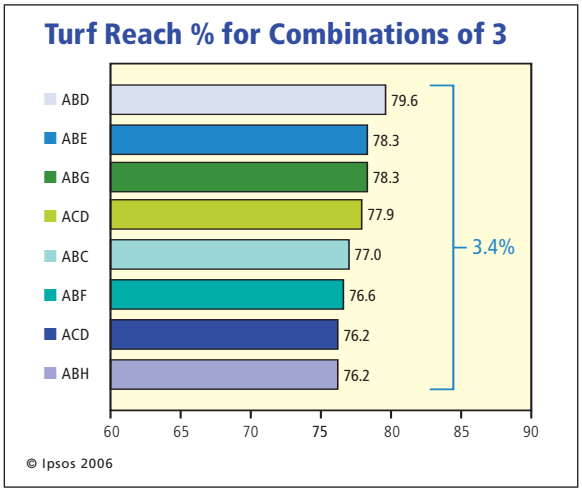
Consider the example shown in *Figure 1*. Suppose the manufacturer is trying to determine the optimal line length when ten varieties are available. Using TURF, it appears that reach is maximized by offering a three-item line. This is the point at which the graph in *Figure 1* starts to flatten, with increases in reach of less than 5% between a three-item line versus a four-item line. TURF is effective at pointing toward the best line length.

Figure 1



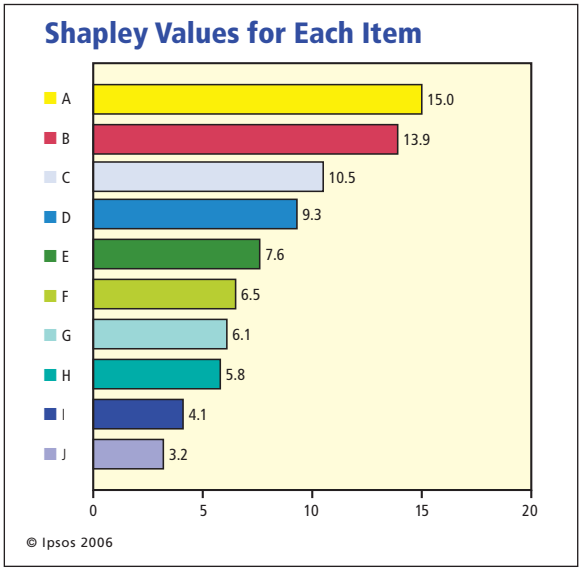
However, TURF falls short when trying to discern which would be the best combination of three items. Consider the example displayed in *Figure 2:* Reach scores for the top eight combinations of three items are closely grouped and there is little discrimination between the lines. The range in reach between the top combination, ABD, and the bottom combination, ABH, is only 3.4%. Clearly, TURF is not providing clear direction on which of these would be the optimal lineup.

Figure 2



However, with Shapley Value analysis, each item is assigned a Shapley Value indicating the potential value of that item over all the possible combinations. This analytical tool calculates the average difference between reach for all item combinations that include a particular item versus item combinations that do not include a particular item. The higher the Shapley Value, the more important that item is to the lineup. Furthermore, Shapley Value scores are ratio-scaled so that it is easy to identify how much more important one item is to the line than another item. In the example below *(Figure 3),* the manufacturer can have confidence that ABC or ABD would be the best three-item lineup and that inclusion of item B would add more than twice the value of item F.

Figure 3



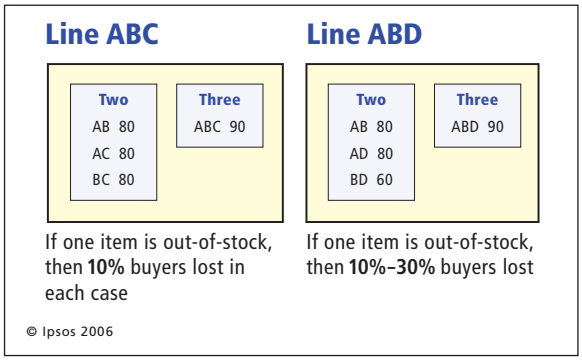
Thus, Shapley Value provides better differentiation among potential line configurations than TURF, thereby providing more actionable results.

The Retailer Challenge: Compensating for Items Out-of-Stock

Shapley Value analysis also evaluates the impact of a given variety that is out-of-stock or not in distribution at a retailer. Consider the example in *Figure 4* below, which describes two alternative lines of three items: ABC vs. ABD. In both of these lines, the reach of a three-item line is 90%. However, note that in line ABC, the reach for any two combinations is 80% whereas in line ABD reach drops to 60% if only BD is stocked. Clearly, item A is more integral to the ABD line than to the ABC line. Thus, in the ABC lineup, the maximum reach loss is 10% if one item is out-of-stock. But for ABD, 10% to 30% of reach can be lost if one item is out-of-stock.

Because Shapley Value provides a score that measures the average contribution to reach of each variant in the lineup, whether the line consists of 2, 3, 4 or even 10 items, *Line Evolution* provides better guidance at maximizing reach regardless of whether out-of-stock is due to the retailer not stocking the full line or due to temporary inventory depletion. This is an important consideration given that at the time of launch the manufacturer does not know which items a particular retailer will choose to slot. A retailer might choose to slot only three items from a five-item lineup. *Line Evolution* will help to guide which three out of the five items would maximize turnover.

Figure 4



The Consumer Challenge: Offering Complementary Items to Meet Different Need States

Configuring a product line with the goal of appealing to the broadest range of consumers is not always the best strategy. Striving for *depth of usage* is also important. Depth of usage is a means to drive multi-item purchasing within the brand to satisfy variety-seeking consumers as well as to satisfy consumers with different need states. Need states are reasons why consumers use a particular product and are usually – but not always – tied to a usage occasion.

Including substitutes in a line (for example, different flavors of the same product) satisfies variety-seeking, while including complements in a line satisfies different need states. With complementary items in a line, consumers may buy more than one item for different need states or usage occasions. Successful line optimization creates the correct balance of substitutes and complements based on need states.

Consider, for example, a line of Mexican salsa products. Salsa can be used for multiple occasions: as a dip when having company, as a condiment with a meal, or as an ingredient in a recipe, to name a few. Will one salsa product fit all these occasions? Or is there an opportunity to extend the line based on occasion?

Ipsos Marketing incorporates need states and usage occasions into their line optimization model. Looking at a different set of ten items, TURF is initially used to identify the point at which reach starts to max out: at about a four-item line *(Figure 5a).* However, digging a bit deeper by looking via TURF at reach within occasions *(Figure 5b),* we see that using the same guideline mentioned earlier of seeking a 5% change in reach before adding in an additional item, reach can be expanded to a five- or six-item line because usage of the items in the line varies by usage occasion. It is important to note that the success of occasions-based line optimization is impacted by the prior in-depth delineation of actual or potential usage occasions for the product.

Figure 5a

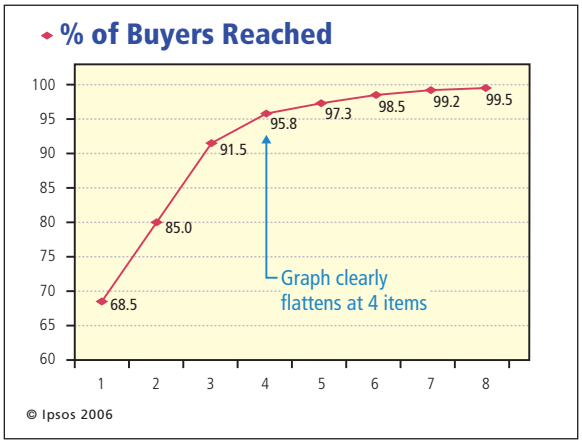
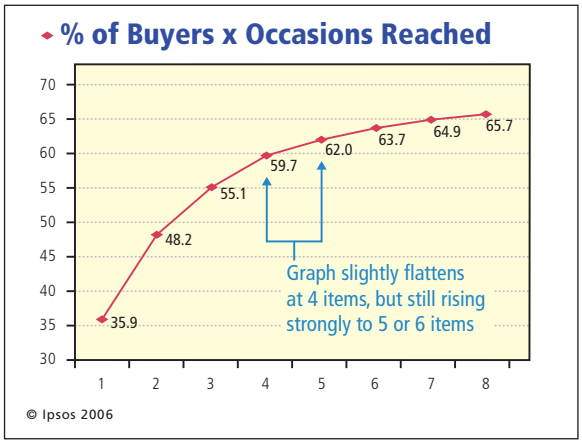


Figure 5b

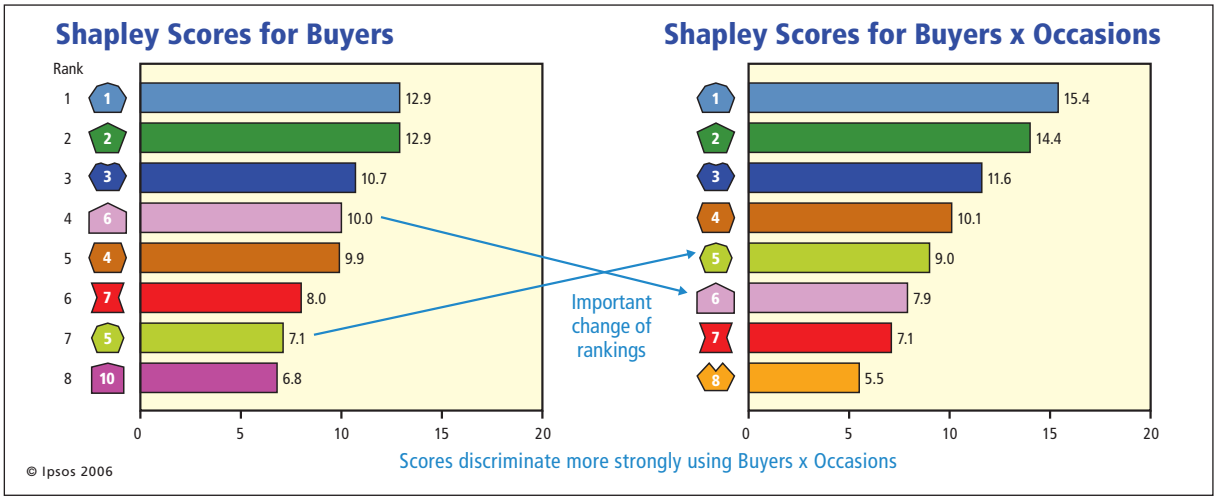


The next question is: which items are the optimal five to include in the line?

Looking at the top-ranked eight varieties, *Figure 6a* indicates that when only buyers – and not occasions – are taken into account, the optimal line consists of items 1, 2, 3, 4 and 6. However, when occasions are factored the analysis *(Figure 6b),* the optimal line comprises items 1, 2, 3, 4 and 5. Item 6 swaps out and item 5 swaps in. Thus, item 5 will reach a broader range of buyer-occasions than will item 6.

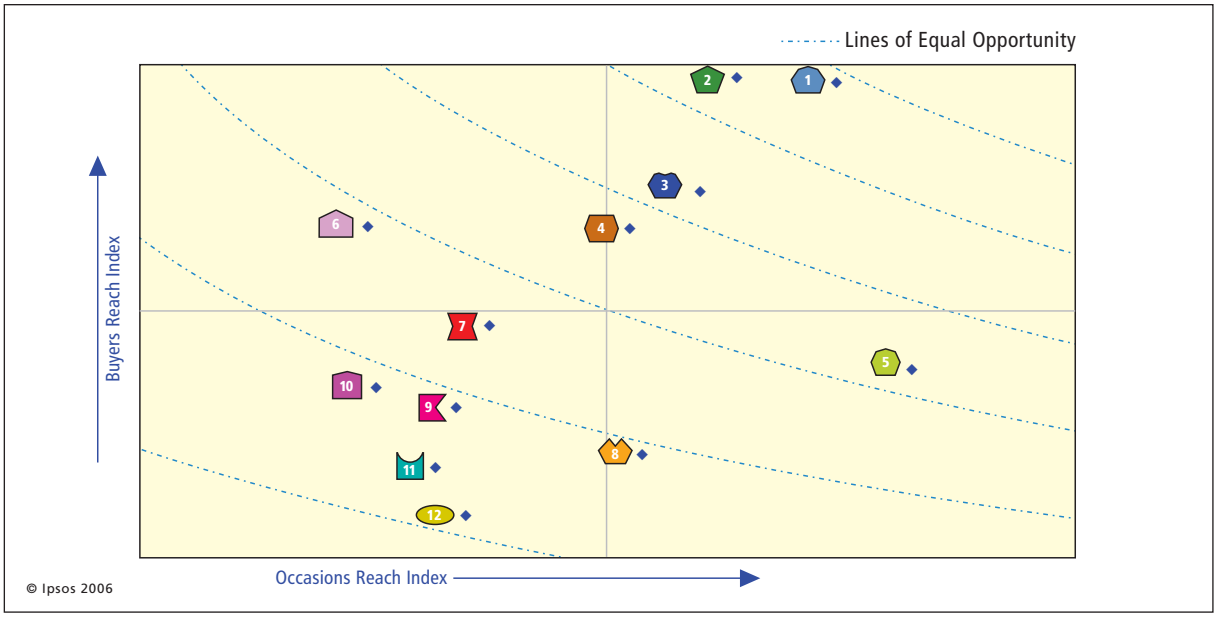
Figure 6a

Figure 6b



This is seen even more clearly in the Total Potential Map *(Figure 7).* This map shows each item's contribution in terms of both buyer (vertical axis) and occasion (horizontal access) reach. The dashed isobar lines represent lines of equal opportunity, such that as an item moves up and to the right, its ability to fulfill more buyer occasions increases. We see here how item 5 strongly extends usage of the lineup, whereas item 6, though somewhat higher in terms of reaching buyers, is weaker on reaching alternative usage occasions. We clearly see that items 1–5 achieve higher placement in terms of the lines of opportunity versus items 6–12 and thus maximize reach across both buyers and occasions.

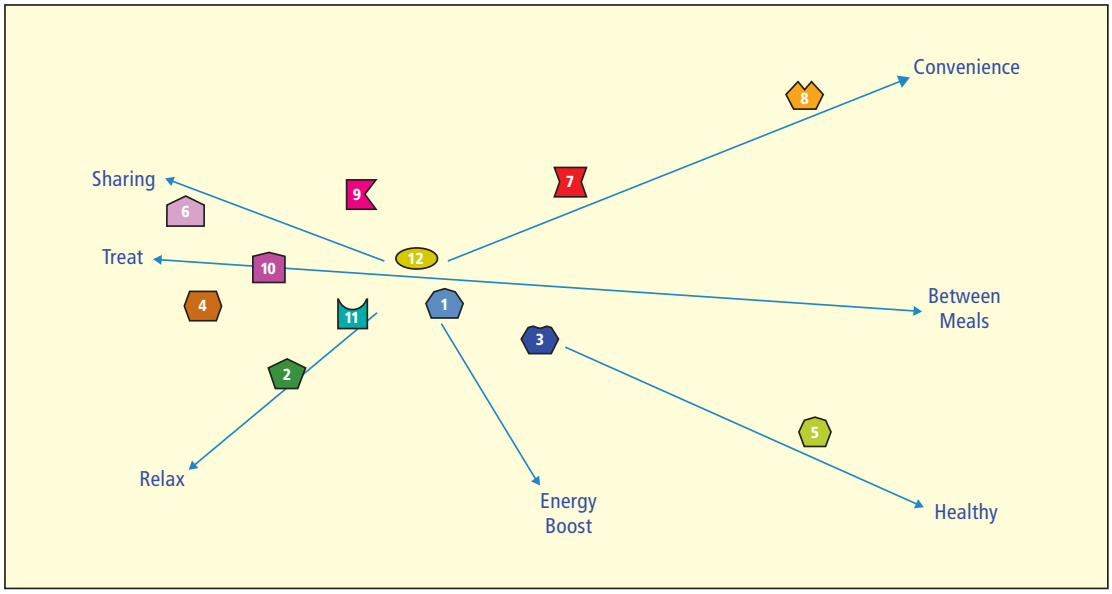
Figure 7



Looking at *Figure 8,* which positions each item against the various usage opportunities, we see why it is preferable to include item 5 instead of item 6 in the lineup. We see that item 5 is strongly positioned against a "healthy" usage occasion. No other item in the lineup occupies this space. In contrast, item 6 fulfills "treat" occasions, but item 4 does as well. Therefore, as the manufacturer seeks retail distribution, stocking items 4 and 6 would help to minimize loss of consumer reach if either were out-of-stock; however, offering item 5 in place of item 6 would extend the "buyer occasion reach" or revenue potential of the brand (all else being equal) because item 5 fulfills a need not filled by any other item.

Figure 8

Map of Occasions Positioning



Line Evolution®: Bringing Line Optimization to the Next Level

Ipsos' *Line Evolution* methodology provides a superior solution to line optimization for new product introductions and line extensions. By using advanced statistical techniques, *Line Evolution* provides the information needed to make critical decisions about:

- The number of items to include in a product line to maximize reach.
- Which specific items to include in a line to provide the best reach.
- Which line configurations best protect against out-of-stock situations.
- Which items to add, retain or drop from an existing range.
- Which items will increase revenue potential by extending a line's usage occasion potential.

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