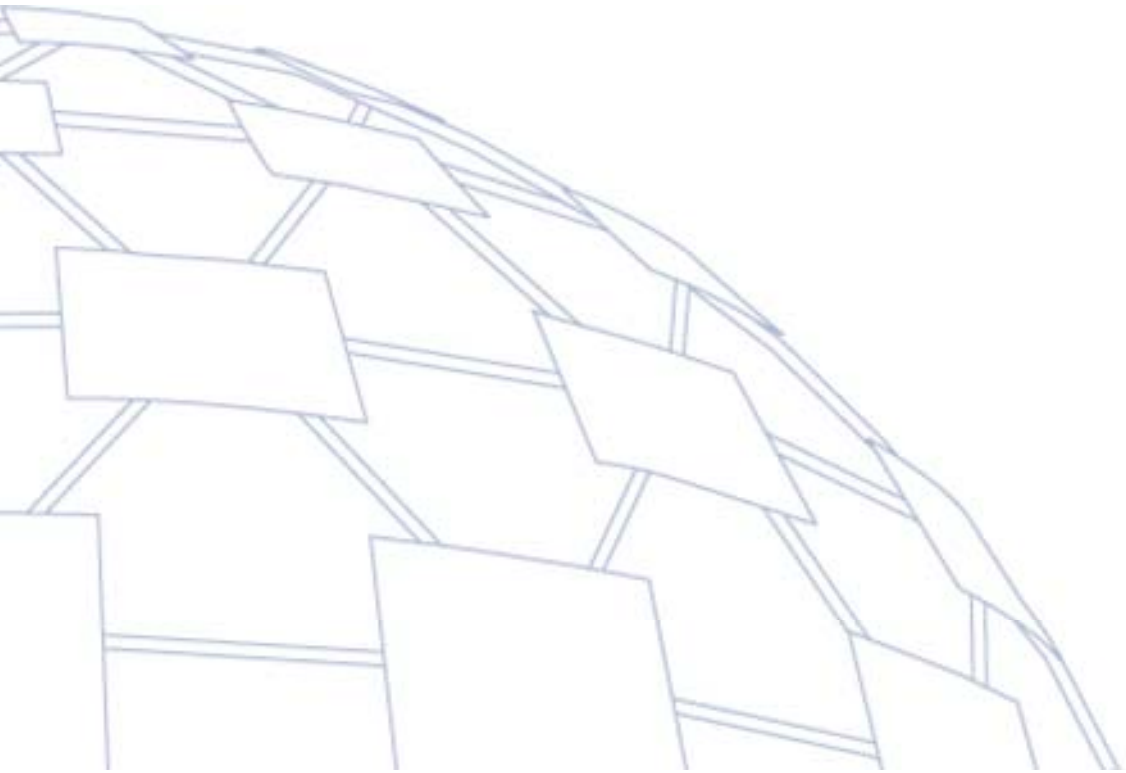
DemandTec White Paper

Science Meets Assortment Optimization: Tune the Mix to Local Demand

April 2009



Science Meets Assortment Optimization: Tune the Mix to Local Demand

Retailers are continually challenged to provide a high level of variety that is attractive to shoppers while simultaneously optimizing space productivity. This leads inevitably to the question, "How much variety is enough?"

This equation is made more complex when retailers also strive to tailor merchandising to variations in local demand and to target specific shopper segments. Armed with insights about consumer demand, retailers discover that one assortment no longer fits all stores and they redefine their category objectives by store and store-cluster. This leads to a second key question: "What is the right assortment for the shoppers who shop in this store?"

Retail innovation efforts are leading us toward new solutions for shoppers, new categories, and new disciplines for "macro" space management (aka "master store planning"). Mastering these capabilities begins with attaining an understanding of transferable demand and its linkage to space planning. The right space for each store – and for that matter the right prices – cannot be accurately determined without understanding the implications to the assortment.

This white paper offers a fresh take on the familiar "variety versus duplication" challenge and outlines a vastly improved assortment planning methodology from DemandTec. We will begin with a brief situation review, discuss the principles of customer-centric assortment management, and finally provide an overview of DemandTec's Assortment Optimization software service.

Situation: Inherent Conflicts Act as Barriers to Improvement

Most successful retailers share the objective of creating the most effective merchandising environment possible within each of their stores. They take steps to ensure objectivity, leverage proprietary data, and reduce dependency on trading partners. They are building internal assortment expertise and are assuming greater responsibility for the process. Retailers also seek to maximize organizational efficiency. They see benefit in employing advanced analytics, adopting a more consistent, standardized approach, and at times, leveraging manufacturer resources to get it done.

It is in manufacturers' interests to get closer to the consumer. This implies assortment analysis performed by account teams with local knowledge. But manufacturers also have a drive to maximize organizational efficiency, which leads them to try to streamline skill sets, and establish Subject Matter Expert (SME) groups. This approach would imply assortment analysis performed by a centralized group with advanced capabilities.

Ultimately, advanced analytical solutions for assortment management must be easily adopted by all potential user groups. It behooves retailers to adopt a consistent approach throughout the organization and identify "balance" between manufacturer assistance and complete delegation. Collaboration is required, but abdication of control is not.

Introducing Customer-Centric Assortment Optimization

Traditionally the assortment management process has come down to ranking items within a category by their movement statistics and eliminating the slowest-moving or least productive items at the bottom of the list. The category manager applies a certain degree of professional judgment and experience to preserve key "image" or niche items near the bottom of the list, but there is seldom a discipline around understanding exactly how shoppers will respond when items are eliminated.

A newer, more empirical approach begins with attaining an understanding of transferable demand by creating an analytical model. This approach is distinguished by three traits: 1) its focus on variety versus duplication, 2) the determination of each item's incremental contribution to category sales and profit; and 3) the replacement or elimination of the least incremental items.

Within the analytical model, an item's incrementality may be determined based on the number of like choices – items that are very similar or interchangeable in the mind of the shopper. An item with many like alternatives is by definition less incremental. In contrast, an item with few like alternatives is almost always more incremental.

To gain insight into an item's incrementality, the assortment optimization process leverages three key dimensions: consumer decision trees, incrementality curves, and optimization.

The Consumer Decision Tree (CDT), a familiar concept for Category Management professionals, describes the way consumers decide to purchase particular SKUs within the category and their switching behavior between SKUs. To develop a CDT, experts examine loyalty or panel data, analyzing consumer choice and switching behavior. They employ statistical cluster analysis to create product groupings and identify common attributes to define product segments and sub-segments.

Incrementality Curves result from the application of demand modeling science. The primary inputs are SKU counts and demand data. Then log-linear regression is used to quantify transferable demand between product segments and sub-segments. These may be developed for unique shopper segments as defined by either the retailer's or brand's segmentation scheme.

Optimization goals are established for incremental sales, profit, SKU counts, linear feet, etc. These will be subject to objectives and constraints defined by the retailer's strategy and role for the category, shopper segment, and/or store cluster.

Consumer decision trees and the product incrementality curves feed into the optimization process and allow retailers to identify the best set of products based on their environment and their specific goals. It is important to model this at store or store-group level, as each store will have different assortment needs.

Optimization itself is about telling the solution what you are trying to achieve within a category, given goals and constraints (e.g., category size, role, shopper segment goals, etc.).

Incrementality Provides a Way to Understand Variety and Duplication

The core question in Assortment Optimization is how to determine the degree to which an SKU is incremental (and therefore contributing) or not (and therefore a candidate for deletion). The answer depends on whether an item adds true variety or mostly duplicates the role of an alternate item. The incrementality of an individual SKU is not fixed, but is dependent on the assortment into which it is being placed. This is accomplished by applying demand science. Assortment Optimization performs a transaction analysis on the customer's POS data to find examples where SKUs have been de-listed or had distribution reduced. Comparing the drop in sales of the SKU with the drop in sales at the category, segment, and sub-segment levels allows the model to determine how incremental that product was to category performance.

The model also lets us understand the reverse situation, where a new product is added to the assortment. As more similar items are added to the segment, more demand transfers from existing items and the incremental contribution diminishes. In other words, as more SKUs are added to the sub-segment they become less incremental. Conversely, when an item is removed, its volume is partly or wholly re-distributed to other items.

> **Transferable Demand** measures the incremental sales Contribution of an item. As more similar items are added to segment, more demand transfers from existing items and its incremental contribution diminishes.

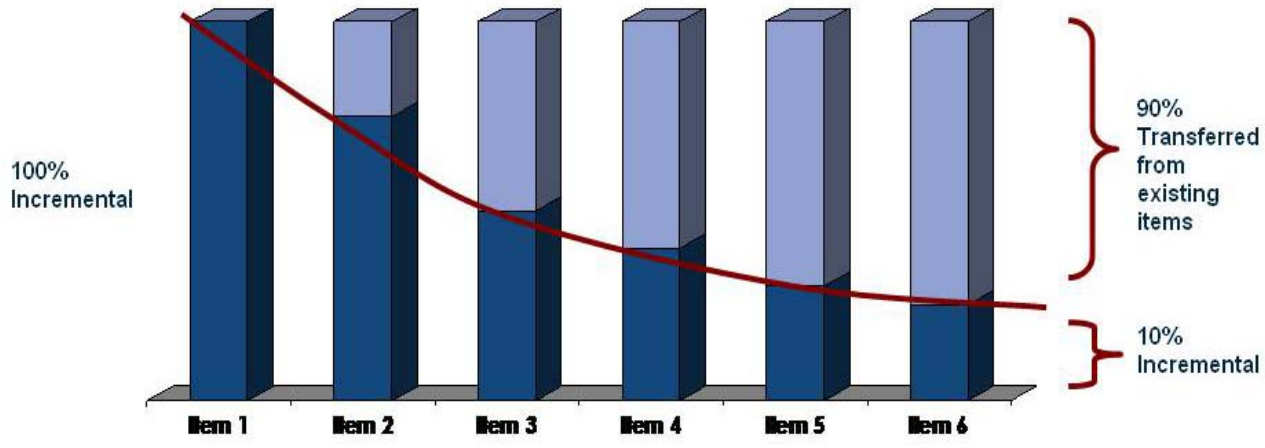


Figure 1

Optimization Lets You Tailor Assortment to Your Objectives

DemandTec's Assortment Optimization software service helps retailers apply the principles outlined to their localized assortment decision process through the application of demand science. The analytical model delivers an understanding of transferable demand and a mechanism for applying those insights to support improved outcomes.

In addition to the demand models, the Assortment Optimization software service makes use of retailers' existing customer decision trees and allows the retailer to define strategy for a product category, segment or sub-segment, as well as specific customer segments.

Assortment Optimization from DemandTec delivers a host of benefits to retailers by enabling you to:

- Localize offerings for customer needs, provide differentiation, and long-term loyalty
- Increase category sales, profit, and market basket size
- Understand variety versus duplication with shifting consumer preferences and constant new products
- Identify macro space opportunities to "free-up" footage for growing categories
- Reduce SKU counts while maintaining customer loyalty to the category

Superior analytics from DemandTec let you deliver localized offerings for customer needs, providing differentiation, increased basket size and long-term loyalty. Consistent cross-category merchandising creates more of a "one-store" impression to your shoppers. The results are increased category sales and profit from more effective and efficient assortments.

DemandTec's Enhanced Suite of Merchandising and Marketing Solutions

The Assortment Optimization software service is part of a holistic suite of science based merchandising and marketing solutions that provide a common framework and data source, allowing retailers to make integrated decisions about all their merchandising and marketing activities, including variations that meet localized demand.

With software services from DemandTec, retailers benefit from an integrated decision-support solution that:

- Ensures price relationships support assortment goals
- Iterates pricing and assortments with full visibility to cannibalization/incrementality
- Generates assortments and planograms from forecasted sales by store/cluster
- Lets you understand potential markdown implications for dropped products
- Clusters stores and tailors assortments based on customer segments
- Optimizes shelf, facings, and secondary space based on segment shopping behavior
- Ensures high loyalty items are protected in the assortment for key customer segments
- Provides a deep understanding of incrementality by customer segment or store cluster

Integrating price, promotion, and assortment optimization on a common platform delivers superior insights while leveraging the investment to greater advantage.

To learn more about DemandTec's Assortment Optimization software service and the entire suite of merchandising and marketing solutions, contact us:

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