

## Why is Assortment Planning so Difficult for Retailers? A Framework and Research Agenda

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### Abstract

When retailers conduct product assortment planning (PAP), they determine (1) The variety of merchandise, (2) The depth of merchandise, and (3) Service level or the amount of inventory to allocate to each stock-keeping unit (SKU). Despite longstanding recognition of its importance, no dominant PAP solution exists, and theoretical and decision support models address only some of the factors that complicate assortment planning. This article simultaneously addresses the variety, depth, and service level aspects of PAP to provide a more thorough understanding. A review of current academic literature and best trade practices identifies open questions and directions for further research and applications.

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One of the most basic strategic decisions a retailer must make involves determining the product assortment to offer. Retailers attempt to offer a balance among variety (number of categories), depth (number of stock-keeping units [SKUs] within a category), and service level (the number of individual items of a particular SKU). Yet retailers also are constrained by the amount of money they can invest in inventory and by their physical space. Offering more variety thus may limit the depth within categories and the service level, or both. By making appropriate trade-offs with respect to variety, depth, and service levels, retailers hope to satisfy customers' needs by providing the right merchandise in the right store at the right time. If the retailer fails to provide the expected assortment, customers defect, causing losses in both current and future sales. If a customer hopes to purchase

clothing but cannot find all the product categories necessary to put together an outfit (variety), his or her preferred style in the category (depth), or the proper size, the retailer has failed and may not be able to induce the customer to return.

The heterogeneous nature of the marketplace also demands that retailers tailor their assortments to local tastes rather than making national-level product assortment planning (PAP) decisions. Macy's, for instance, having realized that a "one size/style fits all" strategy is not adequate, is moving toward tailoring at least 15% of the merchandise in each of its store to local tastes (O'Connell 2008).

Despite the longstanding recognition of the importance of PAP, practitioners have not adopted a dominant solution, and despite emerging academic literature on PAP, extant theoretical and decision support models address only subsets of the range of factors that make assortment planning so challenging. Researchers tend to focus on analytical solutions that deal almost exclusively with questions of depth—that is, which SKUs should be carried within a particular category—but fail to address all three issues associated with PAP decisions simultaneously. We attempt to correct for this omission and provide a more

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thorough understanding of the difficulties of assortment planning by reviewing current academic literature and best trade practices, as well as identifying questions and directions for further research and applications.

### Product assortment planning model

To facilitate our discussion, we provide a conceptual framework for PAP-related decision making in Fig. 1. We use this framework to guide our exploration of the current state of practical and academic knowledge about PAP. Product assortment planning entails a series of trade-offs, during which retailers must consider consumer perceptions and preferences, their own supply-side constraints, and the external environmental factors, such as economic conditions and competitors' strategies. Retailers then invest in people and systems according to the fundamental category assortment decisions they make. Customers benefit from these costly investments by finding and buying what they want; if their experience is favorable, they become loyal and generate revenues for the retailer. Therefore, an appropriate metric for assessing the long-term success of assortment decisions uses customer lifetime value (CLV), as we show in Fig. 1.

#### Understanding inputs to product assortment planning decisions: where do we stand?

The conceptual model in Fig. 1 illustrates three sets of inputs to PAP decisions: consumer perceptions and preferences, retailer constraints, and environmental factors.

#### What do we know about consumer perceptions and preferences?

A growing body of consumer behavior research focuses on consumer choice within a single category, that is, the depth

aspect of the retailer's PAP related to how many and which SKUs to offer within a product category. Determining the optimal number of SKUs requires identifying the number of distinct brands or product types to offer, the number of variants of each brand or product type to offer, and the number of units of each variant of each brand or product type to carry in inventory. Because many factors govern consumers' preferences, as the first box in Fig. 1 implies, these determinations are difficult.

As a starting point, the retailer needs to identify consumers' preferred brands. According to consumers, an optimal assortment includes the first choice preference for each consumer in the target market, but in some markets, the heterogeneity of preferences is so massive that even this seemingly simple solution becomes quite difficult (Green and Krieger 1985). Even if a retailer can determine and carry the first choice preference of each member of its target market, consumers frequently want options or flexibility in their choice set (Kahn and Lehmann 1991).

#### Consumers' desire for flexibility

Consumers prefer flexibility because the purchase occasion often is separate in time from the consumption occasion. The consumer must predict his or her future utilities, which is considerably more difficult than predicting immediate utilities (Kahneman and Snell 1992; Simonson 1990). Consumers also try to avoid the difficulty or stress of making the inevitable trade-offs associated with choosing products (e.g., price for quality, health for taste). Finally, consumers' preferences may change over time as a result of satiation (McAlister and Pessemier 1982) or the need for stimulation (Menon and Kahn 1995, 2002), prompting them to prefer a choice set that allows for variety-seeking behavior (Kahn 1998).

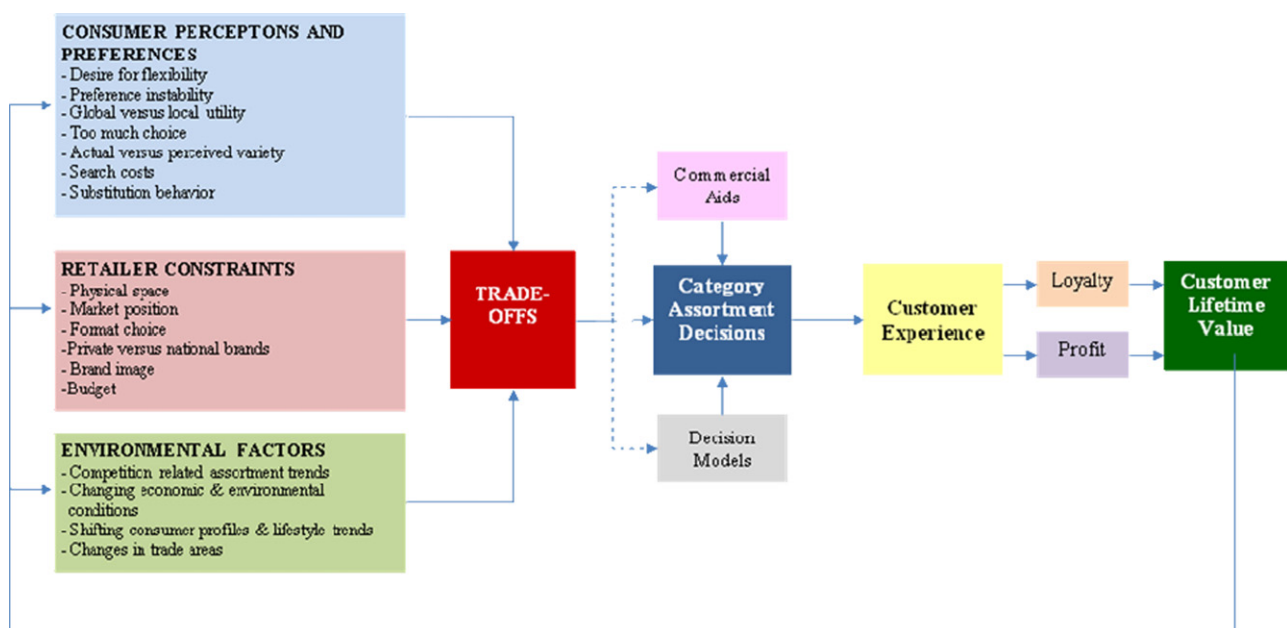


Fig. 1. Product assortment planning model.

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