

Product Assortment and Consumer Choice: An Interdisciplinary Review

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Abstract

The topic of product assortment has generated a plethora of research across various domains, including economics, analytical and empirical modeling, individual and group decision making, and social psychology. Despite the voluminous assortment research, however, the key findings have remained scattered across domains. In fact, the very domain of assortment research has not been clearly defined, thus complicating the understanding of the current state of assortment research. The goal of this review, therefore, is to define the field of assortment research and outline its key findings. In this context, this review delineates three key domains of assortment research: (1) how consumers perceive the variety of items in an assortment, (2) how consumers choose an item from a given assortment, and (3) how consumers choose among assortments. The key findings in each of these three areas are synthesized in the form of specific research propositions that build on the existing findings and provide guidance for further empirical investigation. By outlining the key findings in each of these three areas, this review offers an integrative framework for understanding the impact of assortment on consumer choice.

1

Introduction

The importance of assortment decisions for both retailers and manufacturers has been underscored by numerous research articles, marketing textbooks, and the popular press (Kahn, 1999; Kay and Jost, 2003; Lerner, 1980; Levy and Weitz, 2006; Iyengar, 2010; Schwartz, 2003). Common assortment decisions involve issues such as assortment size, reflecting both the breadth (i.e., number of categories) and the depth (i.e., number of items within a category) of the available product lines; the type of items (e.g., overall attractiveness); the relational properties of the items (e.g., item similarity); pricing policies; and the variety of items over time.

Because of its importance, the topic of product assortment has generated a substantial amount of interest across different research domains, including economics, analytical and empirical modeling, individual and group decision making, and social psychology (Broniarczyk, 2008; Kahn, 1999; Lancaster, 1990; Simonson, 1999). This research has contributed to significant advancement in understanding the impact of assortment on consumer choice. Yet, most prior research has focused on specific problems without necessarily integrating the findings with the existing research across different domains. The goal of this review,

therefore, is to discuss existing literature and, building on the current theoretical developments across different research domains, develop a set of research propositions delineating the impact of product assortment on consumer choice.

This review takes a consumer's perspective to examine how product assortment influences decision making and choice. In particular, it defines the consumer aspect of assortment research to answer three key questions: (1) How do consumers perceive the variety of items in an assortment? (2) How do consumers choose an item from a given assortment? and (3) How do consumers choose among assortments? Accordingly, this review is comprised of three main sections.

The first part examines factors that influence consumer perceptions of the variety of an assortment. In particular, it investigates how factors such as assortment size, the degree of distinctiveness of assortment options, the dispersion of option frequencies (entropy), and the organization of the assortment influence consumer perceptions of assortment variety. The second part discusses factors that influence consumer choice of an item from a given assortment. It examines the impact of assortment size on the purchase likelihood from a given assortment, the number of options purchased, and the particular options chosen from the assortment. The third part examines factors that influence consumer choice among assortments. In particular, it investigates how assortment size, assortment structure, and purchase quantity influence consumers' choice of an assortment.

Conceptual analysis of the existing research in each of these three areas is summarized in a series of research propositions that integrate current findings and offer directions for future research. We conclude with a discussion of the theoretical contributions and managerial implications of existing product assortment research and identify venues for further investigation.

2

Perceptions of Assortment Variety

Consumers' choice of an item from an assortment, as well as consumer choice among assortments, is often determined by the perceptions of the variety of items comprising these assortments. In particular, perceived assortment variety can be viewed as a function of two key factors: assortment size and assortment structure. These two factors are discussed in more detail below.

2.1 Assortment Size and Perceived Assortment Variety

The basic notion that perceived variety is a function of *assortment size* is fairly straightforward: Larger assortments tend to be perceived as having greater variety. The research in this area has focused on identifying factors that moderate the impact of assortment size on choice. Research by Broniarczyk et al. (1998) documents that perceptions of variety in a given assortment are influenced by three key factors: the number of distinct items (SKUs) comprising the assortment, the assortment's attractiveness (e.g., the availability of buyers' favorite brands), and the total shelf space allocated to the assortment. In particular, they show that removing a more preferred item has a greater likelihood of

lowering an assortment's perceived variety than removing a less preferred item. They further report that a decrease in the shelf space allocated to a category tends to lower this category's perceived variety. Thus, when a product category is given more shelf space in a retail store, even when the number of distinct items (SKUs) is constant, consumers perceive greater variety than when the same category is assigned to a smaller space. Finally, their findings document that reducing the number of distinct items (SKUs) will have an impact on consumer choice of a retailer only if this influences the perceived variety of the assortments carried by these retailers. Similar findings reported by Van Herpen and Pieters (2002) show that doubling the size of an assortment with replicates can increase perceived variety by as much as 42%.

2.2 Assortment Structure and Perceived Assortment Variety

In addition to assortment size, perceived variety is a function of *assortment structure*, that is, the organization of the items within a given assortment. Three key aspects of assortment structure can be identified: (1) the degree of distinctiveness of the options, (2) the entropy of the options comprising the assortment, and (3) the organization of the assortment (Hoch et al., 1999; Kahn and Wansink, 2004). These three aspects are discussed in more detail below.

The degree of option distinctiveness refers to the attribute-level differences between individual items. Existing research has shown that perceived variety of an assortment is a function of the magnitude of the differences between its options, such that perceived variety is smaller in assortments comprising similar rather than dissimilar options (Hoch et al., 1999; Van Herpen and Pieters, 2002, 2007; van Ryzin and Mahajan, 1999). It has further been documented that the impact of option distinctiveness on perceived variety is independent of the number of items comprising an assortment. Thus, the distinctiveness of options' attribute values only moderately correlates with assortment size with respect to its impact on perceived assortment variety and can be used as an independent predictor of assortment variety (Van Herpen and Pieters, 2002).

Two approaches to conceptualizing option distinctiveness have been advanced in the literature. The product-based approach focuses on the dissimilarity of the options across all attributes (Hoch et al., 1999, 2002). In contrast, the attribute-based approach focuses on the similarity of the attribute levels across alternatives, as well as on the relationship between different attributes (Van Herpen and Pieters, 2002). These two approaches can be related to conceptualizing the degree of option distinctiveness in terms of integral or separable attributes (Garner, 1974). Here, integral attributes represent dimensions that are difficult to consider separately; as a result, the evaluation of an option's performance on each attribute is a function of performance on the other integral attribute (e.g., the evaluation of the brightness of a color is influenced by its saturation). In contrast, separable attributes are defined as dimensions that can be evaluated independently from each other (e.g., the evaluation of the brightness of a color is not influenced by its shape). In this context, it has been argued that options described on separable attributes are likely to be perceived as more distinct and, hence, lead to a greater perception of assortment variety (Hoch et al., 1999).

The *entropy* of an assortment is a metric of the dispersion of its items, which incorporates both the number of different items and their relative frequencies into a single measure of variability (Kullback, 1959; Young and Wasserman, 2001). When describing the variety of an assortment, the term entropy has been used in two similar contexts: (1) as a measure of the dispersion of attribute levels within an attribute (Van Herpen and Pieters, 2002) and (2) as a measure of the dispersion of the frequency with which each option appears in a given assortment (Kahn and Wansink, 2004; Shannon and Weaver, 1949). Thus, entropy is highest when all attribute levels occur in equal proportions (in the case of attribute-based entropy) or when all options occur with equal frequency (in the case of option-based entropy). In general, attributes/options with lower entropy (e.g., unique features/options) are considered more diagnostic (informative) relative to attributes/options with higher entropy (e.g., shared values of a given attribute or common options in an assortment).

Recent research has shown that the entropy of the options in an assortment can have a significant impact on the perception of

variety. In particular, it has been documented that high dispersion in the attribute values across options (high-attribute entropy) leads to increased perception of assortment variety (Van Herpen and Pieters, 2002). In the same vein, it has been shown that a higher number of distinct options (high-option entropy) leads to increased perception of assortment variety (Hoch et al., 1999; Young and Wasserman, 2001).

Perceived variety has also been shown to be a function of the *organization of the assortment*. Thus, it has been documented that for large assortments, disorganized sets are likely to be perceived as offering less variety than organized sets — an effect attributed to the lack of structure, which makes it more difficult for consumers to recognize the existing variety. In contrast, for small assortments, disorganized sets are likely to be perceived as offering greater variety because they can obscure the fact that the available assortment is fairly small (Kahn and Wansink, 2004).

Organized displays also have been reported to be more likely to lead to perceptions of greater variety in the context of analytic information processing, whereas in the context of holistic processing this effect is reversed, such that disorganized displays are perceived to offer greater variety (Hoch et al., 1999). Perceived variety has further been documented to be a function of the proximity of the items comprising an assortment. In particular, options in close proximity (e.g., adjacent options) have been reported as having greater impact on assortment variety than distant options (Hoch et al., 1999).

Perceived variety of an assortment has also been reported to be a function of consumers' familiarity with the product category and the consistency of consumers' internal category schema with the category structure of the product display. In particular, for consumers familiar with the product category, congruency between the internal schema and the external layout was found to lead to greater perceptions of variety (Morales et al., 2005; see also Mogilner et al., 2008). It has further been shown that experienced consumers are also able to detect subtle, but rich, distinctions within an assortment, further increasing their perceptions of variety (Redden, 2008).

The discussion of the impact of assortment size and structure on perceived variety can be summarized in the following propositions:

- P_{1.1}: Perceived variety is a function of the *distinctiveness* of the options comprising an assortment. In particular, assortments comprising more distinct options are perceived to have greater variety than assortments comprising options that are more similar.
- P_{1.2}: Perceived variety is a function of the *entropy* of the options comprising an assortment. In particular, high dispersion in the attribute values across options (high-attribute entropy), as well as a higher number of distinct options (high-option entropy), leads to increased perceptions of assortment variety.
- P_{1.3}: The *proximity* of items is likely to influence the perceived variety of an assortment. In particular, options in close proximity (e.g., adjacent options) have greater impact on assortment variety than distant options.
- P_{1.4}: Perceived variety is a function of *assortment size*, such that increasing assortment size by adding either distinct items or replicates will increase perceived variety. The marginal impact of increasing assortment size on perceived variety will be greater when the added items are distinct than when they are replicates and will diminish with an increase in the number of distinct options comprising the assortment.
- P_{1.5}: The impact of assortment size on the perceived variety is a function of the *organization* of the options in the assortment. In particular, for small assortments, low organization is likely to lead to a perception of higher variety, whereas for large assortments, low organization is likely to lead to a perception of lower variety.
- P_{1.6}: The impact of organization on an assortment's perceived variety is a function of the nature of consumer decision strategy. In particular, consumers processing the information in

analytic fashion are likely to perceive organized assortments as offering greater variety than nonorganized assortments. In contrast, consumers processing the information in holistic fashion are likely to perceive nonorganized assortments as offering greater variety than organized assortments.

P_{1.7}: The impact of organization on an assortment's perceived variety is a function of the nature of consumer *expertise*. In particular, congruency between the internal schema and the organization of the assortment was found to lead to greater perceptions of variety.

3

Choosing from an Assortment

When making a choice from an assortment, consumers typically face three decisions: (1) whether to make a purchase from the available assortment, (2) how many options to purchase, and (3) which particular option(s) to choose. These three aspects of consumer decision — purchase likelihood, purchase quantity, and option choice — are discussed in more detail below.

3.1 Purchase Likelihood

The likelihood of purchasing any item from the available assortment has been shown to be a function of two key sets of factors: the size of the assortment and the relationships between the options in the assortment. These two factors are examined in more detail in the following sections.

3.1.1 The Impact of Assortment Size on Purchase Likelihood

Prior research has identified a number of benefits and costs associated with large assortments. The most intuitive benefit, featured prominently in economics research, is that the greater the number of options

in the choice set, the higher the likelihood that consumers can find an option matching their purchase goals (Baumol and Ide, 1956; Betancourt and Gautschi, 1990; Hotelling, 1929; Kahn and Lehmann, 1991; Kahneman et al., 1997; see Lancaster, 1990 for a review). A related economic explanation of consumer preferences for larger assortments involves the greater efficiency of time and effort involved in identifying the available alternatives in the case of one-stop shopping associated with retailers offering larger assortments (Betancourt and Gautschi, 1990; Messinger and Narasimhan, 1997; Miller et al., 1999).

It has also been proposed that larger assortments might lead to stronger preferences because they offer option value (Reibstein et al., 1975) and allow consumers to maintain flexibility in light of uncertainty about future tastes (Kahn and Lehmann, 1991; Kreps, 1979; Kahneman and Snell, 1992; March, 1978; Shin and Ariely, 2004; Walsh, 1995) and accommodate their future variety-seeking behavior (McAlister, 1982; Pessemier, 1978; Ratner et al., 1999; Simonson, 1990; Read and Loewenstein, 1995; Inman, 2001; Levav and Rui (Juliet) Zhu, 2009; Van Herpen and Pieters, 2002, 2007; van Trijp et al., 1996).

It has further been argued that consumers might experience additional utility simply from having multiple items in the choice set (Kahn et al., 1987; see also Broniarczyk et al., 1998; Oppewal and Koelemeijer, 2005), a proposition consistent with the view that larger assortments might influence preferences by creating a perception of freedom of choice (Brehm, 1972) and perceived personal control (Inesi et al., 2011). Larger assortments may also enhance the enjoyment of shopping (Babin et al., 1994) and the overall choice satisfaction (Botti and Iyengar, 2004), as well as provide buyers with a greater opportunity to learn about the range of available products (Bellenger and Korgaonkar, 1980).

Finally, it has been proposed that larger assortments influence consumer preferences by reducing the uncertainty of whether the choice set at hand adequately represents all potentially available options. Recent experiments show that consumers may delay their purchasing because they are uncertain about the degree to which the available set is representative of the entire set of possible options (Greenleaf and Lehmann, 1995; Karni and Schwartz, 1977). To illustrate, consumers might feel

more confident when selecting from a retailer that offers a larger assortment because it is less likely that a potentially superior alternative is not represented in the available choice set.

Despite their multiple benefits, larger assortments have been identified as having a number of important drawbacks. From a retailer's standpoint, larger assortments are often considered less desirable for cost-related reasons, such as inventory, shelf space, and financing costs (Bayus and Putsis Jr., 1999; Kurt Salmon Associates, 1993; Lancaster, 1990; Lehmann, 1998; Moorthy, 1984; The Partnering Group, 1998).

From a consumer's standpoint, it has been proposed that the benefits of greater variety are, at least partially, offset by a corresponding increase in consumers' costs associated with choosing from a larger assortment. Recent research has shown that reducing the size of an assortment can actually increase the purchase likelihood from that assortment. To illustrate, Broniarczyk et al. (1998) have documented that reductions (up to 54%) in the lower selling SKUs often have no significant impact on variety perceptions and sales. Related research has further shown that deleting less popular SKUs can actually increase aggregate sales, whereby a 10% SKU reduction resulted in a 4% sales increase (Dreze et al., 1994). Similar results were reported by Boatwright and Nunes (2001) in a natural experiment in which decreasing the assortment in nearly all product categories offered by a retailer resulted in a significant increase in sales.

One of the first field experiments empirically documenting the drawbacks of larger assortments involved comparing consumer reactions to different assortments of gourmet jams (Iyengar and Lepper, 2000). In this context, it was shown that consumers were more likely to make a purchase when being presented with an assortment comprising six items than with an assortment comprising 24 items (30% versus 3%). Similar findings have been documented in a variety of product categories, such as chocolates (Berger et al., 2007; Chernev, 2003b), consumer electronics (Chernev, 2003a), and mutual funds (Iyengar et al., 2004; Huberman et al., 2007; Iyengar, 2010; Morrin et al., 2008).

The negative consequences of larger assortments have been attributed to several factors. It has been argued that making a choice from larger assortments requires greater cognitive effort than choosing

from smaller assortments simply because it involves evaluating a greater number of options, attribute dimensions, and attribute levels (Iyengar and Lepper, 2000; Haynes, 2009; Huffman and Kahn, 1998; Jacoby et al., 1974; Lurie, 2004; Scammon, 1977; Shugan, 1980). In addition, for consumers who are uncertain of their preferences, larger assortments have been shown to be more confusing because of the larger number of attributes and/or attribute levels that must be evaluated in order to form a preference and make a choice (Dhar, 1997; Greenleaf and Lehmann, 1995; Huffman and Kahn, 1998; Iyengar and Lepper, 2000; Malhotra, 1982; Schwartz, 2000; Shah and Wolford, 2007; Sood et al., 2004), as well as the increasing number of tradeoffs consumers have to make when comparing the benefits and costs of the different options (Chernev, 2003b).

It has further been argued that larger assortments tend to raise consumer expectations, shifting their ideal points and making them more difficult to attain (Schwartz et al., 2002). Larger assortments have also been found to raise consumers' expectations of the likelihood of finding their ideal option in the available assortment and the degree of preference match they can achieve (Diehl and Poynor, 2010; Kuksov and Villas-Boas, 2010). As a result, choices from larger assortments are likely to lead to disconfirmation of consumer expectations, resulting in greater choice deferral and lower choice satisfaction.

Recent research also has shown that adding new options to an assortment will have an asymmetric impact on the probability of choosing an option from that assortment, such that the benefits of expanding a smaller assortment are likely to outweigh the corresponding benefits of expanding a larger assortment. This argument is based on the notion that the attractiveness of larger assortments is likely to be subject to diminishing returns because the marginal benefits from each additional alternative tend to decrease with the increase in assortment size (Anderson et al., 1966; Chernev and Hamilton, 2009; Oppewal and Koelemeijer, 2005). Given that the increase in benefits happens at a decreasing rate, at some point it is likely to be offset by the additional costs of evaluating the available alternatives (Roberts and Lattin, 1991). Thus, it has been shown that the probability of purchasing a brand, reflected in the brand's market share, tends to decrease after the

assortment of items comprising its product line achieves a certain size (Draganska and Jain, 2005). In the same vein, it has been argued that, following the high extent of product proliferation in the last several decades, the depth of assortment (number of SKUs) in many staple categories has reached saturation levels (Dreze et al., 1994).

Because increasing the number of options in a choice set can have both a beneficial and detrimental impact on choice, it is difficult to make an overall prediction on how assortment size will influence consumer preferences. One of the key factors moderating the impact of assortment size on consumer preferences is the degree to which consumers have an available ideal point (Chernev, 2003b). It is argued that individuals without an available ideal point must first articulate their attribute preferences in order to identify the option with the highest utility derived from these preferences. Because choosing from larger assortments typically involves evaluating a greater number of options, attributes, and attribute levels, the choice process is likely to be more complicated. As a result, for consumers without a readily available ideal point, choices from larger assortments are more likely to lead to choice deferral and weaker preferences for the selected alternative than choices from smaller assortments. In contrast, for consumers with an articulated ideal point, the impact of assortment size is reversed, leading to greater likelihood of choice deferral and weaker preferences for the chosen alternative in the context of a smaller rather than larger assortment. This line of reasoning is based on the notion that unlike consumers without articulated preferences, who are faced with the task of simultaneously forming their ideal point and selecting the option that best matches this point, consumers with articulated preferences are simply trying to identify the option that best matches their ideal point — a task that can be better completed in the context of a larger rather than smaller assortment.

From an information-processing standpoint, it has been documented that when choosing from larger assortments, individuals with an articulated ideal attribute combination are more likely to rely on positive test strategies to identify the alternative that matches their ideal point, whereas individuals without an articulated preference are likely to adopt strategies that involve comparing the available alternatives

without the confirmatory goal of matching these alternatives to an existing ideal point. In particular, it has been shown that relative to consumers without an articulated ideal point, those with articulated preferences are (a) more selective in processing the available information; (b) more likely to rely on alternative-based rather than attribute-based processing; and (c) more likely to evaluate the available alternatives in a confirmatory manner, using their ideal attribute combination as a reference point (Chernev, 2003a). In contrast, consumers without articulated preferences are expected to be (a) more comprehensive in evaluating the available alternatives; (b) more likely to rely on attribute-based rather than alternative-based processing; and (c) more likely to evaluate the available alternatives in a comparative fashion, using the performance of the other options in the assortment as a reference point.

In the same vein, it has been proposed that consumers who are likely to engage in a more comprehensive information search that involves evaluating all available choice alternatives and selecting the best one (referred to as a maximizing strategy; Wright, 1975) are more likely to perceive larger assortments as more complex and associated with more difficult decisions than individuals who engage in a more selective processing and choose the first acceptable alternative (referred to as a satisficing strategy; Simon, 1955; Wright, 1974). Thus, consumer decision strategy (maximizing versus satisficing) has been argued to influence purchase probability of an item from a given assortment, as well as overall satisfaction with choice (Schwartz et al., 2002; Aaker, 2004; Inbar et al., 2011; see also Iyengar and Lepper, 2000; Iyengar et al., 2006).

While most of the existing assortment research has focused on the overall probability of purchase, strength of preference, and satisfaction, relatively little research has investigated the impact of assortment size on the option chosen. In particular, it has been shown that larger assortments are associated with a greater amount of variety-seeking behavior, leading to a greater diversity of the chosen items (Kahn, 1995; Kahn and Lehmann, 1991). It has also been documented that an increase in assortment size is associated with an increase in the choice probability of the easiest-to-justify option (Sela et al., 2009). This effect is

attributed to the fact that choosing from larger assortments is associated with greater preference uncertainty and decision difficulty, which consequently promotes greater reliance on reasons in choice. Building on the idea that utilitarian options are often easier to justify (Kivetz and Simonson, 2002), it is further proposed that when choosing from larger assortments, consumers are more likely to select utilitarian rather than hedonic options.

3.1.2 The Impact of Assortment Structure on Purchase Likelihood

In addition to assortment size, the probability of purchase from a given assortment is influenced by the organization of the assortment and type of items it includes. In particular, understanding the impact of assortment structure on choice involves examining three key aspects describing the relationships between the options in a given assortment: relative attractiveness of the available options (e.g., the availability of the “ideal” option), attribute complementarity, and pricing. These three characteristics are discussed in more detail below.

Prior research has shown that consumers are more likely to make a purchase from an assortment in cases when it contains their most preferred option than when this option is absent (Chernev, 2006a; Boatwright and Nunes, 2001; Broniarczyk et al., 1998; Oppewal and Koelemeijer, 2005). It has also been shown that an increase in the variability of the options’ attractiveness will lead to increased decision certainty, decreased confusion, and higher choice satisfaction (Malhotra, 1982), as well as increased overall purchase probability (Summers, 1974). Thus, adding an inferior option that enhances the dominance of one of the existing options has been shown to increase choice likelihood from an assortment (Dhar, 1997), whereas adding equally attractive options has been reported to have the opposite effect, increasing the likelihood of deferring the decision (Dhar, 1997; Dhar and Simonson, 2003; Tversky and Shafir, 1992). Furthermore, adding an inferior option has been shown to increase the share of the dominant option, a finding commonly referred to as the attraction effect (Huber et al., 1982; Simonson, 1989; Simonson and Tversky, 1992).

Purchase likelihood is a function of the availability of a default option, such that consumers are more likely to make a choice from a given assortment when they are provided with a default option compared to when they are not. Moreover, the impact of a default option is likely to be more pronounced in cases when the level of decision uncertainty is high — e.g., when consumers without articulated preferences have to make a choice from a relatively large assortment. For example, it has been shown that when the default decision involves participating in a retirement plan and consumers can opt out, participation rates are substantially higher than when the default is nonparticipation and consumers must opt in (Thaler and Benartzi, 2004; see also Johnson and Goldstein, 2003).

The presentation format of assortment options can have a significant impact on consumer judgment and choice. In particular, attribute-based presentation of the choice options, in which option information is organized by attribute has been found to decrease perceived decision complexity and increase choice satisfaction (Huffman and Kahn, 1998). Ordering options in a given assortment has also been found to decrease search costs, thus decreasing the difficulty of choosing an item from larger assortments (Diehl et al., 2003; Diehl, 2005). In this context, when choosing from sets ordered by expected quality, consumers are likely to pay lower prices when choosing from larger rather than smaller assortments — an effect attributed to the fact that ordering the choice options by expected quality produces a subset of options that are more similar in overall quality compared to randomly selected items, making consumers less willing to pay a premium for the more attractive option (Diehl et al., 2003).

The purchase likelihood from a given assortment is also a function of feature complementarity, which reflects the marginal utility that one feature adds in the presence of another (Chernev, 2005). Thus, the addition of a complementary feature (e.g., tartar protection in toothpaste) to a product with a similar feature (e.g., cavity prevention) tends to increase its marginal utility and make the overall product more attractive, whereas adding a noncomplementary feature (e.g., mint flavor) to a product with a similar feature (e.g., banana flavor) does not increase its marginal utility and the overall product attractiveness.

In this context, it has been shown that increasing a product assortment by adding options differentiated by complementary features tends to lower the attractiveness of all alternatives in that assortment. Indeed, adding an option differentiated by a complementary feature highlights an attribute dimension on which the original product is inferior, thus decreasing its overall attractiveness. Consequently, each new complementary feature used to extend the product line ultimately makes the existing products less attractive because they are dominated on the attribute defined by the newly added feature. This decrease in the overall attractiveness of the choice options ultimately leads to a decline in the probability of consumers choosing any option from this assortment.

A conceptually similar argument has been advanced by Gourville and Soman (2005), who propose that the probability of choosing an option from an assortment is a function of the alignability of the attributes describing the options comprising the assortment. The concept of alignability draws on the literature of structural alignment in psychology (Markman and Gentner, 1993) to denote the degree of correspondence between two objects. To illustrate, an assortment of computers in which options are differentiated by the presence or absence of a particular feature (e.g., a Wi-Fi card) is typically described as nonalignable, whereas an assortment in which options are differentiated by the level of performance on these attributes (e.g., the range of the Wi-Fi card) is typically described as alignable. In this context, increasing the size of assortments differentiated by alignable attributes reportedly can lead to an increase in the probability of consumers making a purchase from that assortment, whereas increasing the size of assortments differentiated by nonalignable attributes has been shown to have the opposite effect of decreasing the purchase probability from that assortment (Gourville and Soman, 2005). Further research has linked attribute alignability to satisfaction with choice such that it follows an inverted U-shape for options differentiated on nonalignable but not alignable attributes (Griffin and Broniarczyk, 2010).

Consumer choice is also influenced by the attractiveness of the options comprising an assortment and the nature of the decision task, in particular, whether individuals have to make the choice themselves or leave the choice to others or fate (Botti and McGill, 2006). Thus, when

confronted with attractive options, those making a choice themselves (choosers) entertain more pleasant thoughts and are more satisfied with the outcome than those who do not make the choice themselves (nonchoosers). When presented with undesirable options, however, choosers contemplate more unpleasant thoughts and are less satisfied with the outcome than nonchoosers (Botti and Iyengar, 2004). Related research has also shown that people tend to prefer to have the option to make a choice themselves; however, they end up performing worse and feeling less satisfied than those who did not make the choice (Botti and Hsee, 2010).

Another important factor influencing the purchase probability from an assortment involves pricing its options. Despite its conceptual and managerial importance, very little research has been done in the area of assortment pricing, most of which has focused on the area of price sensitivity (Diehl et al., 2003; Lynch and Ariely, 2000). An important question managers face when designing an assortment is whether to price items in a given product line at parity or to let the pricing vary as a function of other factors such as the actual cost or the anticipated demand for each product. To illustrate, a restaurant could price all the options on its dessert menu identically or, alternatively, it could let the pricing reflect the actual cost of making each dessert. A wine manufacturer could price different wine varietals at parity or let the pricing vary as a function of anticipated consumer demand. In this context, recent research has shown that assortment pricing can have a significant impact on purchase probability from a given assortment and that this impact is a function of the degree of uncertainty associated with performance of the options on nonprice attributes (Chernev, 2006b). Thus, when consumers are uncertain about the relative attractiveness of choice alternatives on nonprice attributes, price-based differentiation reduces this uncertainty by offering price as a diagnostic criterion for making a choice, thus increasing the likelihood of consumers making a choice from this assortment.

In contrast, when consumers have an established preference ordering of choice options on nonprice attributes, the impact of price differentiation on choice is a function of the degree of consistency of consumers' preferences on price and nonprice attributes. Thus, price-differentiated

assortments in which consumers' preferences on price and nonprice attributes are consistent tend to result in greater choice likelihood than equally priced assortments. In contrast, price-differentiated assortments in which consumers' preferences on price and nonprice attributes are inconsistent tend to result in lower choice likelihood than equally priced assortments.

The discussion of the impact of assortment size and structure on purchase likelihood can be summarized in the following propositions:

- P_{2.1}: The impact of assortment size on the strength of consumer preferences is a function of the marginal benefits associated with the extra options in the larger assortment. In particular, smaller assortments tend to be more preferred when the perceived costs of evaluating the extra options in the larger assortments outweigh the perceived benefits.
- P_{2.2}: The impact of assortment size on the strength of consumer preferences and purchase likelihood is a function of preference uncertainty. In particular, when choosing from a larger assortment, consumers with an available ideal point are more likely to have stronger preferences for and make a purchase from that assortment than consumers without an available ideal point. In contrast, when choosing from a smaller assortment, consumers with an available ideal point are more likely to have weaker preferences and be less likely to make a purchase from that assortment than consumers without an available ideal point.
- P_{2.3}: The impact of assortment size on consumer decision processes is a function of preference uncertainty. In particular, when choosing from larger assortments, consumers with an articulated ideal point are likely to be (a) more selective in processing the available information; (b) more likely to rely on alternative-based rather than attribute-based processing; and (c) more likely to evaluate the available alternatives in a confirmatory manner, using their ideal attribute combination as a reference point. In contrast, consumers without

an articulated ideal point are expected to be (a) more comprehensive in evaluating the available alternatives; (b) more likely to rely on attribute-based rather than alternative-based processing; and (c) more likely to evaluate the available alternatives in a comparative fashion, using the performance of the other options in the assortment as a reference point.

- P_{2.4}: In the absence of an articulated ideal point, consumers choosing from larger assortments are more likely to select the option that is easiest to justify than consumers choosing from smaller assortments.
- P_{2.5}: Consumers are more likely to make a purchase from an assortment in cases when the assortment contains their most preferred option than when this option is absent.
- P_{2.6}: The purchase likelihood from a given assortment is a function of the complementarity of its options and assortment size. In particular, choice deferral is greater for assortments comprising complementary rather than noncomplementary options. Furthermore, increasing assortment size by adding noncomplementary options will increase the purchase likelihood from this assortment, whereas increasing assortment size by adding complementary options will decrease the purchase likelihood from that assortment.
- P_{2.7}: The purchase likelihood from a given assortment is a function of the alignability of its options and assortment size. In particular, choice deferral is greater for assortments comprising nonalignable rather than alignable options. Furthermore, increasing assortment size by adding alignable options will increase the purchase likelihood from the assortment, whereas increasing assortment size by adding non-alignable options will decrease the purchase likelihood from the assortment.
- P_{2.8}: The purchase likelihood from a given assortment is a function of the attractiveness of its options and whether individuals have to make the choice themselves or leave the choice to others/fate. When confronted with attractive

options, choosers are more satisfied with the outcome than nonchoosers, whereas when presented with undesirable options, choosers are less satisfied with the outcome than nonchoosers.

- P_{2.9}: The purchase likelihood from a given assortment is a function of the dispersion of option prices and the uncertainty associated with individuals' consumption preferences. Thus, when preference uncertainty on nonprice attributes is high, differentially priced assortments will lead to higher purchase probability than equally priced assortments. In contrast, when preference uncertainty on nonprice attributes is low, differentially priced assortments will lead to higher purchase probability only in cases when the dispersion of prices is consistent with individuals' preferences, such that the most preferred option also has the best price.

3.2 Purchase Quantity

Most assortment research has focused on scenarios in which the consumer goal is to select a single option. On many occasions, however, consumers purchase multiple items from the same product category during a single shopping trip. To illustrate, it has been reported that multiple units are purchased in 74% of all yogurt shopping trips and in 78% of all soup shopping trips (Walsh, 1995). The importance of investigating consumers' purchase quantity decisions has been underscored by numerous researchers (Gupta, 1988; Harlam and Lodish, 1995; McAlister, 1979; Simonson, 1999; Chandon and Wansink, 2002; Wansink et al., 1998).

From a modeling perspective, a key difference between a single-item and multiple-item purchase is the assumption that in a single-item choice consumers evaluate each item independently, ultimately choosing the one with the highest utility. In particular, it has been argued that when choosing multiple items from an assortment, consumers tend to balance the characteristics of individual items in the consideration set (Farquhar and Rao, 1976; Harlam and Lodish, 1995; Dhar and Simonson, 1999; Lattin, 1987; Lee and Steckel, 1999; McAlister,

1979, 1982). Although the interpretation of what constitutes balance varies among researchers, most agree that it reflects a certain degree of interdependency among the selected options, such that consumer choice is influenced by the items available for purchase and/or purchased during the current shopping trip.

Selecting multiple options can involve scenarios in which all chosen options are expected to be consumed, as well as scenarios in which only a subset of the chosen options will be consumed. In this context, it has been argued that in situations in which sets of items are chosen together, selections are dependent on one another, with consumers balancing the characteristics of the selected items (Farquhar and Rao, 1976; McAlister, 1979).

Recent research has shown that the perceived variety of items in a given assortment can serve as a consumption benchmark that allows consumers to determine the number of items to be purchased and/or consumed, such that a greater variety of items in an assortment increases purchase quantity (Kahn and Wansink, 2004). It has further been shown that larger assortments can also lead to increased consumption (Reibstein et al., 1975). To illustrate, it has been documented that consumers offered three varieties of yogurt are likely to consume on average 23% more yogurt than consumers offered only one flavor (Rolls et al., 1981).

The effect of assortment size on purchase quantity has been further shown to be a function of the organization and the entropy of the assortment. In particular, larger assortments have been associated with greater purchase quantity for organized and asymmetric (low entropy) assortments than for disorganized and symmetric (high entropy) assortments (Kahn and Wansink, 2004). Thus, by varying the organization and entropy of the options in each of the choice sets under consideration, it is possible to influence purchase quantity.

Prior research has also shown that the structure of an assortment, and in particular the diversity of its options, can bias consumers' perception of the overall quantity offered, thus potentially influencing their consumption preferences. Thus, it has been shown that in the case of relatively large and/or complex assortments, choice sets offering less variety are perceived to include more options than same-size

assortments comprising more diverse options (Redden and Hoch, 2009). In particular, an increase in the variety of the options has been shown to reduce perceived quantity by up to 12%.

The discussion of the factors likely to influence the purchase quantity from an assortment can be summarized in the following propositions:

- P_{2.10}: Consumption quantity is a function of assortment size, such that larger assortments will lead to greater purchase quantity.
- P_{2.11}: The effect of assortment size on purchase quantity is a function of the organization and the entropy of the assortment. In particular, larger assortments are more likely to lead to greater purchase quantity for choices made from organized and asymmetric (low entropy) assortments relative to choices made from disorganized and symmetric (high entropy) assortments.
- P_{2.12}: The variety of options available in large and/or complex assortments can influence perceived (and potentially consumed) quantity, such that choice sets offering less variety are perceived to include more options than same-size assortments comprising more diverse options.

3.3 Option Choice

In addition to influencing the probability of purchase and purchase quantity, the characteristics of an assortment can influence the specific option(s) chosen. Thus, recent research has argued that because choosing from larger assortments tends to be more difficult, consumers are led to select options that are easier to justify (Sela et al., 2009). In this context, it has been proposed that because virtues and utilitarian necessities are generally easier to justify than indulgences, choosing from larger assortments often shifts choice from vices to virtues and from hedonic to utilitarian options. It has further been documented that when situational factors provide viable reasons to indulge, larger assortments have the opposite effect, increasing the share of vices or hedonic options.

In addition, it has been shown that the choice of an option is a function of assortment structure, such that consumers tend to spread their choices among the categories into which the options are partitioned (Fox et al., 2005). For example, a menu partitioned into the categories “fruit,” “vegetables,” and “cookies and crackers,” will yield more healthy choices (i.e., fruits and vegetables) than a menu partitioned into the categories “fruits and vegetables,” “cookies,” and “crackers.” This finding, referred to as “partition dependence,” is consistent with the “ $1/n$ ” rule in which individuals spread their choices evenly across the n available categories (Benartzi and Thaler, 2001).

The impact of assortment type on the choice of particular options can also be observed in the context of multi-item purchases. When buying multiple items to be consumed over time, individuals can adopt one of the two strategies: They might purchase all items during a single shopping trip (e.g., a weekly supply of yogurt) or, alternatively, they might purchase these items on several occasions (e.g., purchase yogurt on a daily basis). These two scenarios raise the question of how the variety of the purchased options will vary as a function of the number of purchase occasions. It has been shown that, compared to items purchased for sequential consumption during a series of shopping trips, items purchased during a single shopping trip tend to yield greater variety seeking, as displayed in the greater variance of the selected options (Simonson, 1990; Simonson and Winer, 1992). To illustrate, when considering snacks for consumption on three separate occasions, consumers who chose snacks in advance were more likely (64% versus 9%) to select different items than consumers who choose snacks sequentially (Simonson, 1990). Similarly, consumers were more likely to choose a greater variety of flavors, as well as to select unusual yogurt flavors, in combined rather than separate purchases (Simonson and Winer, 1992). This finding has been attributed to consumers’ uncertainty about future preferences, such that when making purchases for multiple consumption occasions, consumers tend to select a broader variety of items.

The proposition that consumers seek variety when purchasing multiple items in order to hedge against uncertainty is consistent with the findings reported by Harlam and Lodish (1995), who show that across

purchase occasions consumers tend to buy the same flavor, brand, and package size, whereas within a single purchase occasion they tend to buy different flavors, even though they buy the same brand and package size. This finding has been attributed to the fact that in mature product categories there is little uncertainty about the performance associated with any particular brand, size, or flavor; the key uncertainty with individuals' own future preferences. To hedge against this uncertainty, consumers are likely to prefer assortments with a greater selection of preference-specific attributes, such as diverse flavors. Following this line of reasoning, one could argue that in novel product categories without established brands and with varying product quality, consumers might seek brand variety across, as well as within, purchase occasions.

Consumers' propensity to select a greater variety of items in combined versus separate choices is often referred to as diversification bias. Thus, when choosing multiple goods for future consumption over time, consumers tend to overestimate their preference for variety and end up choosing more diverse options. This overestimation has been attributed to several factors, including diversification, information search, time contraction, and choice bracketing (Read and Loewenstein, 1995). In this context, diversification is related to uncertainty about one's own preferences about products, as well as uncertainty about the products' actual performance. By selecting a variety of options, consumers can mitigate the risk of putting all their eggs in one basket and selecting large quantities of an ultimately undesirable product (Kahn and Lehmann, 1991; Simonson, 1990).

Diversification bias has also been attributed to consumers' information-seeking behavior stemming from the desire to identify more desirable products through trial and error. Diversification bias can also be accounted for by time contraction, in which people tend to underweight the interconsumption interval (Kahneman and Snell, 1992; Gourville, 1998). This is consistent with the general finding of duration neglect, in which the ratings of the overall utility of pleasure and pain are insensitive to the duration of these sequences (Fredrickson and Kahneman, 1993). Finally, diversification bias can be attributed to choice

bracketing, by which simultaneous choices are considered as a portfolio choice and hence are more diversified, whereas sequential choices are considered as individual choices (Ainslie, 1975).

Building on the finding that individuals tend to select a greater variety of items in simultaneous rather than in sequential selections, research by Ariely and Levav (2000) documents that sequential selections in group settings tend to display greater variety than simultaneous selections. They show that consumers are more likely to choose different items when they make choices sequentially than when choices are made simultaneously and are not influenced by the selections made by other group members. To illustrate, when ordering from a restaurant menu, a consumer is less likely to select an item if it has already been chosen by another group member — a strategy that ultimately leads to a greater variety of items when choices are made sequentially rather than simultaneously.

From a conceptual standpoint, it can be argued that the degree to which an individual's behavior is affected by the behavior of the other group members is a function of the group's entitativity (Campbell, 1958), which reflects the tendency of individuals to view their group as an individual entity. Thus, a group with high entitativity is likely to display more variety seeking than a group with low entitativity because in this case individuals are likely to seek to diversify their selections across the entire group. Because similar choices tend to strengthen entitativity, one could further argue that when group members have the motivation to create a high-entitativity group (e.g., the overall performance of the team determines the well-being of its individual members), the opposite pattern of behavior can be observed, such that instead of choosing different options in a sequential choice scenario, individuals might have the desire to underscore the commonality of their preferences by choosing options that are consistent with the options already selected. It could also be argued that when preference uncertainty is high (e.g., choosing among unfamiliar options), selections made by other group members can be construed as reference points, thus influencing other members' behavior in favor of the initially selected option (Tversky and Kahneman, 1991; Wansink et al., 1998).

The discussion of the factors determining the choice of specific option(s) from an assortment can be summarized in the following propositions:

- P_{2.13}: The choice of an option from a given assortment is a function of assortment size, such that choosing from larger assortments tends to shift choice from vices to virtues and from hedonic to utilitarian options.
- P_{2.14}: Simultaneous purchases of multiple items for sequential consumption yield greater variety of the selected options compared to purchases in which the same number of items is purchased over multiple purchase occasions (diversification bias). Consequently, the choice probability of the most preferred option is likely to be greater in scenarios in which items are purchased over multiple occasions than when the same number of items is purchased simultaneously.
- P_{2.15}: In group selections, variety-seeking behavior is a function of the group entitivity (cohesiveness). Thus, compared to low-entitivity groups, high-entitivity groups are more likely to display greater variety-seeking behavior in selections made sequentially rather than simultaneously. However, individuals whose goal involves increasing the group's entitivity are more likely to display less variety-seeking behavior in selections made sequentially rather than simultaneously.

4

Choosing Among Assortments

In addition to choosing items from available assortments, consumers often have to make choices among assortments, such as choosing among retailers or choosing among product lines offered by different manufacturers. Similar to consumer choice of items from an assortment, consumer choice among assortments can be viewed as a function of assortment size, assortment structure, and purchase quantity. The impact of these three factors on choice among assortments is examined in more detail in the following sections.

4.1 The Impact of Assortment Size on Choice among Assortments

The relationship between the number of options contained in an assortment and assortment choice is fairly straightforward: larger assortments are commonly preferred to smaller ones (Bown et al., 2003; Broniarczyk et al., 1998; Hotelling, 1929; Kahn and Lehmann, 1991; Oppewal and Koelemeijer, 2005; Pan and Zinkhan, 2006; Richards and Hamilton, 2006; Wright and Barbour, 1975). It has further been shown

that the preference for larger assortments tends to increase when consumers expect to have to justify their decision to others (Ratner and Kahn, 2002). A number of empirical studies have shown that retailers offering larger assortments tend to attract more customers, as well as customers from greater distances, than retailers offering smaller assortments (Amine and Cadenat, 2003; Arnold et al., 1983; Dhar et al., 2001; Louviere and Gaeth, 1987).

Consumer preference for larger assortments has been attributed to the fact that when choosing among assortments consumers seek to maximize decision flexibility and “hedge” against future preference uncertainty (McAlister and Pessemier, 1982). In this context, larger assortments offer a greater variety of options, which, in turn, increase the probability of a better fit between a consumer’s preferences and the available choice alternatives.

Recent research has argued that in addition to increased decision flexibility, consumer choice among assortments can also be influenced by the anticipated costs of selecting an option from the larger assortment. Thus, it has been proposed that consumers can choose to forgo the greater option variety and decision flexibility associated with larger assortments in order to minimize the cognitive effort in evaluating choice alternatives and simplify the choice of an option from the selected assortment (Chernev, 2006a; Huffman and Kahn, 1998).

Consumer choice among assortments can be better understood when considered in the context of a conceptual framework that views choice as a hierarchical decision process comprising two different stages: selecting an assortment and, subsequently, selecting an option from that assortment (Kahn and Lehmann, 1991; Kahn et al., 1987; Arentze et al., 2005; Cachon and Kok, 2007; Sood et al., 2004; Tversky and Sattath, 1979). In this context, consumers’ assortment-size preferences have been attributed to the nature of the consumer decision process and, in particular, to the degree to which these two stages of the overall decision are considered jointly versus separately (Chernev, 2006a; see also Sood et al., 2004). Thus, increasing consumers’ awareness of the item-selection task tends to increase the likelihood that consumers will view the assortment choice as a single decision (instead of two independent

choices) and, therefore, select the assortment that optimizes their choice of an item. When the choice of an assortment and the subsequent item selection are viewed as two independent decisions, choosing the larger assortment is perceived as the optimal strategy. However, when considering both decisions jointly, consumers who believe that choosing an item from the larger assortment is going to be difficult are also less likely to prefer the larger assortment to a smaller one. Thus, by varying the decision focus, it is possible to systematically vary consumers' choice among assortments.

Consumer choice among assortments is also influenced by the attractiveness of the options. Thus, some assortments comprise options that are, on average, of higher quality and, hence, are likely to be perceived as more attractive (e.g., Nordstrom, Neiman Marcus, and Whole Foods). In contrast, other assortments comprise options that are, on average, of lower quality and are likely to be perceived as relatively less attractive (e.g., dollar stores, Value City, and K-Mart). In addition, some assortments can be perceived as more attractive because the items they carry match customer preferences. To illustrate, assortments comprising bestseller items that are likely to appeal to the majority of consumers are likely to be perceived, on average, as more attractive than assortments comprising less popular items.

Recent research has further shown that consumer choice among assortments is a function of the attractiveness of the options contained in these assortments, such that smaller assortments tend to be more preferred when choosing among assortments comprising relatively more attractive options than when choosing among assortments comprising relatively less attractive options (Chernev and Hamilton, 2009). To illustrate, when choosing between a retailer carrying a larger assortment and one carrying a smaller assortment, consumers are more likely to prefer the latter when both assortments comprise relatively more attractive options than when they comprise relatively less attractive options. Anecdotal evidence from the ice cream industry suggests that flavor assortments are correlated with quality, such that higher end manufacturers (e.g., Haagen-Dazs) tend to offer less variety than lower end manufacturers, and higher end product lines

offer less variety of flavors than lower end product lines (Kochak, 1985; Shugan, 1989).

This finding is attributed to the notion that in the case of assortments comprising relatively attractive options, the marginal benefit from having a larger assortment to choose from is likely to be less than in the case of assortments comprising relatively less attractive options — a proposition consistent with the concavity of the value function (Bernoulli, 1738; Kahneman and Tversky, 1979; Nowlis and Simonson, 1996; Chandon and Wansink, 2007). With respect to consumer choice among assortments, the diminishing marginal value principle implies that increasing the attractiveness of the options in both larger and smaller assortments is likely to bring the assortments closer together in terms of the benefits consumers perceive. As a result, the perceived difference between these assortments will decrease with the increase of the options' attractiveness, which, in turn, will decrease the relative advantage of the larger set. The impact of option attractiveness on choice among assortments has been empirically shown not only to have a significant impact on consumer preferences but also to lead to a preference reversal in favor of the smaller assortment (Chernev and Hamilton, 2009).

The discussion of the impact of assortment size on choice among assortments can be summarized in the following propositions:

- P_{3.1}: Consumer choice among assortments is a function of assortment size and consumers' decision focus. In particular, larger assortments tend to be more preferred (relative to smaller assortments) in cases when consumers focus primarily on the assortment-choice task than in cases when consumers focus primarily on the task of choosing an item from an already selected assortment.
- P_{3.2}: Consumer choice among assortments is a function of assortment size and the attractiveness of items included in these assortments. In particular, smaller assortments tend to be more preferred when the attractiveness of the options comprising the available assortments is high rather than when it is low. Furthermore, the relationship between assortment

size and option attractiveness is concave, with the marginal impact of assortment size on choice decreasing as the attractiveness of the options increases.

4.2 The Impact of Assortment Structure on Choice among Assortments

In addition to being influenced by the number of alternatives, consumer choice among assortments is also a function of the relationships between these alternatives. The impact of the structure of the decision set on assortment choice involves two different aspects: option variety and option complementarity. The impact of these factors on choice among assortments is discussed in the following sections.

Prior research has shown that a reduction in the perceived variety of a given assortment will lower its choice likelihood (Broniarczyk et al., 1998; Sloot et al., 2006). It has further been argued that consumers will seek more variety as the number of items purchased from the same category increases (Ratner et al., 1999; Simonson and Winer, 1992; Walsh, 1995; see also Ariely and Levav, 2000; Arnold et al., 1983; Read and Loewenstein, 1995). The behavioral rationale for this finding is that larger quantities are associated with a longer consumption horizon, thus raising uncertainty about future consumption preferences; to deal with this uncertainty, consumers broaden the assortment of items at the time of purchase. Research by Hoch et al. (1999) has further documented that consumers are more satisfied with and are likely to choose assortments that offer high variety and are displayed in an organized rather than random manner.

Assortment choice can also be related to the degree to which options are differentiated by complementary versus noncomplementary features (Chernev, 2005). Thus, when choosing among assortments, consumers are more likely to select assortments differentiated by complementary features (i.e., features with additive utility that complement one another with respect to a consumer's ideal point, such as tartar protection and cavity prevention of toothpaste) than assortments differentiated by noncomplementary features (i.e., features with nonadditive utility, such as toothpaste flavor) — a counterintuitive finding, given

that consumers are less likely to make a choice from a complementary than a noncomplementary assortment.

It has been further shown that brands that offer a greater variety of internally consistent options are likely to be perceived as being of higher quality and consequently will more likely be chosen (Berger et al., 2007). Thus, large assortments comprising category-specific options (e.g., chocolates with different cocoa content levels) are more likely than cross-category assortments to be interpreted by consumers as signals of commitment to the category, which, in turn, translate to a perception of higher quality.

Assortment choice has also been shown to be a function of the availability of an option that clearly dominates all others because of its close proximity to a consumer's ideal point (Chernev, 2006a). The availability of such an "ideal" option has been shown to decrease consumer preference for larger assortments — an effect attributed to the fact that the presence of such an "ideal" option decreases the marginal utility that can be derived from the presence of extra alternatives in the larger assortment.

The discussion of the impact of assortment structure on choice among assortments can be summarized in the following propositions:

- P_{3.3}: Consumer choice among assortments is a function of assortment variety and the organization of the items in the choice set. In particular, consumers are more likely to choose assortments that offer high variety and are displayed in an organized rather than random manner.
- P_{3.4}: Consumer choice among assortments is a function of assortment size and the complementarity of the attributes differentiating its options. In particular, consumers are more likely to select assortments differentiated by noncomplementary rather than complementary attributes.
- P_{3.5}: Consumer choice among assortments is a function of the availability of an option in close proximity to a consumer's ideal point. Specifically, consumer preference for larger assortments is likely to be less pronounced in the presence of an "ideal" option.

4.3 The Impact of Purchase-Quantity Goals on Choice among Assortments

Most of the existing research examining consumer choice among assortments has focused on a scenario in which consumers aim to buy a single option. The issue of how purchase quantity influences consumers' choice among assortments has received relatively little attention in the literature. Recent research has shown that consumers purchasing a larger quantity tend to prefer assortments offering larger varieties (Bucklin et al., 1998; Simonson, 1990; Simonson and Winer, 1992; Walsh, 1995), which, in turn, implies greater preference for larger versus smaller assortments.

It has further been shown that consumers' choice of an assortment is influenced by their purchase-quantity goals, such that an assortment is more likely to be chosen if its size matches the desired purchase quantity (Chernev, 2008). Thus, when consumers are uncertain in their preferences, a match between the size of an assortment and the number of to-be-purchased items allows them to simplify the selection process by eliminating the need to trade off the benefits and costs involved — a strategy referred to as the quantity-matching heuristic. To illustrate, when choosing between an assortment of five items and an assortment of ten items, a consumer purchasing five items should be more likely to choose the smaller, five-item assortment than a consumer purchasing three items. In this context, it has been argued that this quantity-matching heuristic simplifies the choice process by allowing the decision maker to avoid tradeoffs associated with choosing a specific option. Thus, instead of deciding which and how many products to purchase, consumers can simply select the matching assortment.

The quantity-matching heuristic has been documented in a variety of decision scenarios, such as when purchases are intended for consumption over time, as well as when the purchase quantity is set by a retailer's volume-based promotions. It has been further documented that the quantity-matching heuristic tends to be more pronounced when decision uncertainty is high than when it is low, when consumers expect to have to justify their decisions, when consumers engage in variety-seeking behavior, and when consumers are aware of

the cognitive costs associated with choosing individual options from an already selected assortment.

The discussion of the impact of purchase quantity on choice among assortments can be summarized in the following propositions:

- P_{3.6}: Consumer choice among assortments is a function of the desired purchase quantity. In particular, consumers are more likely to select larger assortments when intending to purchase a greater number of items.
- P_{3.7}: Consumer choice among assortments is a function of the match between the assortment size and the purchase-quantity goal. In particular, consumers are more likely to select an assortment when its size matches the number of to-be purchased items.

5

Developing an Agenda for Further Research

This review takes a consumer's perspective to examine how product assortment influences judgment and choice. The impact of assortment on choice is discussed in the context of three key domains: how consumers perceive the variety of items in an assortment, how consumers choose among assortments, and how consumers choose an item from a given assortment. In particular, this review examines the impact of the individual factors represented by these three domains on four types of decision outcomes: purchase likelihood from a given assortment, the number of options purchased, the particular options chosen, and the strength of a consumer's preference for the chosen option(s). A conceptual analysis of the research in these three areas is summarized in Figure 5.1.

Factors that influence consumer perceptions of assortment variety can be divided into two broad categories: assortment factors (e.g., assortment size, assortment organization, and option differentiation) and consumer factors (e.g., consumer expertise and the decision task). Each of these factors can, in turn, be viewed as a composite factor that includes multiple aspects. For example, option differentiation involves

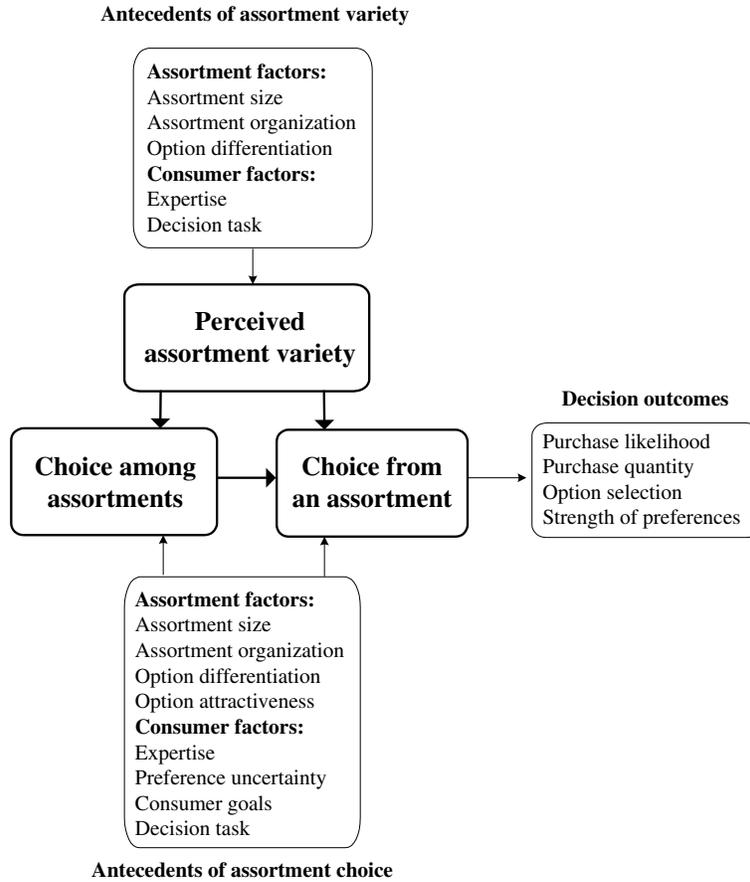


Fig. 5.1 Research framework for investigating the impact of product assortment on consumer choice.

factors such as the degree of distinctiveness of assortment options, the dispersion of option frequencies, and the proximity of the options.

In the same vein, factors that influence assortment choice (both among assortments and from one assortment) can be divided into assortment and consumer factors. The key assortment factors include assortment size, assortment organization, option differentiation (e.g., variety, option complementarity, option alignability, and price dispersion), and option attractiveness; whereas the key consumer factors include expertise (e.g., awareness of the relevant attributes

and attribute levels), preference uncertainty (e.g., availability of an ideal option), consumer goals (e.g., purchase quantity and purchase timing), and the nature of the decision task (e.g., accountability and complexity).

The predictions concerning the impact of these factors on different decision outcome variables are summarized in a series of research propositions outlined in this review. Most of these propositions reflect findings already documented in prior research. Despite the plethora of research examining the impact of product assortment on consumer choice, however, there are many unexplored areas that call for further investigation. Mapping the research propositions supported by prior research onto the framework presented in Figure 5.1 can help identify knowledge gaps that have not been addressed by prior research. Several promising areas for further investigation are discussed below.

An important issue not addressed by the existing research involves examining how factors such as assortment size and structure influence the choice of specific options. Indeed, while most of the existing research has focused on factors that reflect consumer preferences for the assortment in general and the likelihood of purchasing *any* option from that assortment, an issue of interest to many manufacturers and retailers involves understanding and, eventually, influencing consumer choice of a *particular* option from a given assortment. Prior research has already identified several factors that are likely to influence the choice of a particular option, such as the attraction effect, the compromise effect, and accountability (Simonson, 1999; Sela et al., 2009). Examining how these factors influence choice and how assortment-specific characteristics such as the size of the choice set and the organization of the individual options impact choice is an important area for further investigation.

Another underresearched issue involves developing strategies to overcome the potential drawbacks of large assortments. In many product categories, ranging from choosing a retirement plan to selecting a laundry detergent, consumers are often confronted with a large number of options without readily available decision strategies to facilitate making a “rational” decision — a phenomenon sometimes referred to as the “tyranny of choice” (Schwartz, 2000). This problem is exacerbated in

developing countries, in which consumers are for the first time faced with making choices from multiple options, which is typical for the U.S. retail environment. Identifying strategies to help consumers make better choices when faced with complex decisions is an important area for further investigation (Botti and Iyengar, 2006; Mick et al., 2004).

Most of the research has focused on the cognitive aspects of assortment choice, involving issues such as information load and cognitive effort, which are associated with evaluating the choice options. Further research is needed to investigate the affective (e.g., regret) and motivational (e.g., focus on maximizing gains or minimizing losses) aspects of choice. In addition, it is important to establish the interplay between the cognitive, affective, and motivational aspects of consumer decision processes. For example, an interesting question involves the possibility of influencing the perceived decision difficulty of the choice task by varying consumers' motivation for making the decision, by influencing their affective evaluation of the decision outcome, as well as by structuring the decision process (Levav et al., 2010). Investigating assortment choice in the broader context of decision processes is a fruitful venue for further investigation.

An important area for further investigation involves the development of an integrative model of managerial decision making that incorporates individual-level decision factors identified in prior behavioral research. Indeed, when modeling consumer preferences for a product in a given assortment, most quantitative research makes the implicit assumption that a product's utility is relatively independent from the utility of the other available options (Misra, 2008). The behavioral research discussed in this review suggests, however, that this simplifying assumption might lead to biased estimates of consumer preferences and purchase behavior. In this context, developing models that estimate the utility of any given option as a function of the other available options is an important area for further research.

On a more general level, assortment research can benefit from a quantitative approach to analyzing the prior findings. The existence of a variety of factors that are likely to influence assortment choice calls for a model-driven meta-analytic approach (e.g., Becker, 2001) that aims to identify the theoretical drivers that determine the impact of

assortment size on consumer choice. Such a meta-analytic approach is likely to be more informative for analyzing the impact of assortment size on choice overload than the typical quantitative approach, which is used to document the presence of a significant main effect across multiple studies reporting directionally consistent results. Thus, instead of simply looking for relationships between readily observable variables, the meta-analysis should focus on testing the validity of a conceptual model that reflects the decision processes underlying assortment perceptions and choice.

A first step in developing such a theory-based meta-analytic review involves articulating a general model of the impact of product assortment on consumer choice. In this context, choice overload can be represented as a function of the relationship between (1) the characteristics of the assortment (e.g., assortment size, assortment organization, and option differentiation) and (2) the characteristics of the consumer that determine his/her reaction to a given assortment (e.g., expertise, preference uncertainty, consumer goals, and the nature of the decision task). Testing the validity of a model reflecting this relationship across different experimental conditions can shed light on our understanding of the processes underlying assortment choice and help articulate its antecedents and consequences.

6

Product Assortment and Consumer Choice: A Managerial Perspective

The research discussed in this review suggests several strategies for managing product assortments. On a more general level, these strategies can be grouped into two categories: (1) strategies for optimizing the assortment and (2) strategies for optimizing the consumer decision-making process (Hamilton and Chernev, 2010). These two types of strategies are discussed in more detail in the following sections.

6.1 Strategies for Optimizing the Assortment

This research identifies three dimensions on which an assortment can be optimized: (1) assortment size (the total number of options contained in an assortment), (2) assortment organization (the way in which choice options are presented to consumers), and (3) option differentiation (the relationship among the individual options in a given assortment). Strategies for assortment optimization on each of these dimensions are discussed below.

6.1.1 **Optimizing Assortment Size**

A common belief among manufacturers and retailers is that offering more choice is always better. To illustrate, faced with slower growth many manufacturers — including Procter & Gamble, Unilever, and Johnson & Johnson — have adopted product proliferation strategies aimed at giving consumers more options. In many cases these strategies involve churning out tens and sometimes hundreds of minor variations of existing products. Many retailers have adopted similar strategies as well. Furthermore, many online retailers, such as Amazon.com, have used the breadth and/or depth of their assortments as a key aspect of their differentiation strategy. Contrary to this popular belief, the empirical evidence outlined in this review shows that offering consumers a greater variety of options can sometimes have a detrimental impact on purchase likelihood, in addition to driving up manufacturing and distribution costs.

One strategy for minimizing the negative consequences of choice overload is to reduce the assortment size to a point where the advantages of adding another option are lower than the disadvantages of complicating the consumer decision process. This strategy calls for designing more efficient assortments comprising options that are most likely to appeal to target customers while excluding those that are unlikely to be preferred by those customers. A number of manufacturers and retailers have adopted such strategies. For example, Apple offers a very limited set of offerings and customization options, and Wal-Mart offers a rather limited variety of options in each category. And even though the size of these assortments is driven primarily by manufacturing, logistic, and cost considerations, these companies might receive the additional benefit from simplifying consumer choice.

6.1.2 **Optimizing the Assortment Organization**

Improving the organization of the available options can facilitate choice by reducing some of the cognitive costs associated with the decision process. Because choice complexity increases with assortment size, larger assortments are likely to benefit from having a logical organization that will simplify choice. In contrast, smaller assortments may

benefit from lack of organization because disorganized assortments are often perceived as offering more variety than organized assortments. Indeed, because greater variety is one of the reasons individuals prefer larger assortments over smaller ones, disorganization can make smaller assortments more appealing. Thus, while organization can be used as a strategic tool to simplify choice from large assortments, disorganization offers a strategy to make smaller assortments more appealing without actually changing the number of items offered.

There are two common approaches to organizing options within an assortment: taxonomic and goal-derived. Taxonomic organization involves arranging products based on their inherent characteristics, such as category, manufacturer, size, or type. For example, taxonomic organization calls for displaying all brands of cereal together, in subgroups by types of cereal and/or the manufacturer. Goal-derived organization, on the other hand, groups options according to the underlying consumer goal they serve. For example, goal-derived categorization calls for combining cereal with complementary products such as milk and displaying the two products together. Because shopping is usually goal driven, goal-derived categories frequently provide a better match for consumers' decision processes.

6.1.3 Optimizing Option Differentiation

An important issue concerns designing strategies for efficient management of assortment variety. These design strategies are aimed at maximizing the perceived variety while minimizing the actual number of unique options. In this context, the research outlined in this review suggests that a retailer can increase its perceived variety not only by increasing the actual number of SKUs in its inventory but also by managing the shelf space allocated to each item, by the similarity of the items, the organization of the assortment, the ratio of the potential and actual assortment (assortment density), and the pattern of dispersion of item frequencies in the assortment (entropy).

Both insufficient differentiation and overdifferentiation can adversely impact consumer choice. Thus, assortments in which options are differentiated on attributes that are marginally relevant to

consumers might be associated with lower choice probability compared to assortments in which consumers can easily determine which option best matches their preferences. For example, minor variations in an offering's marketing mix variables — such as product attributes, brand, and price — often end up confusing rather than facilitating choice. Confusion can also be caused by overdifferentiation, which occurs when products vary on multiple relevant dimensions without all possible combinations being available. Indeed, the more relevant dimensions on which choice options are differentiated, the greater the number of resulting attribute combinations (and resulting SKUs). The mark of a successful differentiation strategy is designing assortments that match the underlying needs of its target customers.

6.2 Strategies for Optimizing the Consumer Decision-Making Process

In addition to optimizing the size, organization, and differentiation of their assortments, managers can influence choice by optimizing the consumer decision-making process. Common strategies for optimizing the consumer decision process involve providing a default option, helping consumers articulate their preferences, and structuring the decision process. These choice-engineering strategies are discussed in more detail below.

6.2.1 Providing a Default Option

A default option gives consumers a low-effort way of making a choice without having to expend the energy needed for a thorough search and evaluation. In addition, a default option provides a reference point for evaluating the other options in the set. This is because comparing each option to the default option is much easier than evaluating each option relative to all the other options available. Providing a default option can influence the likelihood of making a choice from a given set of alternatives. Thus, research has shown that even for very consequential decisions, such as whether to become an organ donor or participate in a company's retirement saving plan, making opting in versus opting out the default decision can influence people's choices.

In addition to influencing the overall purchase probability from an assortment, providing a default option can also influence which particular option consumers will choose — a strategy that is particularly effective in the case of larger assortments when consumers are faced with an extensive set of options. Thus, default-option strategies such as showcasing specific options in marketing communications, end-of-aisle displays, and online are likely to facilitate choice by providing a simple decision rule for consumers without well-articulated preferences.

6.2.2 Facilitating Preference Articulation

A particularly effective strategy for managing consumer choice involves helping consumers define an attribute combination that represents their “ideal” before they are shown the options available. Indeed, when consumers are unaware of the relative importance of different attributes and their preferences for specific levels of each attribute, they have to articulate these preferences *while* they are searching for the option that delivers the highest utility on these attributes. In this context, structuring the decision process in a way that helps consumers articulate their preferences and identify their ideal point can help facilitate choice. Note, however, that such preference articulation benefits only companies offering large assortments; for companies offering smaller assortments, the effect of preference articulation is likely to be reversed. Indeed, the greater the precision with which consumers define their ideal point, the greater the chance that a corresponding option might not be present in the available assortment. Thus, prechoice preference articulation tends to help primarily the companies carrying larger assortments by reducing customer confusion and streamlining the search and decision processes.

6.2.3 Managing Decision Focus

An alternative strategy for managing assortment choice involves shifting consumer focus from choosing the assortment itself (e.g., choosing a store) to choosing an option (e.g., choosing the product within the store). Research has shown that when the consumer decision process involves choosing a retailer, the advantages of larger assortments are

likely to loom large, while the potential drawbacks (e.g., the difficulty of selecting a single option) seem less important. In contrast, when consumers are choosing a specific option from an already selected assortment, the disadvantages of a large assortment become very prominent. This implies that communication strategies need to consider the stage of the consumer decision process. Promoting assortment size is likely to be more beneficial when consumers are selecting a retailer. On the other hand, when consumers are shopping for a particular option, communications that will help them navigate through the plethora of available alternatives might be more appropriate.

7

Conclusion

During the past two decades there has been substantial amount of research investigating consumer reaction to product assortment. This review groups prior studies into three main categories to define the domain of assortment research: (1) research examining consumer perceptions of assortment variety, (2) research studying consumer choice from an assortment, and (3) research focused on consumer choice among assortments. Some of the key findings in each of these three areas were synthesized in the form of specific research propositions that can be used to facilitate managerial decisions as well as to guide further empirical research. Testing the validity of these propositions in different contexts — both in theory and practice — as well as identifying new factors that influence consumer reaction to product assortments is a fruitful area for research.

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