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The over-categorization effect: How the number of categorizations influences shoppers' perceptions of variety and satisfaction



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ABSTRACT

The mere categorization effect indicates that increasing the number of categorizations for partitioning an assortment can motivate satisfaction. This paper seeks to further clarify the effect of categorization numbers on consumer satisfaction. As the number of categorizations starts to increase from a small one, the level of satisfaction rises accordingly. When the number of categorizations crosses a certain threshold, however, the perceived satisfaction may decrease. Three experiments involving 191 participants in total confirm the existence of the over-categorization effect, examine the influence of perceived overload and regret as the possible reasons causing this effect, and extend the external validity. The findings suggest that over-categorization ultimately pushes satisfaction level in the negative direction. Given a group of predetermined choices, increasing the number of categorizations accelerates satisfaction to a certain level, but the trend reverses when the excessive amount of variety overloads consumers and makes them regret their choices.

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1. Introduction

Display cues such as product categories play an important role when consumers make choices. For instance, in an insightful experiment testing consumer satisfaction about their choices of coffee from menu options with no or 10 categories of coffee, Mogilner, Rudnick, and Iyengar (2008) discover the mere categorization effect that increasing the number of categorizations to partition an assortment can motivate the chooser's satisfaction. However, does the number of categorizations always have a positive effect on the chooser's satisfaction? Is it possible that too much partitioning in assortment reduces satisfaction? Evidence suggests that, along with the increase in categorization number, consumers perceive increases in variety, too (Mogilner et al., 2008). Nevertheless, the effect of variety on consumers is mixed. Conventional

wisdom suggests that a higher variety of choices means a greater opportunity to satisfy the consumption needs of the customer (Baumol & Ide, 1956). In addition, since consumers are often unable to foresee their future tastes, maintaining a certain degree of variety keeps their options open (Kahn, Moore, & Glazer, 1987; Kahneman & Snell, 1992; Kreps, 1979; March, 1978). Studies on consumer decision making also suggest that people tend to choose a larger assortment size over smaller ones to ensure a wider variety of choices (Broniarczyk, Hoyer, & McAlister, 1998; Kahn & Lehmann, 1991).

On the other hand, while satisfying consumers' expectations of variety, the categorization number also causes an additional cognitive load on the consumers (Hauser & Wernerfelt, 1990; Huffman & Kahn, 1998; Jacoby, Speller, & Kohn, 1974; Malhotra, 1982; Scammon, 1977; Shugan, 1980), hinders their decision process (Chernev, 2003a,b; Dhar, 1997; Greenleaf & Lehmann, 1995; Iyengar & Lepper, 2000; Schwartz et al., 2002), and even supplies over-choices (Berger, Draganska, & Simonson, 2007; Dhar, 1997; Iyengar, Huberman, & Jiang, 2004; Iyengar & Lepper, 2000; Tversky & Shafir, 1992). Other studies concede these arguments and point out that a larger categorization number increases the risk that consumers will experience postpurchase regret (Gourville & Soman, 2005), which will reduce their confidence in their choices (Chernev, 2003a,b; Iyengar & Lepper, 2000). In short, increasing the variety of choices might diminish consumers' perceived satisfaction.

The arguments from both sides seem justifiable. When the number of categorizations increases, the perceived variety of choice also

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increases, which guarantees a higher autonomy in choice and raises consumer satisfaction (Mogilner et al., 2008). However, when the number becomes too large, consumers encounter a rapid increase in indecision costs due to the increased variety, eventually inducing a satisfaction loss in their final choice. Currently, relevant studies have shown the relationship between categorization number and perceived satisfaction. Mogilner et al. (2008) have further posited that this relationship should be positive. However, this research argues that the actual relationship might not be so simple. The purpose of this study is to further clarify the effect of categorization numbers on consumer satisfaction. As the number of categorizations starts to increase from a small one, the level of satisfaction rises accordingly. When the number of categorizations exceeds a certain threshold, however, the perceived satisfaction may decrease.

2. Literature review and hypotheses

2.1. Number of categorizations and perceived variety

Categorization of product ranges can function as either an informative base or a perceptual base. As a beneficial marketing tactic, first, categorization signals the basic characteristics of products. Categorization labels provide necessary information for consumers to distinguish between different types of products, which helps to create consumer preference (Alba, Hutchinson, & Lynch, 1991; Bettman & Zins, 1979; Chakravarti & Janiszewski, 2003; Howard & Sheth, 1969; Huber & Klein, 1991; Johnson & Payne, 1985; Nedungadi, 1990; Ratneshwar & Shocker, 1991; Roberts & Lattin, 1991; Rosen, 1978). Second, the presence of uninformative or meaningless categories serves as a perceptual cue that changes the variety perceived by consumers, who perceive products under different categories as being different (Mogilner et al., 2008). For example, linguistic studies show that people tend to believe that products with descriptions in different languages are more likely to be different from those having descriptions in the same language (Schmitt & Zhang, 1998). Studies by Kahn and Wansink (2004) also conclude that a customer's perception of higher variety can be achieved by simply dividing chocolate beans by their colors. Kahn and Wansink (2004) find that when categorizing a packet of chocolate candies by color, the tested participants believe that they are in fact enjoying a wider variety of candies, despite the omission of any type of information control. The categorization per se makes consumers perceive that the same types of goods are similar and that different types of goods are dissimilar (Rosch, 1975, 2002; Sloutsky, 2003).

Based on the above reasoning, perceived variety is associated with the categorization of a group of items. For consumers, the way to categorize an assortment of products not only motivates them to use cognitive resources for information processing but also provides a perceptual implication. As the number of categories changes, consumers' perception of product variety toward the assortment varies accordingly, even if all the products remain the same. When offered more categories, consumers feel that they have a wider variety of alternatives to choose from. Therefore, no matter which method or basis firms use to categorize the products, a greater number of categorizations imply more differences among the goods and thus cause a higher level of perceived variety. Thus,

H1. Given a fixed assortment, an increase in the number of product categories leads consumers to perceive more product variety.

2.2. Perceived variety and consumer satisfaction

Previous studies have shown that companies intend to increase the range of products to meet growing demand from consumers and to prevent competitors from overtaking their share in the market (Schmalensee & Trippi, 1978). Other studies have also shown that people usually have a negative attitude with limited choices and enjoy having a wide variety of possibilities to choose from (De Nisco & Warnaby, 2014; Fitzsimons, 2000); in addition, consumers prioritize and pursue variety to enjoy a diverse range of products (Broniarczyk et al., 1998; Kahn, 1995; McAlister & Pessemier, 1982). These studies indicate that variety brings many benefits. The first benefit is that a greater number of choices mean greater variety, and therefore, consumers can make better decisions. Many traditional economic models support this particular benefit (Hotelling, 1929; Kuksov & Villas-Boas, 2010). In addition, consumers often encounter situations where they sight two extremely similar products and are unable to make a choice (Festinger, 1964; Tversky & Shafir, 1992), whereas products with greater differences are easier to compare (Dhar, 1997).

According to the discussion in Section 2.1, the number of categorizations also influences the perceived product variety, which is highly associated with satisfaction. Most of the research on interactions between the number of categorizations and consumers' perceptions as well as behavior focuses on the positive benefits provided by the diverse range of alternatives (e.g., Hoch, Bradlow, & Wansink, 1999; Kahn & Wansink, 2004; Mogilner et al., 2008). That is, consumers prefer more variety when their variety perceptions are between low and moderate levels. However, previous studies rarely discuss the negative effects of a high level of perceived variety caused by increasing the number of categorizations. For example, increased variety accompanies more loadings in emotional and cognitive processing (Iyengar & Lepper, 2000; Loewenstein, 1999). When the perceived level of variety is high, those loadings exceed the benefits gained from variety, so consumer satisfaction may fall. Thus, when the increasing number of categorizations reaches a certain level, the overly-increased variety will then decrease consumer satisfaction, causing the over-categorization

Although changing the number of categorizations strongly affects the level of satisfaction, such effect does not usually work on preference matchers, who have better knowledge of the products and always have a determined range of preferences when shopping (Mogilner et al., 2008). In contrast to the matchers are the preference constructors, who are unfamiliar with the products and thus construct their preferences through the process of choosing.

Preference matchers and constructors act differently when they meet variety. Preference matchers do not care how many options are available and need to consider fewer alternatives, while preference constructors have to accomplish an entirely different task, one in which the variety and organization of the options are important to them. When making decisions, preference matchers do not rely on external information (Russo & Leclerc, 1994) and rarely use their cognitive resources (Cherney, 2003a,b). Preference constructers, on the other hand, acquire information from the given environment to make their choices (Dodd, Pinkleton, & Gustafson, 1996; Fischhoff, 1991; Hoch & Ha, 1986; Levin & Gaeth, 1988; Lynch, Chakravarti, & Mitra, 1991). In reality, general consumers are often unfamiliar with the products and lack sufficient knowledge of the types of products (Chernev, 2003a,b); in short, they are preference constructors. These studies provide a reasonable inference that the over-categorization effect is only applicable to preference constructors. Thus.

- **H2.** When preference constructors make choices given a fixed assortment, an inverted-U relationship exists between the number of categorizations and their satisfaction. That is, at a moderate number of categories, the satisfaction level will be greatest.
- **H3.** Perception of variety mediates the relationship between the number of categorizations and consumer satisfaction level.

If the over-categorization effect exists, an interesting question then arises: Why does the effect happen? The variety provides more freedom and choices to consumers (Mogilner et al., 2008), but at the same time, the higher number of choices may gradually decrease the satisfaction of

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