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Fundamental patterns of in-store shopper behavior

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ABSTRACT

This research confirms empirical patterns about in-store behaviors based on a large number of shops and store visits, specifically 654,000 transactions in 40 supermarkets, hypermarkets, convenience and specialty stores in the USA, UK, China, and Australia. Integrating new data with past findings highlights that: (i) many shopping trips are short; (ii) shoppers typically only cover a small proportion of the store on any trip, and (iii) the heterogeneity of key behavioral measures (store coverage, number of items bought, and trip length) is generalizable across countries, most store formats, and store size. These patterns can help retailers and manufacturers benchmark and predict behavior and provide a base for further theoretical developments.

1. Introduction

The in-store behavior of shoppers has been studied for more than 60 years (e.g. see Applebaum, 1951; Frisbie, 1980; Kollat and Willett, 1967; Stern, 1962). However, more systematic documentation of the underlying patterns of shopper behavior remains necessary. The retail sector has increased in complexity, where retailers now operate stores in multiple retail formats (i.e. supermarkets, supercenters, convenience, online) across a range of countries. Similarly, manufacturers increasingly sell their products across a range of retail formats and countries (Deloitte, 2013).

While models to describe consumers switching between retail outlets (Keng et al., 1998), regularity of shopping trips (Kim and Park, 1997), and shopper purchases (Kamakura, 2012) have been identified, models to describe shopper behavior inside retail outlets are scarce and largely based on laboratory rather than field experiments (Hui et al., 2009c). Prior research has established that consumers vary in their motivations for shopping (e.g. Tauber, 1972), shopping styles (e.g. Inman et al., 2009; Kollat and Willett, 1967), in-store behaviors (e.g. Kim and Park, 1997; MacKay, 1973) and frequency of shopping trips. However, a better understanding of the heterogeneity of shopper behavior inside retail outlets is needed and is possible.

We focus on three related metrics relevant to the management and design of retail outlets and to the implementation and evaluation of shopper marketing programs: the proportion of the store visited on a shopping trip, the number of items purchased per shopping trip (basket size), and the amount of time spent in the store. The proportion of store area visited is particularly under-researched, despite its relevance to retailers, manufacturers, and researchers.

We utilize data from 42 retail outlets to identify generalizable patterns of shopper behavior. Consistent with an empirical generalizations approach, the data was purposefully selected to provide both close replications (i.e. supermarkets in different US cities) and differentiated replications (a hypermarket in China, specialist wine stores in Australia) to test the generalizability of the findings (as recommended by Lindsay and Ehrenberg, 1993).

2. Key shopper metrics and current knowledge

To build a comprehensive description of in-store behavior to advance the science of shopping (Underhill, 1999), a multi-measure approach providing insight into different aspects of in-store behavior is useful. For example, the proportion of a store covered may be determined by how much time the shopper has available to spend in the store or the items the shopper intends to purchase. Alternatively, the items needed may dictate how much of the store the shopper covers, which may, in turn, influence the time taken to complete a shopping trip. There will be variation across individuals and across shops. Regardless of the direction of these relationships, all measures—trip length, store coverage, and basket size—yield valuable insights into how shoppers behave. While clearly the measures are correlated and there is important work (e.g. in-store experiments) required to under-

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stand how they influence each other across conditions, documenting "norms" and typical patterns in each is an important step to advance our knowledge out how people shop and to develop evidenced based benchmarks for evaluating in store activations.

Of all the aspects of shopper behavior in-store, we intentionally focus on some of the most fundamental patterns to ensure that the knowledge we develop will be understood and adopted by industry. Starting by describing a number of measures is also a critical step in building an empirically based theory of in-store shopper behavior. The scope of this work is brick-and-mortar retail environments. We acknowledge that there is an opportunity in the data-rich online shopping environment to build further generalizations (for a relevant discussion see Moe and Fader (2001)).

The present research builds on scattered prior studies, looking for fundamental patterns in the heterogeneity of in-store shopper behavior. It does this through examining store coverage, shopping trip length, and basket size across a wide range of primary data sources and through incorporating industry based, ad hoc prior studies. Through this, we provide a more comprehensive explanation of the observed patterns in shopper behavior and establish a solid empirical basis from which differences in varying contexts can be identified.

2.1. Store coverage

The first measure, how much of the store a shopper covers on a single trip, plays a critical role in the effectiveness of in-store marketing activities. To be influenced by in-store stimuli (e.g., at-shelf promotions, product arrangement, or in-store communications), shoppers must first visit specific areas of the store. Exposure is also important for generating unplanned (impulse) purchases (Granbois, 1968; Hansen and Ottar Olsen, 2007; Hui et al., 2013a; Knox et al., 2011; Kollat and Willett, 1967; Stern, 1962). In addition, assumptions about store coverage affect store design. For example, some retailers attempt to minimize walking distance, believing that shoppers find it inconvenient (e.g. Tauber, 1972).

Historically, marketers have assumed that shoppers methodically work their way up and down each store aisle (see Larson et al. (2005) for further discussion). Even shoppers themselves believe they behave this way: 25% of shoppers claimed to visit the entire store on their shopping trips (Scamell-Katz, 2012). However, in-store observations revealed a different reality: of the 25% who claimed to visit the whole store, camera footage showed that less than 2% covered more than half of the store (Scamell-Katz, 2012). Trolley tracking studies also support an extremely low occurrence of shopping trips that cover every aisle (Silberer et al., 2007; Sorensen, 2009).

Prior studies and logic indicate that the proportion of store area visited is affected by store size. For example, Sorensen (2011b) reported that, on average, shoppers visited just 11% of a 9000 m^2 US supercenter and 25% of a 3700 m^2 US supermarket (Hui et al., 2013a). Similarly, Hui et al. (2009a) reported that shoppers of a large US supermarket visited, on average, 26% of the store whilst shoppers of a medium-sized US supermarket visited 37%. However, prior studies have not discussed the distribution that coverage statistics follow, and have not systematically documented the patterns in stores of different sizes, to determine if a consistent distribution is evident across different retail formats, store sizes or countries. Understanding the distribution of store coverage by shoppers will enable retailers and managers to forecast the intensity of shopper traffic and to benchmark the performance of stores.

2.2. Shopping trip length

The amount of time spent in a store (trip length or duration) may moderate how much of a retail outlet a shopper covers. The amount of time in-store also affects how shoppers navigate the outlet (Larson et al., 2005) and make purchase decisions (Dhar and Nowlis, 1999; Park et al., 1989).

Shopping trips vary in length, depending on the shopping mission (Walters and Jamil, 2003), the day of the week (LLT 1995 as cited in Kahn and Schmittlein, 1989; Tanskanen et al., 2002), and the retail environment (Sorensen, 2009). For example, trips vary across retail formats, with trips to mass merchandise stores typically being longer than to grocery stores (Sorensen, 2009, 2011b). Sorensen (2010) also reports that shopping trips are typically longer in retail outlets with a single dominant pathway (e.g. Ikea or Stew Leonards supermarkets), compared to outlets where many pathways are possible. Store layout can also affect the distribution of trip length data (Sorensen, 2010).

Prior research has indicated that quick trips are most common (e.g. of all shops that occur in a store most are short) but that there is substantial variation in trip length (e.g. sometimes shoppers have long shops) (Kahn and Schmittlein, 1989; Sorensen, 2009). Systematic efforts to describe the characteristics of the variation in trip length have not been made despite its' relevance to retailers and manufacturers. Variability presents a problem for retailers as it suggests that shoppers have different needs and meeting those needs with a single approach or layout may be difficult.

Prior studies suggest that shopping trips are longer, on average, in some countries that in others; hypermarket trips in Asia have been found to be longer on average than in the US (i.e. Hui et al., 2009a; Scamell-Katz, 2012; Sorensen, 2010). Modeling the distribution and testing its generalizability across factors that have been shown to affect measures of central tendency is an important step towards developing knowledge that is broadly applicable.

2.3. Basket size or the number of items purchased

Basket size is both a driver of in-store behavior and a consequence of the path a shopper takes (Granbois, 1968; Knox et al., 2011; Kollat and Willett, 1967; Stern, 1962). The number of items purchased is a key measure for retailers and manufacturers when tracking the effectiveness of shopper marketing programs.

Basket size is expected to correlate with the amount of money spent on a grocery trip and the frequency of grocery trips (Desai and Talukdar, 2003). Basket size is also influenced by the type of shopping trip (whether a 'major/regular' or a 'fill-in/quick' trip) (Kahn and Schmittlein, 1989; Kollat and Willett, 1967); the planned or unplanned nature of the purchases (Granbois, 1968); the use of a shopping list (Thomas and Garland, 1993); and available shopping aids (basket, trolley, etc.) (Underhill, 1999).

Basket size can vary across different retail formats. For example, consumers may go to a neighborhood store for quick fill-in trips and to a larger store for regular weekly shopping trips (Kahn and Schmittlein, 1989; Leszczyc et al., 2000). Consistent with this observation, Sorensen (2009) found that, in supermarkets, 50% of baskets held five or fewer items but, in convenience stores, 50% of baskets had three or fewer items.

Cross-country variations in basket size have also been noted. For example, in the US, where cars are large and houses typically have ample storage space, large monthly shopping trips are common; however, in Vietnam, where bicycles and motorbikes are the primary modes of transportation, daily shopping is the norm (Scamell-Katz, 2012).

Thus, empirical examination of the distribution of shopping trips across stores of different sizes, formats and countries can be used to test the applicability of prior claims and to test whether it is possible to establish a generalizable pattern about the distribution of basket sizes at a store level.

2.4. Heterogeneity of shopping trips

Industry and academic researchers (e.g. Larson et al., 2005; Sorensen, 2008, 2009; Underhill, 1999) have observed substantial