



Cigarette brand loyalty and purchase patterns: An examination using US consumer panel data[☆]



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ABSTRACT

This study analyzes data on cigarette purchasing using an extensive panel dataset. Major findings are: (1) cigarette purchasing in this market exhibits a reverse-J, or NBD (Negative Binomial Distribution)-like shape: many infrequent buyers and fewer frequent buyers; (2) Cigarette brands do exhibit high loyalty compared to other consumer categories, and show a trend to higher brand loyalty over time coinciding with fewer price promotions; (3) The data shows a weak double jeopardy pattern of smaller brands enjoying somewhat lower loyalty; (4) Smokers of a given brand are on average more likely to purchase another large cigarette brand than another small brand; (5) A straightforward analysis method identifies occurrences of excessive cross-brand cannibalization in the portfolio of one of the major tobacco corporations; and (6) Certain brands enjoy particular appeal among specific demographic groups. The study sheds more light on consumer behavior towards a product with addictive qualities and known harmful effects.

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1. Background and introduction

Tobacco use is reported to be the leading, or one of the leading, public health concerns in many countries (e.g., Haddock, Talcott, Klesges, & Lando, 1999). There is overwhelming evidence that smoking leads to numerous manifestations of ill health including, but not limited to - lung cancer, chronic bronchitis and emphysema, slower recovery from illness or surgery, stroke, numerous other cancers, and death (Chaloupka & Warner, 2000). In the United States, for example, smoking is attributed to the premature deaths of over 400,000 people annually (CDC, 2011). As a consequence of the adverse health effects of smoking, there is an intense interest in the behavior of smokers by researchers in multiple disciplines, because understanding such behavior is a basis for changing it to induce positive health outcomes. Many large-scale surveys are conducted to gain insights into the consumption and cessation behavior of smokers. Examples range from a tobacco use supplement to the US census (Bureau of the Census, 2003), to extensive longitudinal studies examining quitting (Royce, Corbett, Sorensen, & Ockene, 1997). Other studies investigate the impact of advertising and other marketing variables on cigarette demand. Primary demand for cigarettes is price inelastic, with a meta-analysis finding an average price elasticity of -0.42 ; and an average advertising elasticity of 0.08 (Gallet & List, 2003 p. 825). Less is known about in-market brand performance metrics such as repeat-purchase brand loyalty and cross-brand purchasing. Additional insights about smoker purchase behavior and cigarette brand metrics

can be gained by analyzing consumer purchases that are recorded as part of an ongoing consumer panel. The study examines whether cigarette purchasing and cigarette brands follow established empirical patterns of the type routinely identified in many other packaged goods markets such as detergent, toothpaste and so on (e.g., Ehrenberg, Uncles, & Goodhardt, 2004). This descriptive knowledge can provide insights for researchers studying tobacco-related issues, as well as interest for marketing and consumer behavior scholars more generally. The four key areas of interest for this study are: how cigarette purchase incidence is distributed across the sample of smokers, the extent of loyalty towards cigarette brands, patterns in cross-brand purchasing, and whether certain brands appeal to specific demographic groups. Each area is now briefly introduced.

2. Purchase incidence

Total consumption of cigarettes in the USA in 2006 is reported to be 1691 cigarettes per adult per year (American Lung Association, 2011). That extent of smoking would appear to be concentrated among a minority of the population. A current US Department of Health and Human Services survey reports that 19% of adults currently smoke and of those, 73% smoke every day (CDC, 2012). These figures suggest that most adults who smoke, smoke often – reflecting the physically addictive nature of tobacco. Analyzing ongoing purchase records from a consumer panel might uncover additional insight about how the purchase incidence for cigarettes varies across the smoker population. Studies in many other consumer goods markets find that purchase incidence for a product category follows an NBD, Negative Binomial Distribution (e.g., Ehrenberg, 1959, 2000). In such categories the NBD distribution generally takes a reverse J-shape, with larger numbers of infrequent

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buyers and steadily fewer medium and frequent buyers. While the CDC data (2012) are for cigarette consumption, not purchases, such frequent consumption implies the distribution of cigarette purchases may not necessarily follow a reverse J-shape. Is cigarette purchasing, then, quite different to other consumer packaged goods in terms of the distribution of infrequent and frequent buyers? The first research question is therefore:

RQ1. What is the distribution of purchase occasions and cigarette packs purchased (among participants in a consumer panel) in a time period such as a year?

3. Brand loyalty

Various studies suggest, or report, high loyalty for cigarettes. DiFranza, Eddy, Brown, Ryan, and Bogojavlensky (1994) report that 51% of youths interviewed stated they smoke the same brand as their first cigarette. Wakefield, Morley, Horan, and Cummings (2002) state that “once a consumer embraces a cigarette brand, it is quite unlikely that they will change” (p. 73). In an extensive survey of US adult smokers, Siegel et al. (1996) report that only around 9% said they switched their major brand from year to year. Cummings, Hyland, Pechacek, Orlandi, and Lynn (1997) report a similar figure of 10%. Mecredy, Bondy, Brown, and Cohen (2011) found a rate of 24% switching cigarette *type* (full-flavor, light etc.) per year in Canada. Survey studies of cigarette brand usage such as these often rely on questions about the brand usually bought, and whether the respondent has switched from another brand that used to be their favorite. However, consumers' behavior towards cigarette brands may not necessarily involve being highly loyal to a brand then switching to another. Rather, cigarette brand loyalty may perhaps manifest as split brand loyalty – that is, that many consumers simply buy brand *A* some of the time and brand *B* some of the time. This manifestation of divided brand loyalty is documented in many other consumer goods markets (e.g., Ehrenberg, 2000), but not for cigarettes, perhaps because detailed panel data on the product has not been available for academic research. Understanding if this very high reported loyalty for cigarettes is shown in actual purchase data would be desirable for researchers in both marketing and public health. Therefore, RQ2 is:

RQ2. How high is repeat-purchase loyalty towards cigarette brands?

Repeat-purchase loyalty will be measured here as share of requirements (# purchases of brand / total # purchases of category) in a 12-month period, as well as the extent to which highly loyal buyers in one year stay loyal in a subsequent year.

Past studies find a systematic relationship between purchase incidence and brand loyalty: infrequent buyers of a category are more loyal, because they have fewer opportunities to buy competitor brands (e.g. Dowling & Uncles, 1997; Stern & Hammond, 2004). Cigarettes may be different, such that even heavy smokers, reportedly very attached to their brand, always buy it. Therefore, RQ3 is:

RQ3. Is there a relationship between household's category purchase rate for cigarettes and level of brand loyalty?

Next, in relation to brand loyalty, many studies have found a predictable relationship between the number of people who buy a brand (its penetration) and how often those buyers buy it (purchase frequency, or share of category requirements). The relationship is that bigger brands enjoy somewhat more loyalty, while smaller brands get somewhat lower loyalty – described as double jeopardy (e.g., Ehrenberg, Goodhardt, & Barwise, 1990). The double jeopardy pattern is documented for diverse fields ranging from consumer packaged goods (Uncles & Ehrenberg, 1990) to television shows (McDowell & Dick, 2001) to purchases of motor vehicles (Colombo, Ehrenberg, & Sabavala, 2000). However, as stated earlier, since tobacco is addictive and buyers are reportedly highly loyal, perhaps double jeopardy will not hold for

cigarette brands. Knowledge on this issue would be desirable simply from the viewpoint of knowing when loyalty is related to brand size and when it might not be. Therefore, RQ4 is:

RQ4. Does the double jeopardy penetration–loyalty pattern hold for cigarette brands?

4. Patterns in cross-brand purchasing

If smokers *do* purchase more than one cigarette brand in a time period such as a year, what other brands do they tend to purchase? In many other markets, a predictable pattern in cross-brand purchasing has been found whereby competing brands *A*, *B*, *C*, *D* etc. tend to share their customers with each other in-line with their respective penetration. That is, if *A* and *B* are bigger brands than *C* and *D*, then *A* will share more of its buyers with the other large brand *B* and fewer of its buyers with the smaller brands *C* and *D*. This pattern is called the Duplication of Purchase Law (e.g., Dawes & Nenycz-Thiel, 2011; Ehrenberg, 2000 ch.10). In the case of cigarettes, if brands have a strong brand image (e.g. Hafez & Ling, 2005), one might argue that cross-brand purchasing will occur between those with a similar image. Alternatively, such cross-purchasing could occur mainly among brands in the same price tier (Cornelius et al., 2013). Therefore cigarette brand cross-purchasing might not follow in-line with brand penetration. Accordingly, the fifth research question is:

RQ5. Is there cross-purchasing of cigarette brands, proportional to overall brand penetration?

Cigarette manufacture and marketing is highly concentrated with three corporations accounting for 90% market share in the U.S. – Philip Morris, R.J. Reynolds, and Lorillard (Reuters, 2008). Many of these corporations own multiple cigarette brands. Literature on brand management emphasizes that within-portfolio cannibalization should be minimized, though strategies such as placing brands in different price/quality tiers (Hilleke & Butscher, 1997) and employing different brand positioning (e.g. Henderson, Iacobucci, & Calder, 1998; Sengupta, 2007). Indeed, cigarette brands exhibit apparently strong positioning (e.g. Cook, Wayne, Keithly, & Connolly, 2003; Keon, 1983), or at least determined efforts to create it – does this positioning result in minimal cannibalization among the brands owned by the same corporation? The answer to such a question would be illuminating for researchers interested in tobacco consumption, as well as marketing scholars with an interest in brand portfolio management. Research question 6 is therefore:

RQ6. How much within-portfolio brand cannibalization occurs for the large cigarette producers in the US market?

5. Demographic segmentation

Segmentation and targeting are said to be a cornerstone of marketing (e.g., Kotler & Keller, 2006 ch.8). However, some authors argue that segmenting and targeting can be counterproductive. For example, appealing to a specific segment might mean the brand's sales potential is high in that segment, but the brand's market-wide sales are attenuated due to lower appeal outside that segment (Wright & Esslemont, 1994). Also, since many media vehicles (television, radio etc.) are surprisingly *un*-segmented, appealing to a variety of age and income groups, and genders (Nelson-Field & Riebe, 2010), the cost-effectiveness of targeting a mass-market good towards specific population sub-groups is far from certain. Indeed many large-scale studies identify that competing brands within product categories generally sell to the same sorts of users in terms of demographics and psychographic profiles (e.g., Dawes, 2009; Fennell, Allenby, Yang, & Edwards, 2003; Hammond, Ehrenberg, & Goodhardt, 1996; Uncles, Kennedy, Nenycz-

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