5-1994

To extend or not to extend: Success determinants of brand line extensions

Srinivas K. REDDY
Singapore Management University, sreddy@smu.edu.sg

Susan L. HOLAK
City University of New York

Subodh BHAT
San Francisco State University

Citation

SRINIVAS K. REDDY, SUSAN L. HOLAK, and SUBODH BHAT*

The authors study the determinants of line extension success using data on 75 line extensions of 34 cigarette brands over a 20-year period to investigate the relative effects of brand, extension, and firm characteristics on the incremental market share of brand line extensions. The econometric model also captures the extent of cannibalization of parent brand sales that may have occurred due to the line extension's introduction. The authors also explore the role of a brand's symbolic value as a factor in line extension success. Results indicate that parent brand strength and its symbolic value, early entry timing, a firm's size, and distinctive marketing competencies, as well as the advertising support allocated to line extensions, contribute positively to the success of line extensions. Their findings suggest that, in this industry, cannibalization effects of line extension activity may have been limited and line extensions into earlier subcategories actually may have helped the parent brand. Even with cannibalization, the incremental sales generated by the extension seem to be reason enough to make a line extension strategy viable.

To Extend or Not to Extend: Success Determinants of Line Extensions

New product introduction has always been a popular strategy for firms seeking growth. The strategy, however, is risky because the product may not be accepted; 30–35% of new products fail (Booz, Allen, and Hamilton 1982; Crawford 1979). According to Bragg (1986), the odds are even more pessimistic (only two out of ten new items are successful). Because of increasing competition in distribution channels and customer outlets and rising advertising costs, introducing successful new brands may be more difficult now than in the recent past (Aaker 1991).

One increasingly popular approach to reducing this risk of failure is to market the new product using a well-known brand name. A spectrum of strategic options exist. Line extensions—the use of an established brand for a new offering in the same product class or category (e.g., Cherry Coke, Liquid Tide, Miller Lite)—differ from their parent

brand in relatively minor ways, such as flavors, sizes, and compositions. Brand extensions—the stretch of the established franchise to a different product class (Aaker and Keller 1990; Tauber 1981)—have been the focus of recent academic research. Examples of brand extensions include Kodak floppy disks, Ivory shampoo, Zenith computers, and Milky Way ice cream.

Nancy Bauer, president of Bauer and Rosner, is quoted as saying, "Line extension products now outnumber new product launches four to one" (Bragg 1986, p. 61). According to Aaker (1991, p. 208), "One survey of leading consumer product companies found that 89% of new product introductions were line extensions (such as a new flavor or package size), 6% were brand extensions, and only 5% were new brands." The use of established brand names to access new markets is based on the increasing recognition that some brands have built a loyal consumer and trade franchise, command premium prices, and as a result, enhance the overall value of the firm that owns them.

Though the introduction of line and brand extensions has become prevalent, such a practice does not necessarily guarantee success. The failure rates of extensions are fairly high and approach the rates of failure of new brand introductions. In a study by the Association of National Advertisers, it was found that 27% of line extensions fail (ANA 1984).

Even those extensions that are not classified as failures do not necessarily enjoy equal success. An extension may cannibalize sales of existing products and dilute the image

of the original brand over time (*The Economist* 1990). Although the extent is not known, it is likely that an unsuccessful product may seriously affect the parent brand (Tauber 1981). Ries and Trout (1986) contend that extensions are potentially ruinous because they dilute a brand's position in a consumer's mind. However, analysts contend that some companies have waited too long to respond with extensions (e.g., Warner-Lambert's Cool Mint Listerine) as well-known brands names experienced decline (Levinson et al. 1993). The reciprocal impact of an extension, therefore, has been raised as an important focus of research inquiry (Aaker and Keller 1990). Posed more broadly, what is the "interplay between brands and extensions" (Srivastava and Shocker 1991)? These observations lead one to ask what determines the success or failure of extensions, and thus to the purpose of our research.

Our objectives are threefold. Primarily, our purpose is to identify and model the determinants of line extensions' market share, a conventional indicator of extension success. Our approach differs from the studies by Smith and Park (1992) and Sullivan (1991) in that we concentrate specifically on line extensions in one product category occurring over a 20-year period, rather than on brand extensions across product categories. As previously noted, the study of line extensions is important because most new product introductions are line extensions. Rather than hypothetical extensions, our research utilizes actual line extension activity in a longitudinal framework.

Our second research objective addresses the issue of sequential line extension activity of a brand and its incremental impact on the parent brand—the possibility of the erosion of brand equity. A challenging aspect of meeting this objective is the attempt to model and quantify the extent of cannibalization of the parent brand sales due to this sequential extension activity.

Our third research objective is to provide insights into the symbolic value of a brand as a pivotal element of extension activity. At a time when there is much debate about the worth of name brands, pressure from private labels and generics, and heightened selectivity on the part of retailers, corporations and advertising agencies are exploring the meaning or value of brands. As Aaker (1991, p. 15) writes, "The value of brand-building activities on future performance is not easy to demonstrate. The challenge is to understand better the links between brand assets and future performance, so that brand building activities can be justified." In addition, Keller (1993) calls for aggregate research involving extensions to complement individual-level experimental studies, paying particular attention to the relationship between elements of brand knowledge (e.g., symbols, logos, slogans) and extension success.

The article is organized in the following manner: First we present conceptual and empirical literature pertaining to brand management, brand equity, and extension strategies. We then outline a conceptual framework identifying the major determinants of extension success and discuss research hypotheses. The methodology, including variable operationalizations, model, and data specifics are then presented. We conclude with a discussion of the results, impli-

cations for brand management, and opportunities for further research.

BACKGROUND

Historical Perspective

Forms of product branding, including distinguishing symbols, marks, or names, have been practiced by goods purveyors for centuries (Aaker 1991; Kotler 1991). With the advent of marketing research technology in this century, the marketplace possessed capabilities to differentiate products in an unprecedented way. According to Aaker (1991, p. 7), "Unique brand associations have been established using product attributes, names, packages, distribution strategies, and advertising. The idea has been to move beyond commodities to branded products—to reduce the primacy of price upon the purchase decision and accentuate the bases of differentiation."

This evolution of branding practices has spawned additional methods and research topics for practitioners and academics, respectively. Among them are issues related to positioning, loyalty and its measurement, brand management over time (Park, Jaworski, and MacInnis 1986), and, most recently, brand equity and brand extensions. Particularly as competitive stakes ratchet higher, power is shifted away from manufacturers in the distribution channel, and new product introductions become more costly, it becomes more crucial to understand and effectively manage a brand's value.

Brand Equity

According to Aaker (1991, p. 15), "Brand equity is a set of brand assets and liabilities linked to a brand, its name and symbol, that add to or subtract from the value provided by a product or service to a firm and/or to that firm's customers." Aaker goes further to suggest that if a brand's name or symbol were to change, the equity might be affected or even lost. Brand equity, according to Aaker, stems from the following sources: (1) brand loyalty; (2) name awareness; (3) perceived quality; (4) brand associations in addition to perceived quality in the form of names, symbols, and slogans; and (5) other proprietary brand assets (e.g., patents, trademarks, channel relationships). Keller (1993) provides a comprehensive discussion of brands and memory structures relevant to knowledge storage and customer-based brand equity.

Srivastava and Shocker (1991, p. 7) maintain that "brand equity subsumes two inter-related and multi-dimensional constructs: brand strength and brand value." Brand strength stems from marketing activities—for example, positioning, advertising, channel support. Brand valuation, seemingly dependent on these strengths, is a financial measure. The authors provide a comprehensive discussion of the relationship between brand value and strength. Brand equity is a pivotal element to the management of the brand over time, particularly given the possibility that it can enhance brand loyalty and/or serve as a basis for growth through brand extensions (Aaker 1991).

Brand and Line Extensions

Brand extension research generally has focused on consumers' attitudes toward hypothetical new extensions. Researchers have examined how attitudes toward an extension are shaped by attitudes or other associations with the parent brand (MacInnis and Nakamoto 1991; University of Minnesota Consumer Behavior Seminar 1987), the fit between the extension and the parent brand (Aaker and Keller 1990; Chakravarti, MacInnis, and Nakamoto 1990; Park, Milberg, and Lawson 1991), and the interaction between these two (Aaker and Keller 1990). Strong evidence has been found for these determinants of attitude toward an extension. A few researchers (Boush and Loken 1991; Keller and Aaker 1992) have investigated the effects of multiple brand extensions using hypothetical products.

Research to date has focused on attitudes toward hypothetical extensions, with little work on actual extensions. Why, for example, have some extensions succeeded and others failed? What effects have multiple extensions had on their parent brand? The rich history of actual extension activity could provide answers to such interesting questions. Recent studies have attempted to study some of these issues; for example, Sappington and Wernerfelt (1985) developed a model that predicts whether a multi-product firm will brand a new product with the established company name. They tested it on a sample of firms in the U.S liquor industry and found that a firm is more likely to use the brand name if the name has not been used in the same market previously. This may imply that firms are aware of the dilution effects of using the same brand name more than once.

Smith and Park (1992), in a unique study that combines the data on brand strategies obtained from product managers with brand knowledge and evaluation data obtained from consumers, researched the effects of brand strategy, namely the use of brand extensions versus individual brands, on market share and advertising efficiency. Examining the moderating impact of market, brand, and extension characteristics, they find that brand extensions tend to be more efficient and capture greater market share than individual brands. Sullivan (1992) studied a cross-section of 95 brands (which included brand extensions and new-name brand introductions) in 11 consumer durable product categories to investigate market entry decisions of brands relating to the timing of entry and usage of a new-name brand or a brand extension. She concludes that brand extensions enter later than new-name brands, and, on average, brand extensions fare slightly worse in terms of market share.

Prior studies are predominantly cross-sectional and focus on brand extensions. Factors associated with the firm, such as firm size and marketing competencies, have not been explored. In addition, the longitudinal effects of brand and extension characteristics, such as brand strength and the dilution effects of multiple extensions of the parent brand, should be studied. Cannibalization, particularly relevant in the case of line extensions, should be taken into account to judge the success of the extension strategy. Our research examines these issues.

CONCEPTUAL FRAMEWORK

To investigate several of the issues posed, we begin with a conceptual framework that identifies the key factors that may influence line extension success. Success of a line extension can be operationalized in many ways, including profitability of the extension (Buzzell, Gale, and Sultan 1975), market share in the product category or the extension category (Cook 1985), and relative share of the extension compared with that of the largest competitor (Hambrick, MacMillan, and Day 1982). In a market with a high failure rate, the number of years an extension survives could be viewed as a measure of success (Sullivan 1992).

The success of a line extension is proposed to be affected by (1) characteristics of the extension's firm, (2) characteristics of the extension's parent brand, and (3) characteristics of the extension. The characteristics of the extension's firm are perhaps direct determinants of the success of an extension. Firm characteristics affecting extension success might include firm size (Dewar and Hage 1978; Hofer 1975; Smith, Guthrie, and Chen 1989), number of brands the firm has in the market, and market share of the firm's brands. The last two factors are surrogates of the firm's distinctive competencies in a market. Because line extensions are launched to capitalize on consumers' awareness of and associations with the parent brand, some characteristics of the parent brand are expected to influence the success of its line extensions significantly (Aaker and Keller 1990; Smith and Park 1992)—strength or dominance of the parent brand, the symbolic nature of the parent brand, and the order of entry of the parent brand into the category. Characteristics of the extension, such as the marketing (i.e., advertising, promotion, and distribution) support at the time of the extension's launch and sequence of entry of the extension are proposed to affect the success of the extension. The conceptual model, with potential operationalizations of these factors and line extension success, is depicted in Figure 1.

RESEARCH HYPOTHESES

The primary purpose of this study is to determine empirically the extent to which the firm, brand, and extension characteristics affect the success of line extensions. The following discussion provides a rationale for research hypotheses pertaining to each of these three categories.

Brand Characteristics

Relative strength of the parent brand. In experimental brand extension research, brand strength often is conceptualized in terms of consumer perceptions of quality associated with the brand (Aaker and Keller 1990; Smith and Park 1992). Perhaps a more objective indicator of a brand's strength is its dominance in the market as reflected by market share, relative advertising and promotion expenditures, or clout in the distribution channels (Vickers and Hay 1987). Line extensions attempt to capitalize on the awareness of the parent brand and the associations linked to it. If the parent brand is more dominant than competitors' in the market place at the time of extension introduction, it implies that relatively more consumers are aware of this brand and it may have more positive associations for those con-

Figure 1
A CONCEPTUAL MODEL OF EXTENSION SUCCESS
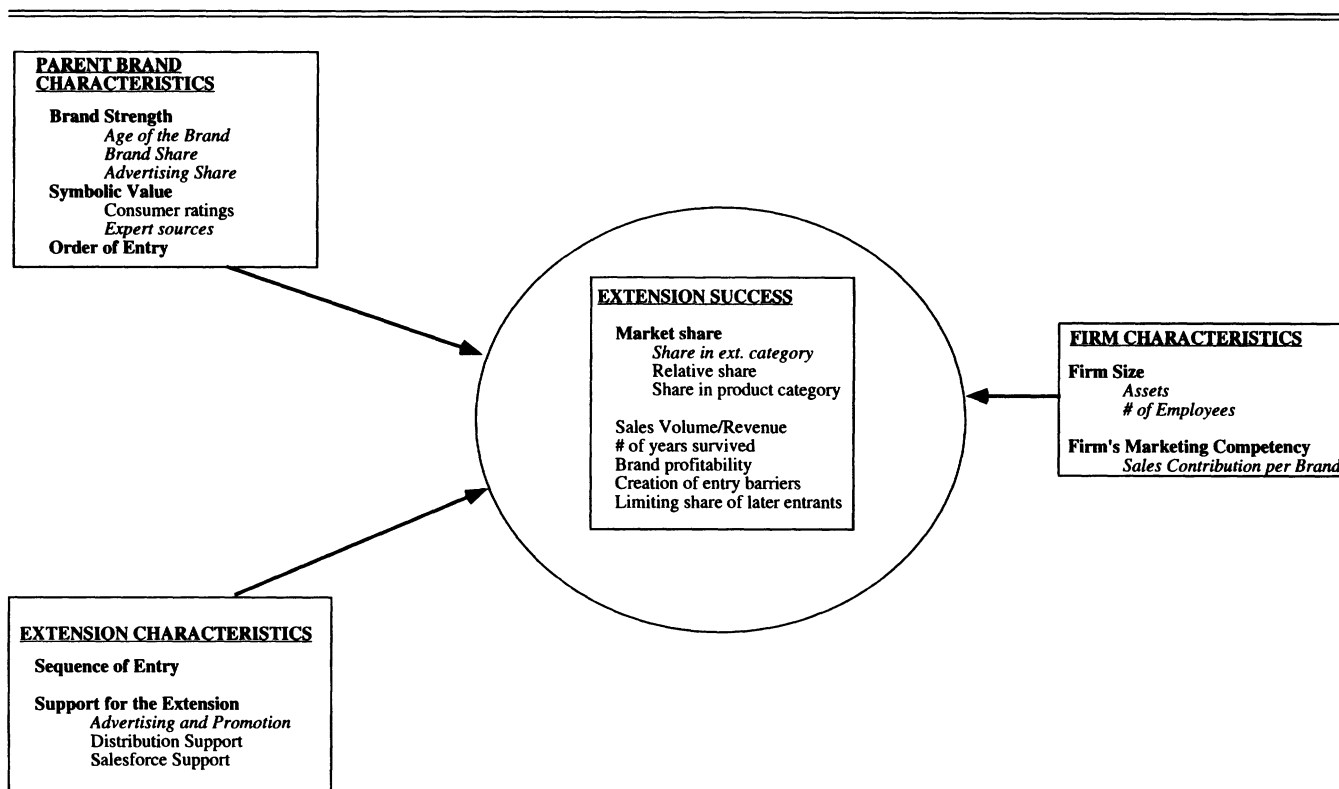
Measures in italics are considered in this study.

sumers. There is empirical evidence that positive associations with a parent brand are transferred to its line extensions (University of Minnesota Consumer Behavior Seminar 1987). At the same time, an extension of a more dominant brand can leverage brand name awareness and positive associations better than an extension of a less dominant brand. Smith and Park (1992) argue that strong brands benefit extensions more than weak brands because strong brands have a greater ability to reduce perceived risk. They found a positive and significant relationship between parent brand strength and the brand extension's market share. For these reasons, line extensions of relatively strong brands are likely to be more successful than those of weak brands.

H_1: The relative strength of the parent brand is positively related to the success of its line extension. The greater the strength of the parent brand at the time of introduction of the extension, the greater the success of the extension.

The symbolic value of the parent brand. Brand associations such as names, symbols, and slogans are often key elements in consumers' memory structures. These associations play an important role in product evaluation and purchase decisions. There is considerable evidence from the field of semiotics to suggest that visual cues are more potent than verbal ones (Solomon 1992). The positioning of a symbolic brand emphasizes the brand's association with group membership or self-identification and the building of

a strong image (Park, Jaworski, and MacInnis 1986). With symbolic brands, consumers are expected to focus on the symbolic value of the item in their choice process and be less concerned with the physical or functional characteristics of the product. Accordingly, marketers emphasize the image of symbolic brands much more than that of nonsymbolic brands. "Maintaining the image or position may be the only way of extending the life of a brand with a symbolic concept" (Park, Jaworski, and MacInnis 1986, p. 143). A symbolic brand's more abstract image suggests that it provides broader appeal, which can be extended to a wider variety of new products relative to comparable nonsymbolic brands (Park, Milberg, and Lawson 1991). For these reasons, extensions of a symbolic brand can gain greater leverage from the parent brand than an extension of a nonsymbolic brand.

H_2: Extensions of symbolic parent brands will be more successful than extensions of nonsymbolic brands.

Order of entry. Although pioneering into new and uncharted markets is risky, researchers generally have established that the first entrant enjoys enormous advantages and rewards, which usually translate into leadership in the market (Bond and Lean 1977; Lambkin 1988; Robinson 1988; Robinson and Fornell 1985; Urban et al. 1986; Whitten 1979). Scherer (1985), on the basis of the accumulated evidence, concludes that pioneering advantage is a general phe-

nomenon. Although the majority of research to date supports the advantages of early market entry, a recent historical analysis of brands in 50 categories by Golder and Tellis (1993) and a critical review by Kerin, Varadarajan, and Peterson (1992) suggest that being first in the market may not automatically provide long-term rewards. Carpenter and colleagues (1993) demonstrate that later entrants can overtake a pioneer by differentiation strategies. Specifically, in the brand extension literature, Sullivan (1992) demonstrates that early-entering brand extensions may not perform as well as early-entering new-name products. The evidence, thus far, is somewhat mixed; yet it seems that early entry advantages do exist.

> H_{3a}: Line extensions that enter earlier into a category will be more successful than later entrants.

Lieberman and Montgomery (1988) argue that later entrants could outpace pioneers with better positioning or superior technology or by using established brand names. This suggests that a stronger brand with superior visibility and market share may be able to compensate for the disadvantages of later entry. For strong brands, one would expect an early extension into a category to be more successful than a later extension, but for weak brands, the order of entry may not influence extension success as much. An advantage of early entry into a category by a weak brand may be dissipated quickly by the superior resources and brand strength of a strong brand, thus diluting the order of entry effects.

> H_{3b}: Order of entry and strength of the parent brand will have a significant interaction effect on the success of line extensions. Line extensions of strong brands that enter later into a category will be more successful than those of weak brands that enter early into the same category.

Extension Characteristics

Support for extension. At the time of a new product's introduction, the promotion and distribution support that the item receives plays a critical role in determining the success of the product (Kotler 1991; Urban and Hauser 1993). The marketing strategies used in new product introduction are characterized commonly as *skimming* (low promotion) and *penetration* (high promotion) (Urban, Hauser, and Dholakhia 1987). Though the penetration strategy may be less profitable initially, it assists in rapid market expansion. Thus, it is hypothesized that line extensions that are well supported in terms of advertising and distribution during the introduction phase are likely to be more successful than extensions that have meager support.

> H_4: The greater the support in terms of advertising and promotion, the greater the success of the extension.

Sequence of entry of the extension by the parent brand. Smith and Park (1992), who examine the impact of previous extensions associated with the parent brand on extension success, find that the number of prior extensions had no significant effect on the market share of brand extensions. However, Loken and Roedder John (1993) found that dilution effects do occur when the attributes of the brand extensions are inconsistent with parent brand beliefs.

With an increase in the number of extensions of the parent brand, the strong associations that consumers may have had with the parent brand are expected to be diluted, and these associations may not transfer as easily to the new extensions (Loken and Roedder John 1993). Another reason later extensions of brands may be worse off than earlier ones is the "brand confusion" that results from too many extensions (Ries and Trout 1986). Sappington and Wernerfelt's (1985) finding that firms in the U.S liquor industry are less likely to brand a new product with the established company's name if that name has been used previously also lends some credence to this argument. For these reasons we contend:

> H_5: Earlier extensions of a parent brand will be more successful than the parent brand's later extensions.

Firm Characteristics

Firm size. Firm size has long been an important variable of study in the organizational and industrial economics literature. Baumol (1959) proposed that large firms tend to have higher ("disproportionate") returns than small firms. Crum (1961) and Stekler (1963), on the other hand, found that size had little effect on profits. Hall and Weiss (1967), however, after correcting some of the problems in the data collection encountered by the previous researchers, reported a positive impact of firm size on profitability. Hofer (1975) and Smith, Guthrie, and Chen (1989) found firm size to be a significant moderating variable in predicting firm performance. Because performance depends on how the firm's individual products fare in the marketplace, large organizations may perform better given their superior resources and management capabilities.

> H_6: Firm size will have a positive effect on line extension market share. Line extensions of large firms will be more successful than those of small firms.

A firm's distinctive marketing competency. A firm's archetypal categorization (Miles and Snow 1978) also may be considered a critical variable that determines firm performance (Snow and Hrebiniak 1980). Categorization according to the four strategic archetypes (prospectors, defenders, analyzers, and reactors) typifies the manner in which a firm competes and serves as a surrogate measure of the firm's culture or attitude in the market. Researchers have related these strategic types to the distinctive competencies the firm possesses. Hitt and Ireland (1984, p. 402) define distinctive competence of a firm as its "ability to complete an action in a manner superior to that of its competitors or to apply a skill that competitors lack." Distinctive competence often is considered the outcome of a firm's consistent pattern of deploying its resources and skills (Hitt and Ireland 1984; Hofer and Schendel 1978). These distinctive competencies could be formed in any of the key functional areas of the firm (Andrews 1971). A firm's marketing competencies (e.g., speedy new product development, marketing and selling effectiveness, distribution advantages) are often the key for successful implementation of brand level strategy (Conant, Mokwa, and Varadarajan 1990; McDaniel and Kolari 1987; McKee, Varadarajan, and Pride 1989; Miles and Snow 1978). Distinctive marketing com-

Figure 2
HISTORY OF LINE EXTENSIONS IN THE REGULAR
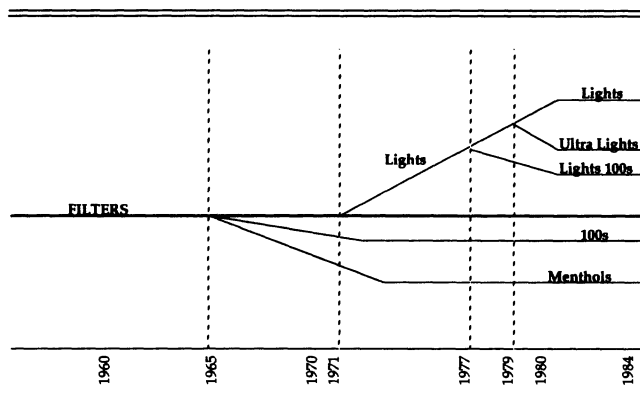
petencies exploited properly result in a competitive advantage leading to a greater probability of success and performance of the implemented strategies (Hitt and Ireland 1986; Snow and Hrebiniak 1980). Distinctive competencies can translate into better implementation of new product introduction strategies, leading to more successful new products. In the context of extensions, marketing competencies are conceived in terms of past efficiency and effectiveness in managing brands. Effective brand management in the past would be a good indicator of the impact of a firm's marketing competencies on an extension.

H_7: The firm's distinctive marketing competency will have a positive effect on line extension success. Extensions of more competent firms will be more successful than extensions of less competent firms.

THE DATA

The cigarette industry is a fertile area for the study of line extensions for several reasons. Prior cross-sectional studies have noted the substantial equity associated with cigarette brands (Simon and Sullivan 1990). Coupled with this is the vigorous line extension activity observed in this industry dur-

ing the last three decades.[1] These market characteristics and extension activities make this industry a good venue in which to investigate the successful strategies of line extensions.

We compiled data on 75 brand line extensions during 1950–1984 by 34 regular filter brands in the cigarette industry. All regular filter brands with extensions were chosen to be included in the study. Brands without extensions or extensions that had data for less than two years were excluded. This resulted in the choice of 34 regular filter brands and their extensions, which accounted for 97.5% of the sales of the filter cigarette market.[2] Annual sales information of line extensions were obtained from Maxwell Reports (1985), which compile the unit sales (sticks) of all cigarette brands in all domestic outlets on an annual basis. Annual advertising information was obtained from LNA Media Reports. These reports contain advertising and promotion dollar expenditure of individual brands and their extensions. The advertising figures were deflated using the Bureau of Labor Statistics consumer price index based on 1967 dollars. Annual firm-level data (assets) obtained from Moody's Industrial Manuals and annual 10K reports were deflated using a CPI index based on 1967 dollars.

The line extensions from this period and their histories are presented in Figure 2. Most of the extension activity started in 1965, when regular filter brands initially extended into the menthol and 100s categories. (The number 100 indicates the length of the cigarettes in millimeters. The standard length of the cigarette at the time was 75mm or 85mm.) Brands then generally extended into the lights (less tar and nicotine) in 1971 and the light 100s and ultra filtration categories in 1977 and 1979, respectively. A summary of information on the extensions is provided in Table 1. Over 61% (46 of 75) of the extensions were in the 100s and menthol categories. The 100s category enjoyed the most success, as is evidenced by the average sales and share figures. The line extension activity of the six major cigarette manufacturers is presented in Table 2. Thirty-four brands of these six companies accounted for the 75 extensions. This amounts to an average of 2.2 line extensions made by each brand.

The impact of market and environmental factors on the conduct and performance of firms has long been realized in the industrial economics literature. It is of interest to see if any market factors have influenced the line extension activity in an industry that, on average, has increased steadily

Table 1
SUMMARY OF LINE EXTENSIONS

EXTENSION CATEGORY	# of Brands	Entry Year of 1st Extension*	Average Sales (billion units)	Average Share of Category
100s	20	1965	75.10	.219
Menthols	26	1965	23.48	.068
Lights	10	1971	28.89	.084
Light 100s	13	1977	29.33	.086
Ultras	4	1979	10.30	.030
120s	2	1981	4.93	.014

*This column represents the year of entry of a regular filter brand into this category as a line extension. It need not necessarily be the pioneering brand into this category. For example, menthol filters as a category existed since Salem pioneered it in May 1956.

[1]This line extension activity, which has not always been successful, recently has come under some strong criticism. Although no specific empirical evidence is presented, an article chastises Michael Miles, the new CEO of Philip Morris, for line extensions that "are ultimately damaging to brands" (Therrien 1991, p. 60).

[2]Because the purpose of the study was to investigate the performance of line extensions, brands with no extensions were not included (e.g., Soring by Lorillard). Some brands introduced in 1984 (the last year of our study), like Richland and Sterling, also were not included. The brands excluded accounted for less than 3% of the filter market in 1984. All extensions of the 34 brands are included in the analysis even though some of them did not last throughout the time period under study (4 of the extensions studied did not survive until 1984). All extensions, however, had survived at least two years. It is possible that some extensions were introduced and have achieved little or no sales in the first year, leading us not to consider some extensions. This may lead to a bias toward surviving extensions.

Table 2
LINE EXTENSIONS BY THE SIX MAJOR COMPANIES

COMPANY	EXTENSION CATEGORY						
	100	Menthols	Lights	Light 100s	Ultras	120s	TOTAL
American Brands	3	6	2	3	0	1	15
Brown & Williamson	3	1	2	2	0	0	8
Liggett & Myers	2	3	2	1	0	1	9
Lorrillard	3	5	1	1	0	0	10
Philip Morris	5	5	2	4	2	0	18
R.J. Reynolds	4	6	1	2	2	0	15
TOTAL	20	26	10	13	4	2	75

since the mid-1960s (with bursts of activity in 1967 and 1977). To determine if market characteristics contributed to this phenomenon, two factors often identified as key to firm conduct, extent of industry concentration and average market growth rate in the industry, were computed (Porter 1980; Scherer 1980). Industry concentration was measured by computing the Herfindahl Index, which is equal to a weighted average of firms' market shares.[3] Market growth

<hr>

[3]It is computed as follows:

$$H = \Sigma\ s_i^2$$

Where s_i is the market share of the ith firm. Other traditional measures could have been used for measuring industry concentration. Example of other indices are four-firm concentration ratio (C4) and Gini Coefficient. However, it has been demonstrated often in the economics literature that industry concentration indices are often highly correlated (Gatignon 1984; Scherer 1980; Sleuwaegen, DeBondt, and Dehandschutter 1989; Waterson 1984).

was measured as the three-year average of percentage changes in unit sales in the cigarette market. Three-year change averages were used to reduce the effect of short-term fluctuations.[4] Market growth rate, industry concentration, and line extension activity are plotted in Figure 3. The general trend in the industry was a continuous decline in average market growth (from over 15% in 1960 to –1% in 1984) and a general increase in concentration (up from a low of .211 in 1967 to .268 in 1984). The correlation between market growth rate and extension activity is –.553, and the correlation between industry concentration and extension activity is .314. Market growth rate and industry concentration are negatively correlated (–.678). This analysis provides a summary look at the potential impact of the market characteristics on line extension activity in this industry.

<hr>

[4]Five-year change averages also were computed. The correlation between the three- and five-year averages was .92.

Figure 3
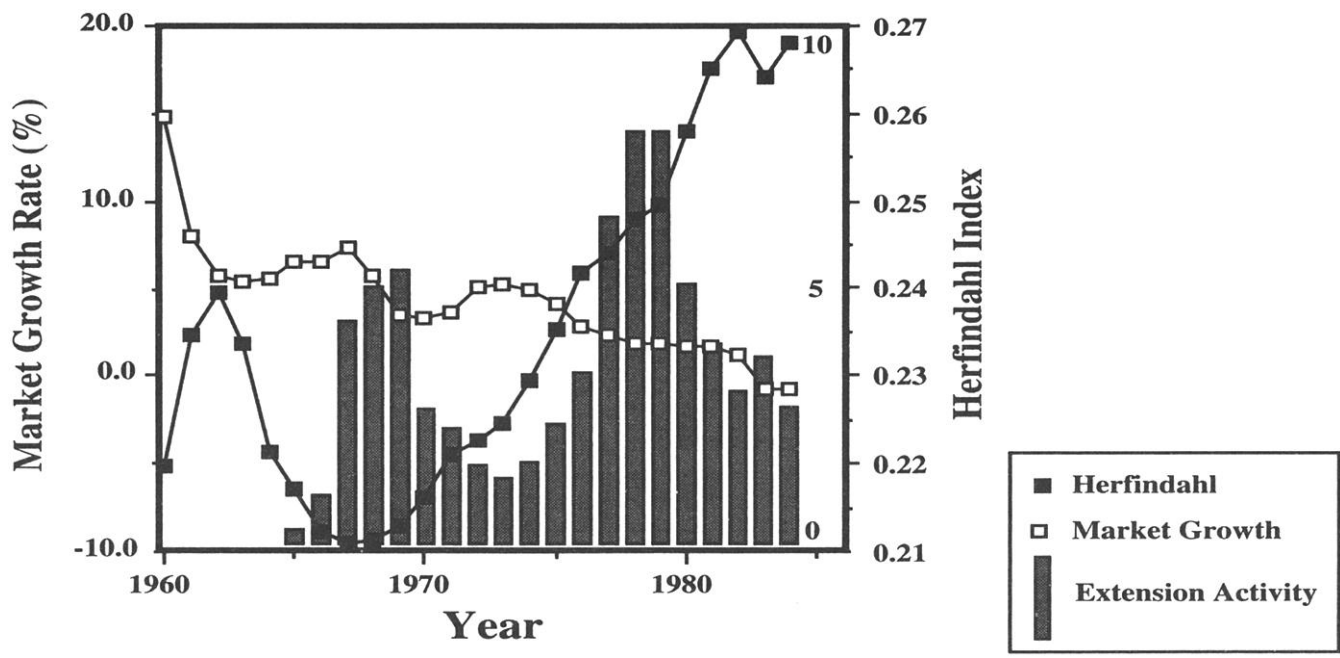CONCENTRATION, MARKET GROWTH, AND EXTENSION ACTIVITY

Table 3
SUMMARY STATISTICS ON MARKET SHARE OF BRANDS

	Mean	Median	Std. Dev.
Average Market Share of Extension (in Regular Filters)	.005	.002	.006
Average Market Share of Extension (in Extension Category)	.056	.022	.078
Market Share of Parent Brand at the Time of Extension Launch	.031	.015	.046

It appears that decreasing market growth rates and increasing industry concentration were accompanied by increased line extension activity in this industry. However, one should be cautious in inferring any causal linkages among the variables.

Summary statistics of extension market share give a dramatic picture of the variability in the success of individual line extensions (Table 3). The average market share of a line extension within the extension category is 5.6% (median share is 2.2%) and the range of shares was from .1% to 30%, indicating high variability in the success of line extensions. Similar variability is observed in shares of extensions in the overall regular filter category.

VARIABLE OPERATIONALIZATION

The Success of a Line Extension

As suggested previously, evidence of the success of a line extension can be viewed from different perspectives. A logical indicator of an extension's success would be its profitability (Buzzell, Gale, and Sultan 1975). Because profitability data are proprietary and access to researchers is difficult, many researchers have used other surrogates of product or brand success than profits (Jaworski and Kohli 1993; Moore, Boulding, and Goodstein 1991; Smith and Park 1992). Even if product profitability data were available, it seems that the different accounting and cost allocation methods used would make comparability across extensions quite difficult. Sales volume or revenue could be another indicator of extension success. The extensions in this study are in different subcategories of cigarettes (e.g., 100's, lights) of different sizes (in total sales volume), thus making it less meaningful to use extension sales volume as a sign of success. Therefore, a relative measure is more appropriate. Market share is a simple and yet powerful indicator of a product's relative position in the marketplace (Cook 1985). There is ample evidence of the widespread use of market share as an indicator of marketing practitioners and its close association with profitability (Buzzell, Gale, and Sultan 1975; Jacobson 1988; Jacobson and Aaker 1985; Szymanski, Bharadwaj, and Varadarajan 1993).[5] Market share of line extensions could be partially derived by cannibalizing parent brand sales. As a result, the observed sales or market

share of the extension may not tell the full story. One has to partial out the cannibalized sales of the extension to get at the incremental sales or incremental market share of the extension. The incremental extension market share (IMS) in the extension subcategory is used as an indicator of extension success.[6] A model to obtain the unobserved incremental extension sales (and thereby compute incremental extension market share) from the observed extension sales is outlined subsequently.

Relative Strength of the Parent Brand

Brand strength typically has been conceptualized in terms of consumer predispositions toward the brand in brand equity studies (Leuthesser 1988; Smith and Park 1992) or as perceived brand quality in the brand extension literature (Aaker and Keller 1990; Smith and Park 1992). Mahajan, Rao, and Srivastava (1991), in their model for brand acquisition, view brand strength as composed of the brand's efficiency and performance, longevity and vulnerability, and extendibility and growth. They find that brand strength explains a substantial portion of an acquirer's preference for acquisition candidates. Srivastava and Shocker (1991) propose relative market share of the brand as a measure of brand strength. Kamakura and Russell (1992), who develop a measure of brand equity using scanner data, propose brand strength as one of the three key components of brand equity. They find that their measure (brand-dominance ratio) correlates highly with market share. In these studies, a parent brand's market share is considered a direct measure of the outcome of the perceptions of brand quality or equity used in consumer studies. Here, we operationalize parent brand strength as the market share of the parent brand in the filter cigarette market (PBSHR).

In addition, two other potential indicators of brand strength are studied here: One is related to the parent brand's age, and the second concerns the parent brand's advertising expenditures. It can be argued that the longer a brand has been in existence, the greater its visibility and strength (Sullivan 1991). Hence, the brand's age (in years) at the time of extension introduction (AGE) is used as another indicator of brand strength. Johnson (1991), who views brand loyalty as a surrogate measure of brand equity, finds in his longitudinal study of brands in 20 consumer product categories that increased share of advertising expenditures correlates with increased brand loyalty. In addition, Sappington and Wernerfelt (1985), who postulate a strong association between strength of the parent brand and advertising expenditures, use parent brand advertising as a measure of brand strength. Hence, a parent brand's advertising expenditures can be viewed as an indicator of its strength,

---

[5]Although doubts have been raised by Jacobson and Aaker (1985) regarding the causal impact of market share on profitability, they do not dispute the strong association between the two. In a recent meta-analysis of 48 studies on market share-profitability relationship, Szymanski, Bharadwaj, and Varadarajan (1993) concluded that on average market share has a significant, positive impact on profitability.

[6]In the present context, market share could be conceptualized and operationalized in different ways. One could operationalize it as the share of the extension in the specific subcategory (e.g., the share of Marlboro 100's in the 100's category, say category share) or it could be operationalized as the share of the extension in the product category (e.g., the share of Marlboro 100's in the filter cigarette category, say filter share). The latter measure is less appropriate because the sales achieved by extensions in different categories is determined partly by the size of the category. A relative share measure, namely the share of the line extension relative to the largest competitor in the extension category also was computed. This measure, however, was highly correlated with the category share measure (r = .82).

given that promotion facilitates awareness and the creation of goodwill (Gould 1970; Nerlove and Arrow 1962). Relative share of parent brand advertising is operationalized as the ratio of parent brand advertising expenditures to advertising expenditures of all brands in the filter cigarette category (PBADSHR). One would expect the three indicators of parent brand strength to be correlated. The correlation between parent brand share and advertising share was relatively high ($\rho = .76$), but age of the brand was only marginally correlated with the other two measures (ρ was .49 with PBSHR and .20 with PBADSHR).

The Symbolic Value of the Parent Brand

A brand's symbolic value or meaning relates directly to its memorability and key associations. In the case of symbolic brands, consumers, when making a choice, are thought to focus on symbolism that may be at a higher level of abstraction than the physical or functional product attributes. Measurement of a brand's symbolic value is admittedly not an easy endeavor. We considered a direct consumer survey, as did Smith and Park (1992), who gathered consumer perception data on products that had been introduced a few years prior to their study in 1989. In our case, however, many of the brands have been around for more than a decade and a half, making it difficult to assess consumers' perceptions of the parent brand's symbolism at the time the extensions were introduced. Our chosen approach relies on secondary data from several sources, including literature on cigarette brands, trademarks, and advertising and information garnered from industry "experts." Given the intensely competitive nature of the tobacco industry, obtaining access to industry representatives is difficult at best. Nevertheless, to supplement the wealth of historical literature on cigarette brands, we obtained information from two tobacco industry personnel—an advertising creative expert with experience with tobacco accounts (all of which requested anonymity) and Richard W. Pollay,[7] curator of the History of Advertising Archives at the University of British Columbia and a noted authority on the cigarette industry.

When posed questions about symbolism, Pollay (1993) provided the following insights regarding the cigarette industry: "Cigarettes are a 'badge' product. All brands are, to some extent, symbolic." Pollay thinks of a brand's symbolic value partly in terms of the consistency of its advertising campaign (see also Pollay and Lavack 1992, p. 269). According to Pollay, "Consistency does well for you—stability makes a reasonable talking point from which to extend a brand." The question of symbolism is perhaps even more of an issue for the cigarette industry compared with others, given the many environmental and legislative threats faced. This situation is noted by Koeppel (1990, p. 178) in the following discussion of industry trends: "Philip Morris' 'red roof' tactic, which ties brands to specific graphic symbols— Marlboro's red box top, Merit's diagonal stripes—is one of the industry's attempts to position itself for a world where

most forms of cigarette advertising are banned." Overall, the experts seem to view the symbolic value of a brand in terms of its campaign consistency and the provision of strong visual as well as verbal cues.

Our multifaceted assessment of brand symbolic value in the cigarette industry led us to a four-tiered categorization: exceptional, high, moderate and all others (SYMBOL). Without a doubt, the most distinctive brand in the industry, the sole brand rated exceptional for symbolism, is Philip Morris's Marlboro.[8] The brand is referred to as the industry's "most powerful trademark" (Koeppel 1990). Given the strong association with a place, inhabitant, and lifestyle, Marlboro's consistency sets this brand apart from others in the minds of industry judges. Perhaps no one captures this brand's symbolism better than Lohof (1969, p. 447), who writes, "The Marlboro image is a cultural symbol which speaks to the collective imagination of the American people. It speaks of the virgin frontier, and of brutal efficacy and constant vigilance which the frontier exacts from its residents."

Two brands, Camel and Virginia Slims, were judged as highly symbolic partly due to the consistency of visual and verbal components of their campaigns. They were not, however, viewed to be in the exceptional symbolism category, commensurate with Marlboro. Camel, with an eastern flair, took its symbol from "Old Joe," the dromedary from the Barnum & Bailey circus (Cleary 1981; Sacharon 1982). Old Joe's symbol has been maintained since the early 1900s, with some recent updating.[9] Virginia Slims is known for a consistent campaign that "brilliantly associated smoking with exciting careers, sexual freedom, and all the improvements in women's lives promised by the women's liberation movement" (White 1988, p. 127). The name and image may in fact appeal to consumer fantasies.[10]

Our judges identified additional cigarette brands that were considered to have symbolic value, but not to the extent of that of Marlboro, Camel, and Virginia Slims. The moderately symbolic group includes the following brands: Merit, Benson & Hedges, True, Winston, Parliament, and Vantage. Most of these products are categorized by Pollay (1993) as "intelligence" brands. They are distinct from "old, traditional family brands," which required management of extension from nonfilter to filter forms. It is fair to say that our expert judges, as well as the literature, are less emphatic about the symbolic nature of these brands. All re-

---

[7]Personal communication with Richard W. Pollay, Professor of Marketing and Curator, History of Advertising Archives, Faculty of Commerce, University of British Columbia, Vancouver, on March 16, 1993.

[8]In an effort to combat the "effeminate" image of filter cigarettes, "Philip Morris turned to Chicago advertising executive Leo Burnett, who decided that the solution was to create an ultra-masculine image to associate with the new PM filter. The cowboy was chosen as universally recognizable figure. Thus began the Marlboro man, the lonely, rugged figure inhabiting "Marlboro Country" (White 1988, p. 121). Unlike other cigarette ads, the Marlboro man made an easy transition from broadcast to print media following the 1971 advertising ban.

[9]Soon after the turn of this century, R. J. Reynolds's management was looking for "short, simple names easily pronounced and symbolized by a picture" to introduce a new brand designed to compete with exotic old Turkish blends (Tilley 1985, p. 214). The familiar slogan, "I'd walk a mile for a Camel," was adopted in 1921 (Morgan 1986).

[10]Solomon (1992, p. 91) notes that "many middle class women apparently smoke in order to keep their weight down; this may explain the success of cigarettes that stress slimness."

maining cigarette brands were considered in the "All Other" category.[11]

Ideally, one would measure the symbolic value of the brands at the time the extensions were introduced and monitor the changes over the years. Unfortunately, due to the nature of this study, the options available to capture this important concept were limited. Given the constraints, the measure of symbolic value used here is a reasonable, if imperfect, approximation.

Order of Entry

Order of entry is operationalized as simply the order of entry of extension i in category j divided by the total number of brands that entered that category j (ORDER). The coding is reversed such that early entrants have larger numeric values. Sullivan (1992) uses a similar operationalization in her study of brand extensions.

Support for the Extension

Although a variety of promotional vehicles are used in the cigarette industry to support brands and their extensions, most expenditures are allocated to event sponsorship, distribution, and print and outdoor advertising. Distribution and sales force expenditure data were not available to us; consequently, only advertising and promotional expenditures were used to compute the measure of extension support. Data on the annual promotional expenditures on extensions were gathered from LNA reports. The data were deflated using Bureau of Labor Statistics consumer price index based on 1967 dollars. Then a ratio was computed of each extension's deflated dollar expenditures relative to the total advertising and promotional expenditures of all the extensions in the subcategory and used as an indicator of support of the extension (XADSHR).

Sequence of Entry of the Extension by the Parent Brand

Sequence of entry of the extension by parent brand measures the number of prior line extensions that were made by the parent brand before the current line extension (SEQ).

Firm Size

Adelman (1951), in his study of the measurement of industrial concentration, identified several potential dimensions of firm size, including number of employees, sales, income, and assets. By far the most popular measure of size in industrial economics literature is the firm assets (Crum 1961; Hall and Weiss 1967; Stekler 1963). Others have used number of employees to measure firm size (Blau et al. 1976; Smith, Guthrie, and Chen 1989; Tosi and Patt 1967). Data on the number of employees and deflated assets (in mil-

lions of dollars) (ASSETS) of the firms were compiled from Moody's Industrial Manuals and annual 10K reports.[12] As one might expect, these two measures were highly correlated ($\rho = .83$). Firm assets was selected as the measure of firm size.

Firm's Distinctive Marketing Competency

Because firms that are more competent in managing their brands tend to get greater contribution per brand than less competent firms, the firm's distinctive marketing competency is operationalized as the contribution per brand toward firm sales (FCOMP). This is measured simply as total firm sales divided by the number of brands that the firm has at time t. A similar objective measure based on the firm's sales was used by Hambrick (1983).[13]

The correlations between the variables are presented in Table 4.

MODEL DEVELOPMENT

Cannibalization

Because line extension introductions may cannibalize parent brand sales, it is necessary to compute the incremental sales generated by the extension. Although acknowledged in the literature, few empirical attempts have been made to estimate cannibalization. Work in the area of new product introductions uses individual consumer attitudinal or behavioral data (e.g., ASSESSOR [Urban and Hauser 1993]) to estimate the introduction's cannibalization of the existing product's sales. In the case of durables, diffusion models (Bass 1969) have been used to estimate the extent of substitution (or cannibalization) due to the firm's or competitors' product introductions. Peterson and Mahajan (1978), and more recently Mahajan, Sharma, and Buzzell (1993), examine the simultaneous diffusion of multiple innovations, in which the diffusion of a later innovation can substitute for the diffusion of an earlier one. Norton and Bass (1987), extending the Bass model, examined the displacement of preceding generations of a high-technology product (complete cannibalization) by a new generation of the product. Other analytical research assumes some market conditions (e.g., number of competitors, extent of cannibalization) to derive conclusions on timing of new product introductions (Moorthy and Png 1992; Wilson and Norton 1989).

---

[11]A survey of 60 smokers was used to assess how closely the consumer perceptions of the symbolic value of brands using multiple scales agreed with the classification based on expert judgment. A pretest of the questionnaire items with 19 smokers revealed two items with high internal consistency (Cronbach $\alpha = .956$). These two items sought respondent's agreement or disagreement on a 7-point scale whether a particular brand (1) said something about the user, and (2) was used to express one's personality (Bhat 1992). The correlation between the average of these scale items and the measure used here was .791. The mean symbolic rating for Marlboro was 5.30. The ratings for Camel and Virginia Slims were 4.66 and 4.71 respectively. The average ratings for brands in the moderately symbolic and all other group were 3.66 and 3.56 respectively.

[12]Firm level data on employees and assets were obtained for the five publicly traded firms—Philip Morris, R. J. Reynolds, American Brands, Liggett and Myers, and Lorillard. Financial information on the privately held Brown and Williamson was not available.

[13]Firm's distinctive competency in functional areas often is measured in the context of identifying strategic archetypes proposed by Miles and Snow (1978). Firms usually are identified as prospectors, analyzers, reactors, or defenders by self-typing (McDaniel and Kolari 1987; Snow and Hrebiniak 1980), objective measures (Hambrick 1983), external assessment (Meyer 1982), or investigator inference (Ruekert and Walker 1987). Conant, Mokwa, and Varadarajan (1990) in a cross-sectional study of HMOs, developed a 20-item scale to measure a firm's distinctive marketing competency. They range from knowledge of customers, integration of marketing activities, advertising effectiveness, quality, and service of offerings to location of facilities. Although multiple item scales of this form have distinct advantages in survey research, they are not practical in the current context. We have chosen an objective measure similar to that used by Hambrick (1983) to indicate the outcome of a firm's distinctive marketing competencies.

Table 4
CORRELATION MATRIX OF VARIABLES

	XMS	AGE	PBSHR	PBADSHR	SYMBOL	ORDER	SEQ	XADSHR	ASSETS	FCOMP
XMS	1.000									
AGE	.314	1.000								
PBSHR	.479	.488	1.000							
PBADSHR	.491	.202	.763	1.000						
SYMBOL	.414	.516	.522	.371	1.000					
ORDER	.300	.369	.442	.328	.191	1.000				
SEQ	.342	.438	.300	.126	.283	.078	1.000			
XADSHR	.531	.078	.179	.103	.180	−.030	.339	1.000		
ASSETS	.329	.032	.232	.150	.150	−.147	.231	.311	1.000	
FCOMP	.432	.035	.480	.414	.324	−.019	.099	.309	.777	1.000

Because little published work exists to determine empirically cannibalization effects from aggregate sales data, one has to develop new or adapt existing procedures to measure these effects. A conceptual framework for assessing an extension's cannibalization or expansion of parent brand sales is presented in Figure 4. The first step is to determine what the parent brand sales would have been if no extension was introduced. This estimate then is compared to the actual parent brand sales to provide an approximation of cannibalization or expansion due to the extension. Let t^* be the time at which an extension was introduced. If the actual sales were represented by A, the difference between C (the projected sales) and A would indicate the extent of cannibalization. If, on the other hand, the actual sales were represented by B, the difference between C and B would imply market expansion.

A direct estimate of the impact of the extension could be modeled using econometric methods. A simple approach is the use of a dummy variable regression, which would provide an estimate of the effect as a constant shift in the intercept term. The direction, magnitude, and significance will provide the cannibalization or expansion effects of the extension. Another approach is to use intervention analysis (Box

Figure 4
A CONCEPTUAL FRAMEWORK FOR ASSESSING THE IMPACT OF LINE EXTENSION INTRODUCTION ON PARENT BRAND SALES

and Tiao 1975). The advantage of using intervention analysis over a dummy variable method is that one could specify nonlinear effects of the intervention as opposed to a simple step function. However, intervention analysis requires a large number of time periods and a smaller time interval than those available in our data. But with the availability of scanner data, in which weekly or even daily information is possible, such models could be used to better estimate cannibalization or expansion effects.

Another approach, a variation of Bass's (1969) diffusion model—particularly the one Mahajan, Sharma, and Buzzell (1993) propose, which uses aggregate sales data rather than individual level data to estimate the extent of cannibalization—offers promise. But the assumptions made regarding the durable, nonrepetitive purchase nature of product categories make the applicability of those models to cigarettes or other frequently purchased products quite untenable.

Given our main objective and the constraints of the data, we provide the following framework, which incorporates the cannibalization by the extension. We propose that the observed extension sales (XS) is composed of incremental sales due to the extension itself (IS) and cannibalized sales (CS) obtained from the parent brand (PS), that is,

$$(1) \qquad XS_{it} = IS_{it} + CS_{it}$$

where

XS_{it} = observed sales of extension i at time period t,
IS_{it} = incremental sales of extension i at time period t, and
CS_{it} = sales of extension i due to cannibalization of the parent brand at time period t.

Cannibalized sales are assumed to be a proportion (λ of the parent brand sales:

$$(2) \qquad CS_{it} = \lambda_t PS_{it}$$

where

PS_{it} = sales of the parent brand of extension i at time period t and
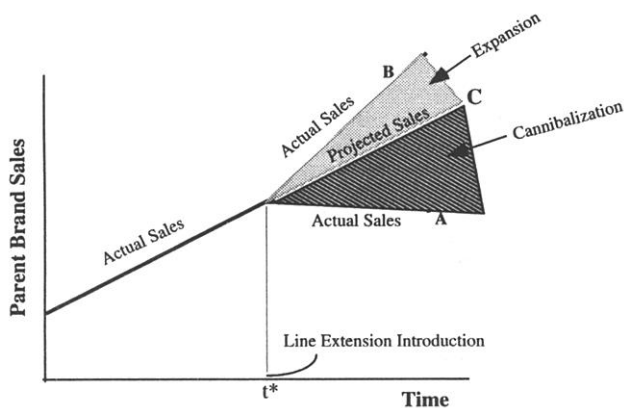λ_t = proportion of sales cannibalized from the parent brand at time period t.

Combining and rearranging Equations 1 and 2 gives us:

$$(3) \qquad IS_{it} = XS_{it} - \lambda_t PS_{it}.$$

Because extension subcategories were not of equal size (in

terms of sales potential), the extension sales must be standardized by the total sales in the subcategory, so that extensions across categories can be compared. If Z_t is the total subcategory sales, then IS_{it}/Z_t provides the incremental market share of the extension i at time period t (IMS_{it}). So, dividing Equation 3 by Z_t, we get

$$(4) \qquad \frac{IS_{it}}{Z_t} = \frac{[XS_{it} - \lambda_t PS_{it}]}{Z_t} = \frac{XS_{it}}{Z_t} - \lambda_t \frac{PS_{it}}{Z_t}.$$

IS_{it}/Z_t is unobserved, but it is composed of two observed variables: XS_{it}/Z_t, the share of extension i at time period t (XMS_{it}) in the subcategory; and PS_{it}/Z_t, the parent brand's total sales (excluding the extension sales) as a proportion of the extension category sales at time period t (PMS_{it}) and one estimable parameter λ_t. Note that though PS_{it}/Z_t cannot be interpreted meaningfully, it is measurable and merely serves to determine the LHS variable IS_{it}/Z_t. Moreover, neither the value nor the interpretation of λ_t is altered.

$$IMS_{it} = [XMS_{it} - \lambda_t PMS_{it}]$$

IMS_{it}, the share of the extension in the category due to incremental sales, is used as the dependent measure. The following market share equation is developed from our hypotheses specifying the variables that affect the incremental market share of the extension:

$$(5) \qquad IMS_{k,i,t} = [XMS_{k,i,t} - \lambda_t PMS_{k,i,t}] = \alpha_0 + \alpha_1 1AGE_{k,t}$$
$$+ \alpha_2 PBSHR_{k,i,t} + \alpha_3 PBADSHR_{k,i,t} + \alpha_4 SYMBOL_{k,i}$$
$$+ \alpha_5 ORDER_{k,i,j} + \alpha_6 ORDER_{k,i,j} * PBSHR_{k,i,t} + \alpha_7 SEQ_{k,i,j}$$
$$+ \alpha_8 XADSHR_{k,i,t} + \alpha_9 ASSETS_{f,t} + \alpha_{10} FCOMP_{f,t} + u_{k,t}$$

where

$IMS_{k,i,t}$	= incremental market share of extension i of brand k at time period t in the extension subcategory,
$XMS_{k,i,t}$	= market share of extension i of brand k at time period t in the extension subcategory,
$PMS_{k,i,t}$	= total sales of parent brand k (excluding the sales of extension i) as a proportion of the extension category sales at time period t,
$AGE_{k,t}$	= the number of years that brand k had been in existence at time period t,
$PBSHR_{k,i,t}$	= market share of parent brand k of extension i at time period t in the regular filter category,
$PBADSHR_{k,i,t}$	= advertising share of parent brand k of extension i at time period t in the regular filter category,
$SYMBOL_{k,i}$	= symbolic value of parent brand k of extension i,
$ORDER_{k,i,j}$	= order of entry of extension i of brand k into category j,
$SEQ_{k,i,j}$	= sequence of entry of extension i in category j of brand k,
$XADSHR_{k,i,t}$	= advertising share of extension i of brand k at time period t in the extension subcategory,
$ASSETS_{f,t}$	= assets (in millions of dollars) of firm f at time period t,
$FCOMP_{f,t}$	= sales contribution per brand for firm f at time period t, and
$u_{k,i,t}$	= the residual term for Equation 5.

Rearranging Equation 5 we have

$$(6) \qquad XMS_{k,i,t} = \alpha_0 + \alpha_1 AGE_{k,t} + \alpha_2 PBSHR_{k,i,t}$$
$$+ \alpha_3 PBADSHR_{k,i,t} + \alpha_4 SYMBOL_{k,i} + \alpha_5 ORDER_{k,i,j}$$
$$+ \alpha_6 ORDER_{k,i,j} * PBSHR_{k,i,t} + \alpha_7 SEQ_{k,i,j} + \alpha_8 XADSHR_{k,i,t}$$
$$+ \alpha_9 ASSETS_{f,t} + \alpha_{10} FCOMP_{f,t} + \lambda_t PMS_{k,i,t} + u_{k,t}.$$

But λ_t, the cannibalization parameter, will not be constant over the entire life of an extension. Cannibalization is more likely to occur in the first few years of a new extension's introduction. It is therefore proposed that λ_t is a quadratic function of time (T). The quadratic term captures the diminishing aspects of cannibalization over time. Moreover, the extent of cannibalization may depend on the subcategory into which the extension entered. To take into account this possible varying nature of λ_t, the following cannibalization coefficient process equation is proposed:

$$(7) \qquad \lambda_t = \beta_0 + \beta_1 T + \beta_2 T^2 + \Sigma_j \beta_j^D D_i^j + e_t$$

where

T	= time since the introduction of extension into the subcategory,
D_j^i	= dummy variables which equal one if, and only if, extension i is introduced in category j (j = menthols, lights, light 100s, or others), and
e_t	= the residual term for Equation 7.

Substituting Equation 7 in Equation 6, we have

$$(8) \qquad XMS_{k,i,t} = \alpha_0 + \alpha_1 AGE_{k,t} + \alpha_2 PBSHR_{k,i,t}$$
$$+ \alpha_3 PBADSHR_{k,i,t} + \alpha_4 SYMBOL_{k,i} + \alpha_5 ORDER_{k,i,j}$$
$$+ \alpha_6 ORDER_{k,i,j} * PBSHR_{k,i,t} + \alpha_7 SEQ_{k,i,j} + \alpha_8 XADSHR_{k,i,t}$$
$$+ \alpha_9 ASSETS_{f,t} + \alpha_{10} FCOMP_{f,t}$$
$$+ (\beta_0 + \beta_1 T + \beta_2 T^2 + \Sigma_j \beta_j^D D_i^j + e_t) PMS_{k,i,t} + u_{k,t}.$$

The parameter estimates of Equation 8 will provide a direct test of the hypotheses proposed in the previous section.

ANALYSIS AND RESULTS

Estimation

The time series data on 75 extensions of 34 brands from six cigarette firms were pooled to estimate the models presented here. Preliminary pooling tests showed that data on extensions from Philip Morris and R. J. Reynolds were significantly different from the extensions of the other four firms. However, because we were using firm and brand characteristic variables to account for the differences, pooling is not a concern (Parsons and Vanden Abeele 1981). Moreover, Wallace (1972, p. 690) has argued for pooling even in the presence of some heterogeneity, because pooled estimators "have smaller variances and one might be willing to make a trade-off, accepting some bias in order to reduce variances."

Significant results from the Breusch-Pagan (1979) Lagrange multiplier (LM) test indicated the presence of heteroskedasticity in the model. Using ordinary least squares will still produce unbiased estimates, but they are inefficient because of heteroskedastic disturbances (Belsley

1973; Parsons and Vanden Abeele 1981). We opted to use White's consistent estimator of the covariance matrix of the coefficient vector to estimate the standard errors of the estimates (Greene 1992; White 1980).[14]

Because data on firm assets and number of employees were not available for Brown and Williamson, the model was estimated initially without the extensions of this company. Doing so reduced the number of extensions studied by 8.

Results

The estimates of the model with and without data from Brown and Williamson are presented in Table 5. The differences in the two estimates and their significance levels were minimal. A test for structural differences in the common parameters between the two models (with and without Brown and Williamson) was performed (Maddala 1977) and was found insignificant ($F_{80,603}$ = .8246, n.s.). Both models, however, show a reasonable fit (adjusted R^2 are .68 and .65). Several of the proposed hypotheses are confirmed.[15]

Cannibalization. The cannibalization process Equation 7 incorporated into Equation 8 will provide an estimate of the extent to which the new extensions cannibalized the parent brand sales. The estimates of this equation are

$$\lambda = -.0770 + .0064 \ (Time) - .0006 \ (Time)^2 + .0730 \ (Menthols) + .0846 \ (Lights) + .0835 \ (Light \ 100s) + .1130 \ (Others).$$

All the estimates were significant at least at the $p < .10$ level. The intercept term (β_0) is the extent of cannibalization or market expansion in the 100s category (which was the omitted dummy variable). The effect of line extension activity into the different subcategories on parent brand sales is presented in Table 6. Even with cannibalization, these extensions still appear to have produced incremental sales for the parent brand, particularly in the case of stretches into menthols and 100s subcategories. Note that activity in the 100s category may have promoted market expansion by producing an average of 5.68 billion units in incremental sales.

However, this does not seem to be the case with subsequent introductions into other categories. Later extensions into lights, light 100s, and ultras subcategories have shown 1.4% to 4.7% cannibalization. Although it appears that earlier extensions were more successful and may have helped the parent brand to expand the market, one has to interpret these results within the context of the cigarette industry.[16] For example, 100s and menthols, which were introduced the earliest, may have some inherent qualities that helped the market expansion or contributed to low cannibalization. The 100s, the most successful subcategory, may have helped to expand the market due to the popularity of the product itself. Menthols, on the other hand, may have had low cannibalization due to the low substitutability of regular cigarettes with menthol cigarettes. The cannibalization or expansion effects of the extension may depend on (1) the inherent popularity of the extension category and (2) the substitutability of the new extension with the brand's other products. Although we find diminishing returns to extension activity, with the current framework, it is not possible to partial out these effects.

As evidenced by the positive coefficient (β_1 = .0064), cannibalization is also greater in the earlier years of the introduction of the extension. The quadratic term (Time^2) was negative and significant, confirming diminishing cannibalization over time.

Effects of parent brand characteristics. It was hypothesized that line extensions of strong parent brands will be more successful. As shown in Table 5, two of the three measures of brand strength, the age (AGE) and advertising share (PBADSHR) of the parent brand, are positively related to extension market share (α_1 = .0021, $p < .01$ and α_3 = 2.1533, $p < .01$, respectively).[17] The parent brand market share (PBSHR) was not significant. One likely reason for this result is the possibility of collinearity between brand share and advertising share (ρ = .76). Belsley's (1991) conditioning diagnostics, however, did not indicate strong near dependency. Because this diagnostic was not a clear indicator of lack of collinearity, the model in Equation 8 was reestimated without PBSHR. The model showed an improvement in fit (adjusted R^2 = .69) without substantially affecting the rest of the coefficients. In addition, a model with PBSHR and without PBADSHR was estimated to see if brand share would become significant. The resulting coefficient was significant (α_2 = .7221 $p < .05$) but the adjusted R^2 dropped to .65. The insignificant effect of parent brand share also could be due to the separation of the cannibalized portion of the extension market share that came from the parent brand.

There was a significant positive impact of the parent brand symbolism on extension market share (α_4 = .0213, $p < .05$) supporting H$_2$. As reported previously, a consumer

[14]The consistent estimator of the covariance matrix is$(X'X)^{-1}[\Sigma_i v_i^2 x_i x_i'](X'X)^{-1}$, where v_i^2 is the estimated residual of observation i and $X'X$ is the SSCP matrix of the exogenous variables. In addition, a random effects model was estimated using generalized least squares (GLS) without any significant differences from the reported results.

[15]At the suggestion of one *JMR* reviewer, the model was modified to incorporate a second equation in which parent brand's share is the endogenous variable being affected by its extension's market share and other parent brand characteristics (such as parent brand's age advertising share) and is estimated using two-stage least squares. The reciprocal effect of extension share on parent brand share was not significant. The results from this two-equation model as reflected by the parameter estimates and their significance did not change any of the substantive conclusions obtained from the single equation model presented in Equation 8.

A structural equation model incorporating multiple measures for the success of an extension (market share of the extension and relative market share of the extension) also was estimated at the suggestion of this reviewer. This model is not directly comparable to the model in Equation 8, because it does not capture the incremental market share of the extension. The results, however, were similar to those obtained here with respect to the direction and significance of the effects. Difficulty in incorporating interaction effects (due to inherent nonlinearities and violation of normality assumptions) and cannibalization effects have precluded us from fully exploiting the structural equation methodology.

[16]We are grateful to one of the *JMR* reviewers for pointing out this alternative view.

[17]The use of parent brand and extension advertising as exogenous variables presents a problem if the advertising expenditures are determined as percentage of sales. In a study of 107 brands, Lambin (1976) found no systematic simultaneous relationship between advertising and sales. However, one should be cautious about the potential of single equation models providing an upward bias in the direction of the advertising-sales relationship (Assmus, Farley, and Lehmann 1984; Schmalansee 1972).

Table 5
ESTIMATES OF THE MODEL

	Coefficient	Expected Sign	With ASSETS	Without ASSETS
Parent Brand Characteristics:				
Parent Brand Strength				
Age of the Parent Brand (AGE)	(α_1)	+	.0021 (.0005)***	.0010 (.0004)***
Parent Brand's Market Share (PBSHR)	(α_2)	+	.2952 (.3684)ns	.5753 (.3752)ns
Parent Brand's Advertising Share (PBADSHR)	(α_3)	+	2.1533 (.2738)***	1.6276 (.2461)***
Symbolic Value of the Parent Brand (SYMBOL)	(α_4)	+	.0213 (.0107)**	.0269 (.0099)***
Order of Entry (ORDER)	(α_5)	+	.0700 (.0162)***	.0568 (.0159)***
Order * Parent Brand Share (ORDER * PBSHR)	(α_6)	+	4.4512 (.7894)***	3.8452 (.7987)***
Extension Characteristics:				
Sequence of Extension (SEQ)	(α_7)	−	.0042 (.0041)ns	−.0029 (.0037)ns
Support for the Extension (XADSHR)	(α_8)	+	.2874 (.0756)***	.2715 (.0735)***
Firm Characteristics:				
Firm Size (ASSETS)	(α_9)	+	.00003 (.00001)**	————
Firm's Competencies (FCOMP)	(α_{10})	+	.0026 (.0009)**	.0040 (.0006)***
Intercept	(α_0)		−3.9907 (.9457)***	−1.9223 (.7994)**
Cannibalization Process Coefficients:				
PMS	(β_0)		−.0770 (.0443)*	−.0987 (.0426)**
Time	(β_1)		.0064 (.0039)*	.0061 (.0039)ns
Time^2	(β_2)		−.0006 (.0002)**	−.0004 (.0002)**
Menthols	(β_3)		.0730 (.0408)*	.0868 (.0395)**
Lights	(β_4)		.0846 (.0476)*	.1060 (.0460)**
Light 100s	(β_5)		.0835 (.0437)*	.1071 (.0419)***
Others (Ultras, 120s)	(β_6)		.1130 (.0494)**	.1372 (.0481)***
Sample Size			621	700
Adjusted R^2			.679	.653
F			78.039***	83.125***

* Significant at $p < .10$ level.
** Significant at $p < .05$ level.
*** Significant at $p < .01$ level.
ns Not Significant.
Figures in parentheses are standard errors.

measure of symbolic value of the brand also was collected, which correlated highly with the categorical measure used in the model ($\rho = .791$). When this alternative measure was used in the model, similar results were obtained. The coefficient was still positive and significant (.0178, $p < .001$). Thus, extensions of highly symbolic brands appear to fare better than extensions of less symbolic brands.

The archival and secondary information-based measure of the symbolic value of the brand can be considered at best only an approximation because it was obtained post hoc. Although the significant positive effect of this measure is encouraging, caution should be used. In future studies, researchers should try to develop measures of symbolic value of brand over time.

Both H$_{3a}$ and H$_{3b}$ were supported. The significant positive effect indicates that line extensions entering earlier into a subcategory relative to the others tend to have higher market shares. ($\alpha_5 = .0700$, $p < .01$). In addition, the interaction effect of order of entry and strength of the brand was significant ($\alpha_6 = 4.4512$, $p < .01$), suggesting that extensions of
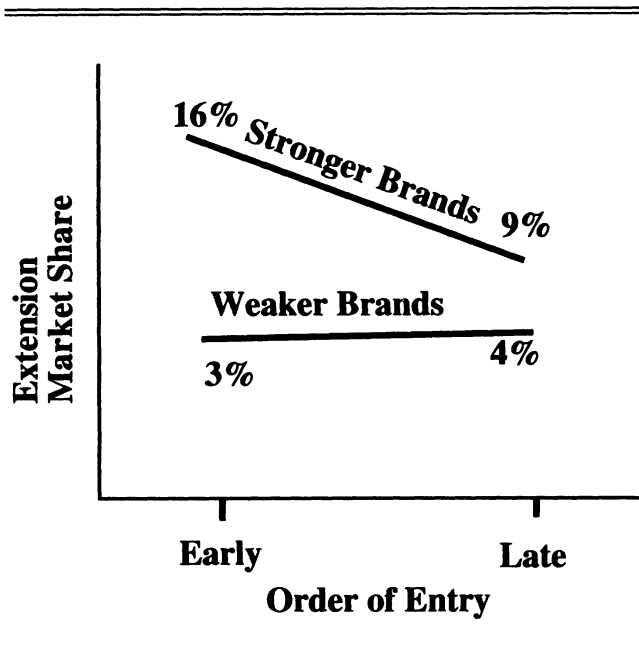
stronger brands can compensate for late entry and still gain market share. To further investigate this relationship, the order of entry and brand strength variables were split at the median and the extension market share for the resultant categories plotted in Figure 5. As can be seen, order of entry ap-

Table 6
EXTENT OF CANNIBALIZATION AND INCREMENTAL SALES DUE TO LINE EXTENSIONS

Category	Average Parent Brand Sales	Average λ Extension	Average Incremental Sales	Average Cannibalization/ (Expansion)
Menthols	11.92	−.007	2.08	(.15)
100s	14.76	−.082	5.68	(1.29)
Lights	19.43	.014	4.01	.27
Light 100s	15.37	.020	3.68	.30
Others	18.64	.047	2.23	.89

* All sales in billions of units.

Figure 5
INTERACTION EFFECT OF ORDER OF ENTRY AND BRAND STRENGTH

The coefficient associated with the extension firm's distinctive marketing competency was positive and significant ($\alpha_{10} = .0026$, $p < .01$) confirming H_7. Firms that managed their past brands effectively by gaining high contribution per brand seem to transfer that expertise to the management of new line extensions as well. The extensions of such firms seem to be more successful.

SUMMARY AND DISCUSSION

Much of the prior work on product extensions, with few exceptions, uses an experimental approach to investigate the effects of extension strategies on individual consumers. Many of these studies have been invaluable in generating important findings on the way consumers evaluate core brands and extensions. As Keller (1993, p. 18) points out, however, one has to go beyond the experimental work to "aggregate implications" by "examining the issues associated with brand knowledge effects on market segments or the customer franchise as a whole, as opposed to its effects on one individual consumer." We attempt to address this issue directly by estimating a model of line extension success using data on numerous extensions in the cigarette industry.

This study contributes to the literature by verifying many of the findings obtained in prior experiments. Not only does our research provide external validation for some of the experiments, but it also complements and extends prior work in the brand extension area through the introduction of some critical factors that affect extension success. By including firm-related characteristics, as well as parent and extension variables, this study serves to enlarge and extend both the number and dimensions of variables identified as contributors to an extension's success.

From a managerial perspective, because the majority (89%) of new product introduction activity appears to come from line extensions, it is imperative for management to have knowledge of what contributes to the success of this strategy. It would be particularly useful if factors under the firm's control were identified as pivotal. Major findings from this study are the following:

pears to have no effect on the market shares of extensions of weak brands, because the market shares of early or late entering extensions are about the same. However, extensions of strong brands entering early have a higher market share than those entering later. Moreover, the later entering extensions of strong brands have significantly higher market shares than extensions of weaker brands.

Effects of extension characteristics. The coefficient associated with the sequence of entry of the extension was not significant ($\alpha_7 = -.0042$), failing to support H_4. Smith and Park (1992) find a similar insignificant effect within the context of brand extensions. Because most of the brands had less than two prior extensions, the range and variance may not be sufficient enough for it to have a significant impact.

There was a significant positive coefficient associated with advertising and promotion support for the extension (XADSHR; $\alpha_8 = .2874$, $p < .01$). The advertising and promotion support used here is only a partial indicator of the total support that new introductions may receive. We have not considered other marketing mix variables, such as the distribution and sales force support provided to line extensions. One has to interpret this result a bit narrowly to imply that line extensions, which receive relatively strong advertising and promotion support, are more successful.

Effects of firm characteristics. H_6 predicts that extension firm's size will have a positive impact on its line extension's success. This hypothesis is confirmed; the coefficient associated with firm assets was positive and significant ($\alpha_9 = .00003$, $p < .05$). An estimate obtained using the number of employees (in thousands) also produced a significant positive coefficient (.0005, $p < .01$), confirming the positive impact of firm size on extension success.

- Line extensions of strong brands are more successful than extensions of weak brands;
- Line extensions of symbolic brands enjoy greater market success than those of less symbolic brands;
- Line extensions that receive strong advertising and promotional support are more successful than those extensions that receive meager support;
- Line extensions entering earlier into a product subcategory are more successful than extensions entering later, but only if they are extensions of strong brands;
- Firm size and marketing competencies also play a part in an extension's success;
- Earlier line extensions have helped in the market expansion of the parent brand; and
- Incremental sales generated by line extensions may more than compensate for the loss in sales due to cannibalization.

Commensurate with research findings that indicate the importance of brand associations in the formation of extension attitudes and predispositions, parent brand characteristics— namely the strength and symbolic value of the parent

brand—are strongly indicative of a line extension's success. By defining brand strength in terms of a brand's dominance in the marketplace, this research addresses Smith and Park's (1992) suggestion to examine behavioral indicators of brand strength, such as brand market share. The strategy of capitalizing on the name and reputation of established brands—in other words, exploiting a brand's equity through extensions—is quite sound, according to our findings.

The method used here to assess cannibalization effects is another important contribution of this research. Although much has been written about the possible cannibalization of parent brand sales by extensions, there has been little empirical work that measures it. The extent of cannibalization, coupled with the incremental sales of successive extension subcategories (see Table 6), provides some insight into the motivation for line extensions. Faced with dynamic environments, such as changing consumer preferences (from regular cigarettes to menthol and low tar/nicotine varieties and to longer length products), brand managers introduced extensions, recognizing that the new cigarettes might cannibalize parent brand sales. Yet the extension, though initially exploiting an existing parent brand name, actually might enhance a brand's life by warding off decline precipitated by environmental changes. Such a phenomenon has been noted in other industries. For example, in the beer industry, the launch of "lite" and "dry" extensions of well-known brands, though initially capitalizing on the parent brand name, have served to extend the parent's life cycle and increase brand equity. It is interesting to note that our findings differ from the conventional wisdom pertaining to the effects of brand extensions into new categories, which suggests that the proliferation of extensions indeed may weaken existing parent brand associations and ultimately the franchise.

This study also addresses Keller's (1993, p. 17) suggestion that research should clarify the roles of "brand identities by considering more explicitly aspects of the brand name, symbols, and logos" by using "visual and verbal properties of brand identities." To our knowledge, this is the first attempt to study the macro-level effects of brand elements like symbols on extensions. We made an attempt to distinguish brands with strong visual cues and consistent campaigns over time. The positive impact of symbolism in our study may be viewed as an initial step in the investigation of such effects. Our findings suggest that managers should recognize the importance of enhancing the symbolic imagery associated with a brand. Not only might a symbolic brand be extended into more diverse product categories than nonsymbolic brands (Park, Milberg, and Lawson 1991), but it also can result in more successful line extensions.

The finding that only extensions of strong brands seem to benefit from early entry has several implications. To benefit from being a pioneer in a product subcategory, managers of weak brands must ensure that extensions are supported well in the face of the superior renown and resources of subsequent entries. Evidence in many industries suggests that the rewards of pioneering may not be sustainable for weak brands. Strong brands, on the other hand, have a good

chance of overcoming the disadvantages of later entry. In addition, strong brands may utilize market signaling to ward off zealous weak competition.

With respect to the timing of introductions, our study is relevant to the manager of a strong established brand delaying extension activity due to uncertainty or other circumstances. Such "paralysis" has been attributed to Warner-Lambert in their introduction of Cool Mint Listerine and IBM and Compaq in terms of low-priced computers (Levinson et al. 1993). Companies reluctant to alter an entrenched product as the environment changes might consider the potential benefits, particularly to strong brands that enter early.

Limitations and Further Research

We have identified some potential areas of limitations for this research. First, we chose to concentrate on one industry rather than perform a cross-sectional analysis. We should reiterate, however, the advantages in terms of modeling clarity gained in this type of investigation relative to cross-sectional work and, ultimately, its ability to complement other findings. In addition, though it could be argued that the industry selected is unique because of the addictive nature of its product, labels warning customers of the hazards of smoking, and advertising limited to print and billboards, the competitive arena is not unlike others. The extension activity of the cigarette industry over time resembles some of the patterns in categories such as ready-to-eat cereals, beer, and carbonated beverages. Though perhaps not as pronounced as in the cigarette category, health and public safety concerns also have affected these products (e.g., sugar in cereals, driving while under the influence of alcohol, saccharin in diet soda).

As with any research, caution should be used in generalizing some of the findings; however, similar results from experimental and cross-sectional studies lend support to the findings here. Aaker and Keller's (1990) experimental results, Sappington and Wernerfelt's (1985) study in the U.S. Liquor industry, and Smith and Park's (1992) findings on sequential entry are similar to those reported in our study. Order of entry effects were similar to those found in a number of cross-sectional studies, including the recent report on brand extensions by Sullivan (1992). In any case, our findings, albeit in a single industry, validate and lend credence to the traditional, experimental work done on brand extensions.

Another limitation of this study stems from the nonavailability of more precise data on the symbolic nature of brands. Ideally, for the purpose of this research, parent brand symbolism is that which existed at the time of the extension's introduction. However, in view of the time that has elapsed since many of the introductions studied here, it was not possible to obtain data ex post. In recognition of this shortcoming, a main criterion used to assess symbolism was campaign consistency. An additional caveat related to the symbolism variable used is its categorical or discrete rating. In reality, all brands possess some symbolic value, however small. Symbolism, therefore, is more likely to be arrayed in a continuum rather than in the discrete form assumed in this study. Under the circumstances discussed, the

symbolic measures of brands used are somewhat imperfect alternatives.

Our research, though addressing many issues through the three research objectives posed, raises some questions that could be addressed in future work. This study concentrated on the incremental market share of the extension as the indicator of success. As we have pointed out, other less tangible indicators of success may be just as relevant. For example, has the introduction of an extension provided a barrier to entry or limited the share of a competitor? Effort also could be spent in the future on investigating the competitive effects of a line extension strategy.

Relative price of the extension may have an important effect on the success of an extension. It is not included in our model due to the uniform pricing situation in the cigarette industry. Although cigarette prices have increased dramatically (over 400%) during the period of study, the prices of filter brands of all manufacturers were the same during any given year. This was the result of the peculiar uniform pricing structure followed by the cigarette industry until recently. Any price differences that existed were usually temporary, not lasting more than a few months (USDA 1988). Price competition in the form of low-priced generic brands (which are 15–35% lower than branded cigarettes) has been evident since the mid-1980s, and discounting of premium brands is a more recent phenomenon. However, one should consider seriously using price variables in other industries in which such a uniform pricing structure is not common.

Different methods have been proposed here for the estimation of cannibalization effects of line extensions on parent brands. A comparison of these methods to obtain a converging estimate may be an interesting avenue to pursue in the future. This study may be limited by the use of annual data. Although we were not attempting to investigate the duration effects of advertising, in which the data interval is of concern, the availability of monthly or weekly data would have facilitated the estimation of brand-level models. In addition, cannibalization might have been modeled more precisely with shorter interval data. With the availability of store-level scanner data, future work can concentrate on the effects of store environment variables (e.g., display shelf space, promotions) and specific characteristics of the line extension category (e.g., similarity of the extension to the parent brand, price of the extension relative to the parent brand) on the extent of cannibalism.

A key question that deserves research attention relates to the circumstances surrounding brand versus line extensions. Farquhar and colleagues (1992), in classifying extension strategies used to leverage brand equity, imply that brand extensions ("direct extensions" in their terminology) are more appropriate for extending to closely related categories and prestige levels. They propose that line extensions using a subbranding strategy (Marlboro Green, American Express Gold) are less risky than brand extensions when moving a master brand up market. Second, the differential effects of sequential versus simultaneous extension introductions on the success and cannibalization are not considered here. Moorthy and Png (1992), in developing an analytical model for the timing of introduction of two differentiated products, show that sequential entry is more preferable when cannibalization is a potential problem.

As noted, we have taken initial steps in this research to incorporate and operationalize the symbolic value of a brand. Given the vast documented history of promotional activity in this industry and others, researchers could extend this macro perspective by making finer distinctions in terms of symbolic value. Experimental approaches might be used to assess characteristics, colors, and other semiotic elements. Furthermore, the effects of emotions and nostalgia on brand consumption are deserving of research attention. A spectrum of category symbolism might be developed, as some items (e.g., food, candy, cars, perfume) have greater potential mechanisms for generating and sustaining symbolic value compared with others (e.g., household cleaners). We believe that this topic is particularly deserving of further research given corporate dependency and environmental pressures on established brands.
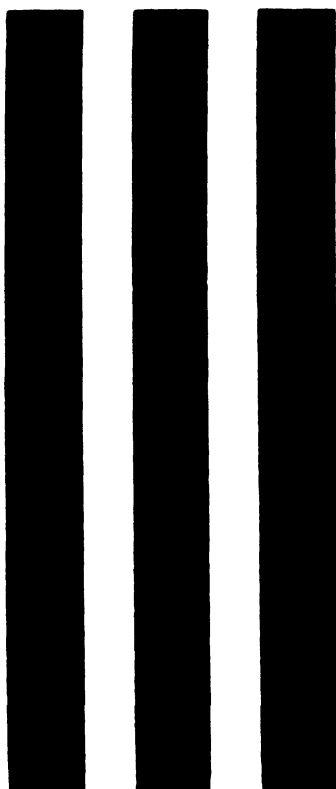
REFERENCES

Aaker, David A. (1991), Managing Brand Equity. New York: The Free Press.

────── and Kevin Lane Keller (1990), "Consumer Evaluations of Brand Extensions," Journal of Marketing, 54 (January), 27–41.

Adelman, M. A. (1951), "The Measurement of Industrial Concentration," The Review of Economics and Statistics, 33 (November), 269–96.

Andrews, K. R. (1971), The Concept of Corporate Strategy. Homewood, IL: Richard D. Irwin, Inc.

Assmus, Gert, John U. Farley, and Donald R. Lehmann (1984), "How Advertising Affects Sales: Meta Analysis of Econometric Results," Journal of Marketing Research, 21 (February), 65–74.

Association of National Advertisers, Inc. (1984), Prescription for New Product Success. New York: ANA.

Bass, Frank M. (1969), "A New Product Growth Model for Consumer Durables," Management Science, 15 (January), 215–27.

Baumol, W. J. (1959), Business, Behavior, Value, and Growth. New York: MacMillan.

Belsley, David A. (1973), "On the Determination of Systematic Parameter Variation in the Linear Regression Model," Annals of Economic and Social Measurement, 2 (October), 487–94.

────── (1991), Conditioning Diagnostics: Collinearity and Weak Data in Regression. New York: John Wiley & Sons, Inc.

Bhat, Subodh (1992), "The Impact of Parent Brand Attribute Beliefs and Affect on the Evaluation of a Brand Extension," doctoral dissertation, Terry College of Business, University of Georgia.

Blau, Peter M., Cecelia. M. Falbe, William Mckinley, and Phelps K. Tracy (1976), "Technology and Organization in Manufacturing," Administrative Science Quarterly, 21 (March), 20–40.

Bond, Ronald S. and David F. Lean (1977), Sales, Promotion, and Product-Differentiation in Two Prescription Drug Markets. Washington, DC: Federal Trade Commission.

Booz, Allen and Hamilton (1982), New Product Management for the 1980s. New York: Booz, Allen, and Hamilton.

Boush, David M. and Barbara Loken (1991), "A Process Tracing Study of Brand Extension Evaluations," Journal of Marketing Research, 28 (February), 16–28.

Box, George E. P. and George C. Tiao (1975), "Intervention Analysis with Applications to Economic and Environmental Problems," Journal of the American Statistical Association, 70 (March), 70–79.

Bragg, Arthur (1986), "Back to the Future," *Sales and Marketing Management*, 137 (November), 61–62.

Breusch, T.S. and A.R. Pagan (1979), "A Simple Test for Heteroskedasticity and Random Coefficient Variation," *Econometrica*, 47 (September), 1287–94.

Buzzell, Robert D., Bradley T. Gale, and Ralph G. M. Sultan (1975), "Market Share—A Key to Profitability," *Harvard Business Review*, 53 (January–February), 97–106.

Carpenter, Gregory S., Donald R. Lehmann, Kent Nakamoto, and Suzanne B. Walchli (1993), "Pioneering Disadvantage: Consumer Response to Differentiated Entry and Defensive Imitation," working paper, Kellogg Graduate School of Management, Northwestern University.

Chakravarti, Dipankar, Deborah J. MacInnis, and Kent Nakamoto (1990), "Product Category Perceptions, Elaborative Processing and Brand Name Extension Strategies," in *Advances in Consumer Research*, Vol. 17, Marvin E. Goldberg, Gerald Gorn, and Richard Pollay, eds. Provo, UT: Association for Consumer Research, 910–16.

Cleary, David P. (1981), *Great American Brands*. New York: Fairchild Publications.

Conant, Jeffrey, Michael P. Mokwa, and P. Rajan Varadarajan (1990), "Strategic Types, Distinctive Marketing Competencies and Organizational Performance: A Multiple-Measures-Based Study," *Strategic Management Journal*, 11 (September), 365–83.

Cook, Victor J., Jr. (1985), "The Net Present Value of Market Share," *Journal of Marketing*, 47 (Summer), 49–63.

Crawford, C. Merle (1979), "New Product Failure Rates—Facts and Fallacies," *Research Management* (September), 9–13.

Crum, W.L. (1961), *Corporate Size and Earning Power*. Cambridge, MA: Harvard University Press.

Dewar, Robert and Jerald Hage (1978), "Size, Technology, Complexity, and Structural Differentiation: Toward a Theoretical Synthesis," *Administrative Science Quarterly*, 23 (March), 111–36.

The Economist (1990), "Brand-Stretching Can Be Fun—and Dangerous" (May 5), 77–80.

Farquhar, Peter H., Julia Y. Han, Paul M. Herr, and Yuji Ijiri (1992), "Strategies for Leveraging Master Brands: How to Bypass the Risks of Direct Extensions," *Marketing Research*, 4 (September), 32–43.

Gatignon, Hubert (1984), "Competition as a Moderator of the Effect of Advertising on Sales," *Journal of Marketing Research*, 21 (November), 387–98.

Golder, Peter N. and Gerard J. Tellis (1993), "Pioneering Advantage: Marketing Logic or Marketing Legend," *Journal of Marketing Research*, 30 (May), 158–70.

Gould, John P. (1970), "Diffusion Process and Optimal Advertising Policy," in *Microeconomic Foundations of Employment and Inflation Theory*, Edmund S. Phelps, ed. New York: W.W. Norton & Company Inc., 338–68.

Greene, William H. (1992), *Econometric Analysis*. New York: Macmillan Publishing Company.

Hall, Marshall and Leonard W. Weiss (1967), "Firm Size and Profitability," *Review of Economics and Statistics*, 49 (August), 319–31.

Hambrick, Donald C. (1983), "Some Tests of the Effectiveness and Functional Attributes of Miles and Snow's Strategic Types," *Academy of Management Journal*, 26 (March), 5–26.

——————, Ian C. MacMillan, and Diana L. Day (1982), "Strategic Attributes and Performance in the Four Cells of the BCG Matrix," *Academy of Management Journal*, 25 (September), 510–31.

Hitt, Michael A. and R. Duane Ireland (1984), "Corporate Distinctive Competence and Performance: Effects of Perceived Environmental Uncertainty (peu), Size, and Technology," *Decision Sciences*, 15 (Summer), 324–49.

—————— and —————— (1986), "Relationships Among Corporate Level Distinctive Competencies, Diversification Strategy, Corporate Structure and Performance," *Journal of Management Studies*, 23 (July), 401–16.

Hofer, Charles W. (1975), "Towards a Contingency Theory of Business Strategy," *Academy of Management Journal*, 18 (December), 784–810.

—————— and Dan Schendel (1978), *Strategy Formulation: Analytical Concepts*. St. Paul, MN: West.

Jacobson, Robert (1988), "Distinguishing Among Competing Theories of the Market Share Effect," *Journal of Marketing*, 52 (October), 68–80.

—————— and David A. Aaker (1985), "Is Market Share All that It's Cracked Up To Be?" *Journal of Marketing*, 49 (Fall), 11–22.

Jaworski, Bernard J. and Ajay K. Kohli (1993), "Market Orientation: Antecedents and Consequences," *Journal of Marketing*, 57 (July), 53–70.

Johnson, Tod (1991), "The Inherent Value of Brand Equity as Measured by Over 15 Years of Brand Loyalty Trends," in *Managing Brand Equity*, Eliot Maltz, ed. Cambridge, MA: Marketing Science Institute.

Kamakura, Wagner A. and Gary J. Russell (1992), "Brand Equity: Measuring Brand Performance With Scanner Data," Report No. 92-122. Cambridge, MA: Marketing Science Institute.

Keller, Kevin Lane (1993), "Conceptualizing, Measuring, and Managing Customer-Based Brand Equity," *Journal of Marketing*, 57 (January), 1–22.

—————— and David A. Aaker (1992), "The Effects of Sequential Introduction of Brand Extensions," *Journal of Marketing Research*, 29 (February), 35–50.

Kerin, Roger A., P. Rajan Varadarajan, and Robert A. Peterson (1992), "First-Mover Advantage: A Synthesis, Conceptual Framework, and Research Propositions," *Journal of Marketing*, 56 (October), 33–52.

Koeppel, Dan (1990), "Cigarette's Future Slowly Cools," *Superbrands 1990: America's Top 2000 Brands: Adweek Supplement*, 178.

Kotler, Philip (1991), *Marketing Management: Analysis, Planning, Implementation, and Control*. Englewood Cliffs, NJ: Prentice-Hall, Inc.

Lambin, Jean J. (1976), *Advertising, Competition and Market Conduct in Oligopoly Over Time*. Amsterdam: North-Holland.

Lambkin, Mary (1988), "Order of Entry and Performance in New Markets," *Strategic Management Journal*, 9 (Summer), 127–40.

Leiberman, Marvin B. and David B. Montgomery (1988), "First-Mover Advantage," *Strategic Management Journal*, 9 (Summer), 41–58.

Leuthesser, Lance (1988), "Defining, Measuring, and Managing Brand Equity," Report No. 88-104. Cambridge, MA: Marketing Science Institute.

Levinson, Marc, Anne Underwood, Seema Nayyar, and Bruce Shenitz (1993), "Stand by Your Brand," *Newsweek* (April 19), 38–39.

Lohof, Bruce A. (1969), "The Higher Meaning of Marlboro Cigarettes," *Journal of Popular Culture*, 3 (Winter), 441–50.

Loken, Barbara and Deborah Roedder John (1993), "Diluting Brand Beliefs: When Do Brand Extensions Have a Negative Impact?" *Journal of Marketing*, 57 (July), 71–84.

MacInnis, Deborah J. and Kent Nakamoto (1991), "Examining Factors that Influence the Perceived Goodness of Brand Extensions," working paper, University of Arizona.

Maddala, G. S. (1977), *Econometrics*. New York: McGraw-Hill.

Mahajan, Vijay, Vithala Rao, and Rajendra Srivastava (1991), "Development, Testing, and Validation of a Model for Assessing the Impact of Brand Strength on Acquisition and Investment Decisions," in Managing Brand Equity: Conference Summary, Eliot Maltz, ed. Cambridge, MA: Marketing Science Institute, Report No. 91-110.

————, Subhash Sharma, and Robert D. Buzzell (1993), "Assessing the Impact of Competitive Entry on Market Expansion and Incumbent Sales," Journal of Marketing, 57 (July), 39–52.

Maxwell, John (1985), Historical Trends in the Cigarette Industry. New York: Furman, Selz, Mager, and Birney Inc.

McDaniel, Stephen and James Kolari (1987), "Marketing Strategy Implications of the Miles and Snow Strategic Typology," Journal of Marketing, 51 (October), 19–30.

McKee, Daryl O., P. Rajan Varadarajan, and William M. Pride (1989), "Strategic Adaptability and Firm Performance: A Market-Contingent Perspective," Journal of Marketing, 53 (July), 21–35.

Meyer, Alan D. (1982), "Adapting to Environmental Jolts," Administrative Science Quarterly, 27 (December), 515–37.

Miles, Raymond E. and Charles C. Snow (1978), Organizational Strategy, Structure and Process. New York: McGraw-Hill Book Company.

Moore, Michael J., William Boulding, and Ronald C. Goodstein (1991), "Pioneering and Market Share: Is Entry Time Endogenous and Does it Matter?" Journal of Marketing Research, 28 (February), 97–104.

Moorthy, Sridhar K. and I. P. L. Png (1992), "Market Segmentation, Cannibalization, and Timing of Product Introductions," Management Science, 38 (3), 345–59.

Morgan, Hal (1986), Symbols of America. New York: Viking Press.

Nerlove, Marc and Kenneth J. Arrow (1962), "Optimal Advertising Policy under Dynamic Conditions," Economica (May), 124–42.

Norton, John A. and Frank M. Bass (1987), "A Diffusion Theory Model of Adoption and Substitution for Successive Generations of High Technology Products," Management Science, 33 (September), 1069–86.

Park, C. Whan, Bernard J. Jaworski, and Deborah J. MacInnis (1986), "Strategic Brand Concept—Image Management," Journal of Marketing, 50 (October), 621–35.

————, Sandra Milberg, and Robert Lawson (1991), "Evaluation of Brand Extensions: The Role of Product Level Similarity and Brand Concept Consistency," Journal of Consumer Research, 18 (September), 185–93.

Parsons, Leonard J. and Piet Vanden Abeele (1981), "Analysis of Sales Call Effectiveness," Journal of Marketing Research, 18 (February), 107–13.

Peterson, Robert A. and Vijay Mahajan (1978), "Multiproduct Growth Models," in Research in Marketing, Jagdish Sheth, ed. Greenwich, CT: JAI Press.

Pollay, Richard W. and Anne M. Lavack (1992), "The Targeting of Youths by Cigarette Marketers: Archival Evidence on Trial," in Advances in Consumer Research, Vol. 20, Leigh McAlister and Michael L. Rothschild, eds. Provo, UT: Association for Consumer Research, 266–71.

Porter, Michael E. (1980), Competitive Strategy. New York: The Free Press.

Ries, Al and Jack Trout (1986), Positioning: The Battle for Your Mind. New York: McGraw Hill, Inc.

Robinson, William T. (1988), "Sources of Market Pioneer Advantages: The Case of Industrial Goods," Journal of Marketing Research, 25 (February), 87–94.

———— and Claes Fornell (1985), "Sources of Market Pioneer Advantages in Consumer Goods Industries," Journal of Marketing Research, 22 (August), 305–17.

Ruekert, Robert W. and Orville C. Walker (1987), "Marketing's Interaction with Other Functional Units: A Conceptual Framework and Empirical Evidence," Journal of Marketing, 51 (January), 1–19.

Sacharon, Stanley (1982), Symbols of Trade: Your Favorite Trademarks and the Companies They Represent. New York: Art Direction Book Company.

Sappington, David E. M. and Birger Wernerfelt (1985), "To Brand or Not to Brand? A Theoretical and Empirical Question," Journal of Business, 58 (3), 279–93.

Scherer, F.M. (1980), Industrial Market Structure and Economic Performance. Chicago: Rand McNally College Publishing Company.

———— (1985), "Editorial: Post-Patent Barriers to Entry in the Pharmaceutical Industry," Journal of Health Economics, 4 (March), 83–87.

Schmalansee, Richard (1972), The Economics of Advertising. New York: North Holland.

Simon, Carol J. and Mary W. Sullivan (1990), "The Measurement and Determinants of Brand Equity: A Financial Approach," working paper, Graduate School of Business, University of Chicago.

Sleuwaegen, Leo E., Raymond R. De Bondt, and Wim V. Dehandschutter (1989), "The Herfindahl Index and Concentration Ratios Revisited," The Antitrust Bulletin, 34 (Fall), 625–40.

Smith, Daniel C. and C. Whan Park (1992), "The Effects of Brand Extensions on Market Share and Advertising Efficiency," Journal of Marketing Research, 29 (August), 296–313.

Smith, Ken J., James P. Guthrie, and Ming-Jer Chen (1989), "Strategy, Size and Performance," Organizational Studies, 10 (1), 63–81.

Snow, Charles C. and Lawrence G. Hrebiniak (1980), "Strategy, Distinctive Competence, and Organizational Performance," Administrative Science Quarterly, 25 (June), 317–36.

Solomon, Michael R. (1992), Consumer Behavior: Buying, Having, and Being. Boston: Allyn and Bacon.

Srivastava, Rajendra K. and Allan D. Shocker (1991), "Brand Equity: A Perspective on Its Meaning and Measurement," Report No. 91-124. Cambridge, MA: Marketing Science Institute.

Stekler, H. O. (1963), Profitability and Size of Firm. Berkeley, CA: Institute of Business and Economic Research, University of California.

Sullivan, Mary W. (1991), "Brand Extension and Order of Entry," working paper, Marketing Science Institute.

———— (1992), "Brand Extensions: When to Use Them," Management Science, 38 (June), 793–806.

Szymanski, David M., Sundar G. Bharadwaj, and P. Rajan Varadarajan (1993), "An Analysis of the Market Share-Profitability Relationship," Journal of Marketing, 57 (July), 1–18.

Tauber, Edward M. (1981), "Brand Franchise Extensions: New Products Benefit from Existing Brand Names," Business Horizons, 24 (2), 36–41.

Therrien, Lois (1991), "From Chuck Wagon to Trail Boss of Marlboro Country," Business Week (April 15), 60–66.

Tilley, Nannie M. (1985), The R. J. Reynolds Tobacco Company. Chapel Hill, NC: The University of North Carolina Press.

Tosi, Henry and Henry Patt (1967), "Administrative Ratios and Organizational Size," Academy of Management Journal, 10 (June), 161–68.

University of Minnesota Consumer Behavior Seminar (1987), "Affect Generalization to Similar and Dissimilar Brand Extensions," Psychology and Marketing, 4 (Fall), 225–37.

Urban, Glen L., Theresa Carter, Steven Gaskin, and Zofia Mucha (1986), "Market Share Rewards to Pioneering Brands: An Empirical Analysis and Strategic Implications," Management Science, 32 (June), 645–59.

————— and John R. Hauser (1993), *Design and Marketing of New Products*. Englewood Cliffs, NJ: Prentice-Hall, Inc.

—————, ————— and Nikhilesh Dholakia (1987), *Essentials of New Product Management*. Englewood Cliffs, NJ: Prentice-Hall, Inc.

U.S. Department of Agriculture (1988), "Tobacco: Situation and Outlook Report," Economic Research Service. Washington, DC: USDA.

Vickers, John and Donald Hay (1987), "The Economics of Market Dominance," in *The Economics of Market Dominance*, Donald Hay, ed. Oxford: Basil Blackwell, 1–60.

Wallace, T.D. (1972), "Weaker Criteria and Tests for Linear Restrictions in Regression," *Econometrica*, 40 (July), 689–98.

Waterson, Michael (1984), *Economic Theory of the Industry*. Cambridge, MA: Cambridge University Press.

White, Halbert (1980), "A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity," *Econometrica*, 48 (May), 817–38.

White, Larry C. (1988), *Merchants of Death: The American Tobacco Industry*. New York: Beech Tree Books, William Morrow.

Whitten, Ira T. (1979), *Brand Performance in the Cigarette Industry and the Advantage to Early Entry*. Washington, DC: U.S. Federal Trade Commission.

Wilson, Lynn O. and John A. Norton (1989), "Optimal Entry Timing for a Product Line Extension," *Marketing Science*, 8 (Winter), 1–17.