

MARKET SHARE REWARDS TO PIONEERING BRANDS: AN EMPIRICAL ANALYSIS AND STRATEGIC IMPLICATIONS*

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An empirical analysis indicates that the order of entry of a brand into a consumer product category is inversely related to its market share. Market share is modeled as a log linear function of order of entry, time between entries, advertising, and positioning effectiveness. The coefficients of the entry, advertising, and positioning variables are significant in a regression analysis on an initial sample of 82 brands across 24 categories. These findings are confirmed by predictions on 47 not previously analyzed brands in 12 categories. Managerial implications for pioneers and later entrants are identified.

(MARKETING; COMPETITION; NEW PRODUCTS)

Introduction

One strategy for new product development is based on innovation and the creation of new markets. It is expensive and risky to be a pioneering brand (Urban and Hauser 1980). The costs of development are often large and the first firm in a market must allocate funds to make consumers aware of its product and convince them to buy it. The risk of failure is high because the potential demand is not known with certainty. An alternative strategy is based on being the second (or later) entrant into the market. The costs may be lower since the innovator has created the primary demand and the basic product design exists; the risk also may be less because a proven demand exists. If an equal market share can be gained, this strategy could be more profitable. If, on the other hand, as a result of being the first entrant in a market, a dominant market share is achieved and maintained, the innovation strategy may be superior. The purpose of this paper is to investigate the market share effects of being a pioneering brand.

If the market grants a long-run market share reward to early entrants, this would encourage innovation. From a public policy point of view, this would serve a similar function to that of patents by providing an additional reward to innovators. Although patents sometimes provide protection, in many cases they are ineffective because of difficulties of establishing and protecting the rights and the ability of other firms to "invent around" the patent as technology advances (von Hippel 1982). This difficulty of protecting an innovation is compounded by the fact that imitators generally take less time and require fewer funds to copy the innovation (Mansfield, Schwartz, and Wagner 1981). If pioneering brands earn a long-run market share advantage, the effectiveness of patent protection may be less critical in providing incentives for innovation and firms may be more willing to innovate without patent protection.

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Several authors have argued on theoretical grounds that such long lived advantages can exist. Early ideas by Bain (1956) indicated that existing products can have an advantage accruing from fundamental consumer traits that lead to stable preference patterns. If an experience curve is present, production costs for the pioneer may be lower because its cumulative production is likely to be greater than later entrants (Abell and Hammond 1979). If the pioneer can not only gain a cost advantage but also erect barriers to entry (Porter 1980), sales advantages may be even greater.

Recent theoretical work by Schmalensee (1982) is based on the fundamental notion that once buyers use the first entrant's product, they will be willing to pay more for it, if it works, because they are not certain the second product will work. Based on a number of assumptions (e.g., products either work or do not work, second entrant objectively equal to first, no response by pioneer to new entrant, and no advertising effects) he shows that a long-run price advantage can persist for the pioneering brand. In this model, the second entrant must offer a price reduction to persuade consumers to try and learn about the product. This can imply higher profits for the pioneer. Lane and Wiggins (1981) also assume that consumers only know the exact quality of the products they have used. Their model is similar to Schmalensee's but includes advertising and some response by the pioneer to later entrants. After examining profit maximizing strategies they find "even with entry, the first entrant's advantage persist in the form of higher demand and profitability" (p. 3).

Hauser and Shugan (1983) have formulated a defensive strategy model which uses the product positioning of the new entrant to determine share. In this model, the persistence of the sales levels of pioneering brands depends on how well the pioneer designed the product attributes to meet heterogeneous consumer preferences. If the "best" positioning was chosen by the first firm, later entrants may have lower market shares because, if they want to differentiate, they must adopt an inferior position. However, if the first brand to enter did not fully understand consumer preferences, the second entrant could get a preferential positioning advantage and earn a greater share.

These theoretical models show the possibility of long-run market share rewards for pioneering brands and indicate these rewards also will be a function of the product positioning and pricing strategies of the new and old products.

A limited amount of empirical analysis on the benefits of early entry has been reported. Biggadike (1976) studied 40 industrial product entries into new markets represented by large firms in the PIMS project. He found that after four years the average share of these entrants was 15 percent while the share of the largest existing competitor in each of the 40 businesses decreased from 47 percent to 28 percent when new entrants came on the market. These data suggest that although the share of the pioneering brand decreases as a result of subsequent entry, shares may not equalize.

Robinson and Fornell (1985) studied the PIMS data for 371 consumer goods business units that were in the mature phase of their life cycle. In this sample firms designated themselves as "pioneers, early followers, or later entrants." "Pioneers" had an average share of 29 percent while "early followers" had 16 percent share and "later entrants" had 11 percent market share. The authors conducted an econometric analysis to uncover the mechanisms underlying the share differences. They found that pioneers tended to have higher quality products and a broader product line. In convenience goods, market pioneers gained additional advantages due to distribution effects. Pioneers also benefited in markets with low price and low purchase frequency. This cross-sectional study provides evidence of order of entry effects at the business unit level.

Two longitudinal industry studies have been conducted which have information relevant to entry effects. The first is by Bond and Lean (1977) and reflects a study of two related prescription drugs (diuretics and antianginals). A historical review and time

series regression analysis of the sales, entry and promotion in each of these markets led the authors to conclude for these prescription drugs that "the first firm to offer and promote a new type of product received a substantial and enduring sales advantage" (p. vi). Neither heavy promotional outlays nor low price dislodged the pioneers. However, later entrants that offered therapeutic novelty did achieve substantial sales volumes when backed by heavy promotional expenditures. They found that "large scale promotion of brands that offer nothing new is likely to go unrewarded" (p. vi).

Another interpretative study of trends in seven cigarette submarkets by Whitten (1979) led to the finding that the "first entry brand received a substantial and enduring sales advantage" in six of the seven cigarette market segments (p. 41). She found, however, that later entry brands which were early in a growing market or which were significantly differentiated could gain a substantial share in the market or even dislodge the first entry brand from its dominant position.

These theoretical and empirical analyses suggest order of entry may affect the market share potential of later entries and that this effect may be modified by the entrant's positioning, quality, pricing, and marketing strategy. This paper enlarges the body of empirical knowledge by a cross product analysis over many categories of frequently purchased brands of consumer goods. It includes effects of order of entry as well as advertising and product positioning. We begin by describing the data base and specifying the statistical model. Then we describe its fit to an initial data base of 82 brands, assess its predictive ability on a new sample of 47 brands, and present a re-estimation of the model parameters based on the pooled data. We consider the strategic implications of our findings and close with a discussion of future research needs.

Data

Pre-test market assessment procedures have been widely used in the markets for frequently purchased brands of consumer products. One such system, called ASSESSOR (Silk and Urban 1978), provides a rich data base for the study of order of entry effects. In this procedure, data on existing products are collected first and then new product response is measured. We are concerned here with only the data on existing products. Studies were carried out in the 1979-82 period. In each category studied, 300 (or more) respondents were interviewed to determine their evoked set of brands, their preferences for these brands (constant sum paired comparisons across each consumer's evoked set), the last brand they purchased, and ratings of selected evoked brands on product attribute scales.¹ These data allow market shares to be estimated by the fraction of the sample which last purchased the brand. The preference and ratings data supply a basis of determining product positioning and differentiation. An initial sample of 24 categories was selected for exploratory analysis. 82 major brands existed across these categories. After the collection and analysis of the initial sample, data for 47 different brands were made available. This second sample became the data for predictive testing. The products in these samples represented tightly defined categories of frequently purchased goods (e.g., liquid detergent, instant freeze dried coffee, fabric softener, anti-dandruff shampoo). The categories were well established. The average time in the market for second entrants was 25.9 years, third entrants 20.5 years, fourth entrants 15.2 years, fifth entrants 8.9 years, and sixth entrants 6.2 years. These data

¹The respondents were intercepted at a shopping mall, screened for category usage, and interviewed if they were within the age and demographic quotas established in the stratified sampling plan for each study. The evoking is based on positive unaided response to one of the following conditions: now using, ever used, on hand, would consider using, or would not consider using. Approximately 90% of evoking is associated with use experience.

were supplemented by advertising expenditures obtained from the *Leading National Advertisers* published media audits. Although these audits may not report 100 percent of each brand's spending, they are useful in comparing advertising expenditures if we assume no biases in relative advertising. Since the brands considered had been on the market at least two years, these spending levels represent post-introductory expenditures.

The order of entry was determined by identifying the time of national introduction for each brand. This was done by personally calling the firms which market each of these products and determining when it was introduced. In the few cases where the firms were not willing to provide this data, at least two competitors were asked to provide an estimate of the entry time and their average response was utilized.

These data provided a cross sectional data base for the investigation of order effects. At the time of each study, the shares for the existing brands, the year of each product's entry into the market, the brand's recent advertising spending, and the relative product preferences are known.

Statistical Model

The dependent variable in this study is the ratio of the market share of the n th (second, third, fourth . . .) brand to enter the market to that of the first product to enter. Since the number of brands in each category varies, the absolute shares also vary; the ratio allows a meaningful comparison of relative relationships of brands within and across categories. Brands are included in the analysis if they were advertised at a significant level (greater than one million dollars per year) and a reasonable share estimate could be obtained (at least 30 respondents reporting a specific brand as last brand purchased).

The order of entry (first, second, third . . .) is used as an independent variable. This variable can empirically reflect the theoretical long lived share advantages of pioneering brands argued by Schmalensee (1982) and Lane and Wiggins (1981). If, as theorized, the early entrant becomes the standard of comparison and subsequent brands require consumers to make additional investments in learning, the order of entry variable will be negatively correlated to the share index. This variable is supplemented by another which is defined as the number of years between the n th entry and the one which immediately preceded it. Being the second brand in the category may have a different share effect if the lag between the pioneer is one year rather than two, three, or four years, Whitten (1979) stressed the importance of a firm being early after a new trend is established. Advertising is represented by the total advertising expenditure over the last three years by the n th brand to enter the category divided by that of the pioneering brand. This variable reflects the sustaining level of advertising spending and allows the order of entry effect to be modified by the application of marketing resources.

Differential product positioning has been identified as another moderator of the effect of order of entry. The Bond and Lean (1977) and Whitten (1979) studies stress its significance. Robinson and Fornell (1985) and Hauser and Shugan (1983) also argue for its importance. One method of constructing a positioning variable is by combining the product attribute ratings to estimate the utility for a brand. (See Urban and Hauser (1980) or Shocker and Srinivasan (1979) for a review.) Many procedures exist and they usually reproduce stated preferences or choices well. Another method is to use stated preferences directly. This has the advantage of avoiding variance due to lack of fits between the attributes and preferences, but has the disadvantage of not linking the attributes to preferences. Because our primary purpose is to use the positioning variable as a covariate of order of entry in explaining share rather than

supporting the design of new products, we choose to use preference to construct the positioning variable. The constant sum preferences supplied by respondents over their evoked set reflect their overall evaluations of the brand's price and features. After scaling the preferences by least square procedures (see Silk and Urban 1978), we obtain a preference value for each evoked brand j , respondent i and category c (V_{ijc}). We define a relative preference for a brand for each consumer and average over all individuals who evoke the brand:

$$R_{jc} = \frac{1}{I_{jc}} \sum_i \frac{V_{ijc}^{\beta_c}}{\sum_k V_{ikc}^{\beta_c}}, \tag{1}$$

- V_{ijc} = preference value for respondent i and brand j in category c ,
- I_{jc} = number of respondents in category c who evoke brand j ,
- β_c = scale parameter for category c ,
- R_{jc} = relative preference of brand j in category c .

The value of R_{jc} is a measure of the consumers' evaluation of the product given that it is evoked. It reflects consumers' preferences that result from a specific multiattribute positioning. In most cases evoking occurs by use of the brand. If it performs well and price is low, R_{jc} will be high; if it does not perform well and price is high, R_{jc} will be low. The scale parameter β_c is estimated by logit procedures (see Silk and Urban 1978, for details) and it empirically has values in the range of 1 to 3 with a median of about 2. This scaling of preferences results in R_{jc} approximating the probability of purchase of the brand given that it is evoked. The driving forces behind R_{jc} are the measured preferences across the evoked set, but this scaling must be remembered when the statistical analysis is interpreted (see below).

Another aspect to emphasize is that R_{jc} is conditioned by evoking. The same market share (e.g., 10%) for a brand could be due to high preference conditioned on evoking and low evoking (e.g., 50% preference given evoking and 20% evoking), low conditioned preference and high evoking (e.g., 20% preference and 50% evoking) or moderate levels of both (e.g., 33% preference and 33% evoking). The variable R_{jc} is not necessarily correlated to share. Before 1974, Tylenol had a low share, but pre-test market evaluations indicated high preference by those who had used it. After Tylenol advertised and promoted its product, its share increased dramatically as the fraction of the population evoking it increased.

In our model we are interested in the positioning quality of later entrants relative to the pioneer, so we define the ratio of R_{jc} for the n th brand to R_{jc} for the first brand to enter as the variable to represent the relative preference given evoking. If the later entrant is superior, the ratio is greater than one, and if less desirable, the ratio is less than one.

The form of the model is nonlinear to reflect the hypothesis that the impact of the second brand to enter on the pioneer will be greater than the third or fourth brand. Considerable precedent exists for modeling a nonlinear response to advertising (Little 1979). Bond and Lean (1977) indicate an interaction between order, position, and marketing promotion and this can be captured in an elasticity function. Formally for brand n in category c :

$$S_{nc} = E_{nc}^{\alpha_1} P_{nc}^{\alpha_2} A_{nc}^{\alpha_3} L_{nc}^{\alpha_4}, \tag{2}$$

S_{nc} = ratio of the market shares of the n th brand to enter category c to the market share of the first brand to enter the category,

E_{nc} = order of entry of n th brand in category c ($n = 1, 2, 3, 4 \dots$),

P_{nc} = ratio of preference given evoking for n th brand to preference for first brand

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