New Product Preannouncing Behavior: A Market Signaling Study
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The authors describe an exploratory study of the preannouncement of new products in advance of market introduction. The basic premise taken is that preannouncement is a marketing manifestation of signaling. The focus is on identifying conditions that are likely to induce firms to preannounce new product introductions. A survey of managers explores the incidence and rationale for preannouncement. Results suggest that constructs such as market dominance, company size, attractiveness of the competitive environment, and customer switching costs can provide good explanations for preannouncing behavior.

# New Product Preannouncing Behavior: A Market Signaling Study

We define "preannouncement" as a formal, deliberate communication before a firm actually undertakes a particular marketing action such as a price change, a new advertising campaign, or a product line change. The preannouncing behavior we examine pertains to new products or services (excluding flankers or line extensions). "Newness" is defined by the firm in relation to its conventional products. Such "new products" may or may not be viewed as new by the external environment.

Preannouncements may be directed to one or more audiences, such as customers, competitors, shareholders, or distributors. The timing of preannouncements may range from a few weeks in advance of a market introduction to many months. We report findings about the incidence of preannouncing and the audiences addressed, as well as firms' actual timing of preannouncements.

Our interest in preannouncing behavior stems from market signaling concepts derived mainly from the economics literature. We take the perspective of the signal sender to examine the likelihood and rationale for market preannouncing behavior. We have not conducted research at the level of the signal receiver, which is also an interesting research domain.

We begin by surveying the literature that provides the market signaling conceptualization. Several research hypotheses are advanced and the methodology and means of analysis for testing these hypotheses are described. After reporting the results, we conclude with suggestions for future research and a discussion of the managerial implications of the study.

## MARKET SIGNALING CONCEPTUALIZATION

Preannouncing behavior is a form of market signaling. In his pioneering conceptualization, Spence (1974) focused on the job market and the value of signals in leading to more efficient market behavior. Market signals, according to Spence, convey information to other individuals in the market. Despite this broad notion of signals, Spence primarily examined education as a signal to the potential employer about the applicant's expected job performance. In the absence of this signal (amount of education), the employer would be precluded from distinguishing among individuals on the basis of their likely productivity levels, which would lead to market inefficiencies.

The signal sender must make several decisions: whether to send the signal, when to send it, and to whom the signal should be directed. Much of the recent signaling research in economics has examined the latter decision in the context of competitive behavior and the value of information directed to competitors. The general research paradigm is game theory and the objective has been to determine stable equilibria signaling positions between actors (Banks and Sobel 1987; Cho and Kreps 1987; Engers 1987, Engers and Fernandez 1987).

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A second stream of signaling research within economics and marketing has taken the consumer as the primary audience to whom signals are addressed. Researchers have examined the signaling value of advertising in suggesting product quality (Kihlstrom and Riordan 1984; Nelson 1978) and pricing in suggesting product quality (Gerstner 1985). Farquhar (1986; Farquhar and Pratkanis 1986, 1987) have pursued a research program at the individual consumer level on the effects of preannounced products ("phantom" products in their terminology) on choice probabilities within a decision set.

Another signaling-related audience that has received attention in the literature is corporate shareholders. The premise is that a major objective of preannouncing various marketing actions is to impress shareholders. Empirical analysis, however, has not yielded confirming evidence (Eddy and Saunders 1980) or has shown only minor positive effects on stock prices (Chaney, Devinney, and Winer 1987; Wittink, Ryans, and Burrus 1982).

We examine the firm's decision of whether to send a signal and propositions accounting for the firm's likelihood of preannouncing (signaling) new products or services based both on "competitive behavior" and "consumer behavior" variables. The objective is to explain and predict preannouncing versus nonpreannouncing behavior by the firm.

A cost is involved in all signaling behavior. The general principle is that the benefits to be gained from signaling must outweigh the costs incurred. In Spence's research on education as a signal, the costs are those of procuring an education (financial and personal). The benefits are the likelihood of securing a superior position of employment with higher long-run payoffs. Furthermore, the costs are related inversely to the capabilities of the individual: superior individuals should incur lower costs than inferior individuals to secure an education. Thus education acts as an effective barrier to entry.

For the preannouncing of new products or services, a cost-benefit analysis must be conducted by the firm. The most important costs are the risks of preannouncing. They include cueing competitors who may then be able to react more quickly, cannibalizing the firm's current product line, and damaging the firm's reputation if it has subsequent difficulties in delivering the preannounced product as promised.

The benefits of preannouncing are tied to the advantages of being a pioneer in the market. The empirical evidence suggests an advantage to being first in a market (Biggadike 1979; Urban et al. 1986). Robinson and Fornell (1985), on the basis of the PIMS database, suggest that the second firm to enter a market can expect to achieve only about 60% of the sales of the pioneering firm. Urban et al. (1986), on the basis of pre–test market assessment data sources, suggest that the second firm can expect a 70% share in relation to the pioneering brand.

Preannouncing gives the pioneering firm the potential ability to position its product in the most profitable segment and to leave less profitable segments to later mar-

ket entrants. Preannouncing also can help the firm develop initial levels of opinion leader support and favorable word of mouth needed to accelerate the diffusion of the innovative product. In fact, if one can forecast the level of awareness and word-of-mouth impact that the preannouncement may create, one can determine the optimal time of launching the new product (Kalish and Lilien 1986). Other advantages of preannouncements include accessibility to efficient distribution systems (Robinson and Fornell 1985) and the creation of barriers to entry for other firms by leaving them the unprofitable segments (Schmalensee 1982) or segments that are too small (Eliashberg and Jeuland 1986).

## HYPOTHESES

The initial hypothesis is that preannouncing and non-preannouncing firms will rely on the same two factors—consumer behavior and competitive behavior—in justifying their decision. However, preannouncing firms will stress the benefits of preannouncing whereas non-preannouncing firms will stress the risks. In particular, we expect preannouncing firms to stress the benefits in terms of gaining consumer (demand stimulation) and competitive (preemption) advantages.

Non-preannouncing firms, in contrast, will stress the risks of consumer and competitive disadvantages. Consumers may postpone purchases, cannibalization of current products might occur if the new product is substitutable rather than complementary (Farrell and Saloner 1986; Gatignon and Bansal 1987), or the firm's reputation may be placed at risk in the event of failure to deliver as promised. On the competitive side, the major risks of preannouncement are in shortening the time frame for competitors to respond, unless the firm is able to create barriers to entry, and the possibility of prompting competitors to react more strongly and aggressively than they do to other competitively oriented moves. More formally:

> $H_1$: Both preannouncing and non-preannouncing firms are motivated by their perception of the environment along competitive and consumer behavior dimensions. However, preannouncing firms stress the benefits of preannouncing behavior whereas non-preannouncing firms stress the risks.

The remaining hypotheses comprise two sets, one pertaining to a competitive behavior signaling rationale and the other to a consumer behavior signaling rationale. The objective is to explain new product preannouncing behavior on the basis of these two dimensions.

### Competitive Behavior Rationale

*Market dominance* is competitive power within the product category. This construct can be represented objectively by product category market share and subjectively by management perception of leadership/followership position.

Preannouncement seems most likely to benefit firms

with low market dominance because of lower cannibalization risks. Cannibalization is increased for a firm with a strong portfolio of products in the product category, as preannouncing may encourage present customers to postpone purchases until the new product is available. The dominant firm therefore has considerably greater risk in preannouncing. It is also in the best position to wait and to use its market power to counter any competitive preannouncements. In contrast, companies with low market dominance within the product category have little risk of lost sales due to cannibalization, and, conversely, will have the most to gain by preannouncing to delay consumer purchases for other brands until their new product reaches the market.

*Size* refers to annual sales and number of employees at the level of the firm. Preannouncing appears to hold some risks for large firms due to potential antitrust action for "market overhanging"—that is, preannouncing a product far in advance with the deliberate intent of injuring competitors' sales. Allegations of such predatory behavior generally are directed at large firms with documented market power, thus discouraging preannouncements (Fisher, McGowan, and Greenwood 1983). Small firms tend not to be susceptible to market overhanging allegations and therefore have greater opportunity for preannouncing. One rule of thumb for companies is to make preannouncing consistent with the purchase decision cycle of customers. Thus, if decisions normally are made over a six-month period, a six-month preannouncing time frame would be appropriate.

> $H_{2a}$: Likelihood of preannouncing behavior is related inversely to the firm's level of market dominance for the product category.
> $H_{2b}$: Likelihood of preannouncing behavior is related inversely to the firm's total size.

*Competitive activity* reflects the combativeness of the product category competitors: How likely are they to react to one another? How quickly? With what weapon and with what intensity? The answers to these questions obviously depend on the competitors' perceptions of the likely impact of the new product on their sales and market shares. Preannouncement will be of value to the extent that competitive advantage can be gained. If a preannouncement is likely to be matched, the incentive to preannounce will be minimal (Heil 1988). The company must assess, on the basis of past competitive behavior and the stability of the business environment, its ability to achieve a preemptive strike. It is in the company's best interests to act aggressively by preannouncing if competitive retaliation is unlikely. The firm must have knowledge of its competitors and extrapolate their likely reactions to a new product preannouncement from their past behavior. Burke (1987), for example, has documented empirically that managers changed their perceptions of competitors over the course of a simulation based on prior competitive behavior.

This rationale is also consistent with game-theoretic implications, such as those of Brems (1958) and Ben-

soussan, Bultez, and Naert (1978). They examined the impact of the timing of competitive response on a firm's strategy in a leader-follower situation, where the follower's reaction to the leader's moves is determined by two major components—the long-term competitive reaction elasticity, which is a measure of the likelihood and intensity of the follower's reactions, and a distributed lag function, which is indicative of the timing of the reaction. They concluded that the leader will be more *aggressive* in its attacking strategy (e.g., by spending more on advertising) if it expects a *less* intense and/or *more* delayed and "diffused" response from its competitor (Eliashberg and Chatterjee 1985).

Kreps and Wilson (1982) studied the power of "reputation" in a game theory context. In finitely repeated games the monopolist's ability to create uncertainty about the possibility of predation deters new entrants. Relatedly, Scherer (1980) examined the case of conglomerates and found that the firm's action in one market, such as sharp price cutting, can affect competitors' reactions in other markets. Scherer suggests that the conglomerate's expected benefit will be a function of the competition-inhibiting effects in these other markets.

A pattern of low competitive reaction might be associated with an industry in which R&D and technology are specialized by R&D category. In pharmaceuticals, for example, firms tend to specialize by therapeutic category, which may reduce the number of competitors with the potential to react. A reliance on patents in this industry also may reduce competitive response. If R&D/technology advantages are limited, competitive response can be rapid. In packaged goods, for example, many firms avoid preannouncing and are increasingly skipping test markets in favor of simulated tests that are less likely to cue competitors about their intentions.

> $H_3$: Likelihood of preannouncing behavior is related inversely to the level of competitive activity in the industry.

### Consumer Behavior Rationale

*Learning.* Preannouncing a new product would be advantageous if the product requires substantial customer learning and application before adoption. The same would be true for innovations classified as "discontinuous" in their effects on established patterns of production or consumption (Robertson 1971).

Gatignon and Robertson (1985) considered high and low involvement adoption processes and stressed the need for learning under a high involvement "hierarchy of effects" model. That model assumes a structured decision process in which learning occurs before trial—awareness, knowledge, attitude, evaluation, trial, and adoption. In contrast, a low involvement model assumes only awareness prior to trial and can be represented by awareness, trial, evaluation, and adoption. Learning occurs after trial on the basis of the usage experience. Preannouncing would advance the learning process and be advantageous to the firm if a hierarchy of effects adoption process is expected. That process is most prevalent

for technology-based product categories and least prevalent for consumer packaged goods where learning requirements are generally minimal.

> H₄: Likelihood of preannouncing behavior is related positively to consumer learning requirements.

*Switching costs* are one-time costs to the buyer of converting to the new product. They include not only the purchase cost of the new product, but also the related costs of changing the production or consumption system. For example, one reason given for the relatively slow penetration of dishwashers in U.S. households is the related costs of kitchen renovation. In contrast, color television switching costs are low. Microwaves achieved more rapid penetration when the sales emphasis was changed from large built-in units for primary cooking (again requiring kitchen renovation) to small countertop units for secondary cooking.

Switching costs may be a significant impediment to consumer adoption of a new product and may favor current competitors by acting as a barrier to new entrants (Porter 1980). Under conditions of high expected customer switching costs, preannouncing would be desirable as a means of encouraging advance planning for changeover. Preannouncements may also begin the process of educating customers about how to change over with minimum disruption and costs. Porter (1980, p. 228), for example, suggests that switching costs will be influenced by the "pace of changeover." If preannouncing can make the pace discretionary for the customer, it may reduce switching costs or distribute them over a longer investment time horizon.

Preannouncements may have particular value in industries dependent on network externalities, that is, when consumer benefits and perceived switching costs depend on the number of other consumers purchasing compatible products (e.g., VCRs, telephones, or personal computers). In network externalities, ". . . the relative attractiveness today of rival technologies is influenced by their sales history. In effect, there are 'demand-side economies of scale' . . ." (Katz and Shapiro 1986, p. 824). Preannouncements may encourage standardization of specifications and operating systems—especially if a dominant firm sends the signals, as in the case of IBM announcing its new line of personal computers in April 1987. Standardization in turn may reduce switching costs by ensuring the availability, for example, of programming, software, or compatible peripherals.

> H₅: Likelihood of preannouncing behavior is related positively to the level of customer switching costs incurred to adopt.

## METHOD

### Overview

To collect the data necessary to test the research hypotheses, two slightly different versions of a questionnaire were administered: one for firms that had preannounced their last new product and another for firms that had not preannounced their last new product. The central screening question was: "Please think of the last new product or service that your company introduced. Was it preannounced?" The questionnaires were essentially identical in the parts addressing the extent to which the respondents agreed or disagreed with items measuring our conceptual constructs, as well as in the demographic and classification information.

Both versions of the questionnaire contained two conceptually distinct sections. The first section, which tested H₁, specifically pursued the company's rationale for engaging in preannouncing or non-preannouncing behavior. It contained 19 benefit items and 19 risk items rated on a 6-category scale ranging from "definitely a reason" to "definitely not a reason." The second section, which tested H₂ through H₅, referred to generalized company behavior and perceived consumer and competitive behavior in relation to new product introductions. This section was identical in the preannouncing and non-preannouncing questionnaires. It contained 21 items rated on 6-category scales ranging from "strongly disagree" to "strongly agree." The questionnaires also elicited the extent of new product/service introduction/preannouncing over the past three years. Some additional responses about the practice of new product/service preannouncing (e.g., timing, audience, medium, title, and amount of detail) were elicited from the preannouncing firms.

The questionnaire was first pretested by obtaining five experts' opinions (the authors' colleagues) and 12 management respondents' evaluations of the extent to which the various items measured the constructs of interest, their perceived vagueness, and the effort required to answer. As a result of the pretesting, the questionnaire was improved by tightening the scales and eliminating confusing items.

The sample consisted of business executives who participated in a series of executive education programs conducted at a major university. The administration of the questionnaire involved a brief explanation of what constitutes a preannouncement activity (formal, deliberative communications well in advance of actual introduction or test marketing of the product or service) and what is meant by a new product/service (as opposed to a line extension). The sample size was 87; 75 individuals returned questionnaires for an 86% response rate. No particular pattern was observed for the 12 nonresponding subjects.

The executives surveyed were employed by different firms and represented a wide range of industries: food, consumer durable, pharmaceutical, textiles, computers, industrial equipment, telecommunications, financial services, and transportation. Fifty-one percent of the respondents reported their company had preannounced the last new product/service that was introduced. The positions of the respondents were essentially identical in the preannouncing and non-preannouncing firms, the modes being marketing/product managers, sales managers, and new business managers. In response to the question, "What title(s) within your company have the

most influence on the decision of whether or not to preannounce a new product or service?", the modes were president, vice-president of marketing/sales, and marketing/product manager. Hence, the data suggest that, in general, the respondents were either directly responsible for new product preannouncement/non-preannouncement (marketing/product managers) or were at least informed about this activity because they reported directly to decision makers. As the data are consistent with the key informant rationale (Campbell 1955), they may introduce a potential source of measurement error in the sense that respondents provide information at the aggregate unit of analysis rather than reporting individual-level opinions and behaviors (Phillips 1981; Silk and Kalwani 1982). Our assessment, however, is that such a potential problem is not severe given the respondents' involvement in (or nearness to the locus of) the decision process for preannouncements.

The respondents reported three major targets as most important for their preannouncing signals: salesforce (84%), customers (79%), and distributors (55%). Somewhat surprisingly, competitors and shareholders seldom were mentioned explicitly as important target audiences for preannouncements. For the timing of the preannouncement, the data indicate that firms tend to preannounce the introduction of new products or services from one to 24 months in advance, the median being three months.

### Measurement

Assessment of the general benefits and risks that preannouncing and non-preannouncing firms perceive, as stated in $H_1$, was pursued with a series of items in response to the question, "Why was the last new product or service that you introduced (not) preannounced?" Among the 19 benefit items were "to discourage competitive new product/service development," "to begin building customer awareness," and "to build a high growth company image." Among the 19 risk items were "preannouncing hurts our other products' sales," "our distributors lose interest in our present product line while waiting for the preannounced product," and "preannouncing leads to greater competitive reactions." Items beyond the hypothesized consumer and competitive domains, such as "to build advance distributor support" (benefit item) and "preannouncing can lead to antitrust problems" (risk item), were explicitly incorporated into the questionnaire to test whether firms perceive them to be significantly relevant to their preannouncing behavior. This battery of items was tested in a confirmatory factor analysis (Gorsuch 1983, p. 153). The results are reported in the next section.

To describe the other measures used in the study, we construe the various constructs stated in $H_2$ through $H_5$ as explanatory variables and the preannouncing behavior as a criterion variable. The two explanatory variables corresponding to $H_{2a}$ and $H_{2b}$, market dominance and company size, were measured on three and two items,

respectively. The items used to operationalize market dominance were product category market share, perceived leadership, and perceived dominance within the product/service category. The latter two items were measured directly on 6-category scales. Market share was initially measured as a percentage and then transformed to a 6-category scale based on the cumulative response distribution. The two items used to operationalize company size were company sales (measured in $ million) and number of employees (measured in thousands). Responses were transformed to 6-category scales based on the cumulative distributions. To assess the internal consistency of these two explanatory variables, Cronbach alpha coefficients (Lord and Novick 1968) were employed. The reliabilities were .75 ($n = 60$) for market dominance based on two items (product category market share and perceived leadership) and .77 ($n = 64$) for company size. These reliability measures compare favorably with the .70 or higher desired in exploratory research (Nunnally 1978).

To assess the internal consistency of the explanatory variables corresponding to $H_2$ through $H_5$, an exploratory maximum likelihood factor analysis (Gorsuch 1983, p. 153) was conducted by pooling the data from both preannouncing and non-preannouncing firms, then calculating alpha coefficients. An advantage of maximum likelihood factor analysis is that it can be used to test statistically the number of factors to be retained in the analysis. As recommended by others (e.g., Gorsuch 1983), it was preceded by a principal components solution to get an approximate idea of the number of factors to be retained. Five factors emerged from the principal components solution as most critical in capturing variance in the original items (52%). A maximum likelihood test comparing the null hypothesis that only five factors are sufficient with the alternative hypothesis that more factors are needed did not reject the null hypothesis ($p > .58$, $n = 71$). Sensitivity analysis suggests this is a reasonable solution.

Because we consider the factors extracted to be conceptually distinct, and to minimize collinearity in subsequent analyses, a varimax rotation procedure was employed. The results of the varimax rotation indicate most of the items hypothesized to capture the essence of the several distinct explanatory variables indeed load highly on the major factors.

One factor that emerged, product trial tendency, though representing a dimension of consumer learning ($H_4$), was not explicitly hypothesized as a separate factor. However, because of the factor analysis results, it was retained and used in subsequent analysis. Another conceptual dimension, competitive activity ($H_3$), was captured by two factors that can be interpreted as attractiveness of the competitive environment and likelihood of immediate competitive retaliation.

On the basis of the loadings and face validity, the items in Table 1 were chosen to represent the domains of the variables and to assess the reliability of the constructs.

## TABLE 1
### EXPLANATORY CONSTRUCTS, MEASURES, LOADINGS, AND ALPHA COEFFICIENTS

| Construct | Hypothesis tested | Measures | Loadings | $H_2$–$H_5$ alpha coefficients |
|---|---|---|---|---|
| Likelihood of immediate competitive retaliation | 3 | It always takes our competitors a long time to react to our new product/service introductions | .75 | |
| | | Our competitors rarely retaliate with the same weapon | .60 | .67 |
| Attractiveness of competitive environment | 3 | In our industry, all of us are trying to maintain a peaceful coexistence | .54 | |
| | | Competitive reaction is not an issue | .50 | .45 |
| Consumer learning | 4 | The last new product/service we introduced required a major learning experience by the customer | .56 | |
| | | It takes time until customers can really understand the full advantages of our new product/service | .48 | |
| | | The last new product we introduced represented a major discontinuity in our product/service line offering | .58 | |
| | | The last new product we introduced is more complex than the other products/services we have offered in the past | .60 | .70 |
| Product trial tendency | | Customers must try the new product/service before they can really appreciate its benefits | .81 | |
| | | It takes time until customers can really understand the full advantages of our new product/service | .55 | |
| | | Customers could readily engage in a product/service trial before buying our new product/service | .64 | .66 |
| Customer switching costs | 5 | The last new product/service we introduced required considerable advance planning on the customer's part | .83 | |
| | | The last new product/service we introduced required a major learning experience by the customer | .51 | |
| | | The last new product/service introduced involved high changeover costs for the customer | .62 | |
| | | Technology in this product/service category changes rapidly | .48 | .71 |

The procedure used therefore is essentially in line with Churchill's (1979) recommendations for developing better measures of marketing constructs: specify the domain of the construct, generate a sample of items, factor analyze the *a priori* items believed to measure the construct, and purify the construct measurement on the basis of face validity and coefficient alpha analysis. As can be seen in Table 1, for four of the constructs used, alpha coefficients are higher than .66. For one construct (attractiveness of the competitive environment), alpha is only .46 and consequently it must be interpreted with caution.

The next step in the analysis was to create a single index for each of the multiple-item independent variables by adding the raw scores of the items for each variable. To ensure consistency and enhance interpretability, scores for items that were phrased negatively in the questionnaire were reversed in the calculation. Hence, high scores for the five factor-analysis-based explanatory constructs can be interpreted to correspond to high levels of likelihood of immediate competitive retaliation, high attractiveness of the competitive environment, high consumer learning requirements, high product trial tendency, and high switching costs. The dependent variable was coded as 0 for non-preannouncing and 1 for preannouncing behavior.

### Analysis

The test of $H_1$ involves separate confirmatory factor analysis on the reasons for preannouncing and not preannouncing. The focus of the analysis for $H_2$ through $H_5$ is on understanding the relationship between preannouncing behavior (criterion variable) and the explanatory variables hypothesized to influence that behavior. The relationship between the seven explanatory (independent) variables and the binary dependent variable was investigated by probit analysis. It was also confirmed convergently through two-group discriminant analysis. These two statistical methods provide insights into the relationship between a nominally scaled dependent variable and a set of typically intervally measured independent variables. In particular, one can obtain a better understanding of the relative importance of each of the independent variables, as well as some predictive indications of their performance.

## RESULTS

### Test of $H_1$

To test $H_1$—that preannouncing firms will stress the competitive and consumer behavior benefits of preannouncing and non-preannouncing firms will stress the competitive and consumer behavior risks in rationalizing their behavior—confirmatory maximum likelihood factor analyses preceded by principal components solutions were conducted. The combined results suggest statistically that three factors are needed to capture the information contained in the preannouncing firms' responses ($p < .096$, $n = 37$), and four factors are needed to capture significantly the non-preannouncing firms' responses ($p < .017$, $n = 35$). The factor analysis solutions were rotated via varimax procedure for substantive interpretation. The results are reported in Tables 2 and 3 for preannouncing and non-preannouncing firms, respectively.

The three factors that capture the perceptions of the preannouncing firms about the impact of the activity can be labeled "image enhancement," "distribution advantage," and "demand stimulation." Because only the last factor corresponds directly to one of the two hypothesized factors, consumer-related issues, this part of $H_1$ is only partially supported by the data. The results for the non-preannouncing firms suggest these firms perceive and rationalize the risks associated with preannouncing in terms of cannibalization, competitive reaction, inability to deliver, and antitrust. The first three factors are related directly to consumer and competitive effects. As the data suggest, however, non-preannouncing firms are also sensitive to their possible vulnerability to antitrust allegations.

### Test of $H_2$ Through $H_5$

In the probit model one assumes an observable dummy variable is related linearly to a set of independent variables. Under the normal distribution assumption for the model error term, it is possible to establish a probabilistic relationship between the binary dependent variable and the independent variables and to estimate it via a maximum likelihood approach. The results of the probit parameter estimation are reported in Table 4.

The probit model provides empirical support for $H_{2a}$, $H_{2b}$, $H_3$, and $H_5$ (one-tailed tests, $\alpha = .05$). Hence, the data tend to support most of the hypothesized relationships. In particular, market dominance and company size ($H_2$), attractiveness of the competitive environment ($H_3$), and customer switching costs ($H_5$) can be construed as significant predictors of preannouncing behavior. Likelihood of immediate competitive retaliation, consumer learning ($H_4$), and product trial tendency do not have acceptable levels of significance.

The results, by the order of their magnitude, suggest that we can diffferentiate firms that preannounce from those that do not preannounce. Preannouncing is associated with (1) new products that involve customer switching costs, (2) firms without market dominance in the product category, (3) smaller firms, and (4) an attractive (noncombative) competitive environment. As indicated previously, all of these variables are supported at an acceptable level of statistical significance ($\alpha = .05$).

To test the predictive performance of the probit model, the estimated values of the dependent variables were transformed into probability measures. The procedure for classifying the observations was such that firms with probabilities higher than .5 were classified as preannouncing and those with probabilities less than .5 were classified as non-preannouncing. Table 5 is the classification table.

Various measures have been proposed to evaluate classification tables. First, an important measure of interest is the overall percentage of correct classification. In our study, this measure is equal to 72% (38/53) for the probit model and compares favorably with that in other studies. Morrison (1969) has proposed two chance criteria, proportional and maximum, that also can be used

## TABLE 2
### FACTORS, MEASURES, FACTOR LOADINGS, AND ALPHA COEFFICIENTS—PREANNOUNCING FIRMS

| Factor | Measure | Factor loading | $H_1$ alpha coefficient |
|---|---|---|---|
| Image enhancement | To enhance the company's image and reputation | .64 | |
| | To impress shareholders and potential shareholders | .52 | |
| | To build an innovative company image | .88 | |
| | To build a high-growth company image | .84 | .81 |
| Distribution advantage | To help distributors clean up their inventories | .49 | |
| | To build advance distributor support | .97 | |
| | To gain better distributor cooperation | .79 | .80 |
| Demand stimulation | To identify new consumers | .64 | |
| | To begin building customer awareness | .56 | |
| | To encourage word-of-mouth advertising among potential customers | .72 | |
| | To start building advertising impact | .70 | |
| | To make sales take off more rapidly when we introduce it | .61 | .74 |

## TABLE 3
### FACTORS, MEASURES, FACTOR LOADINGS, AND ALPHA COEFFICIENTS—NON-PREANNOUNCING FIRMS

| Factor | Measure | Factor loading | $H_1$ alpha coefficient |
|--------|---------|----------------|-------------------------|
| Cannibalization | Preannouncing frequently cannibalizes the sales of the present products in the line | .71 | |
| | Preannouncing delays customer purchases of the present products in our line | .80 | |
| | Preannouncing confuses customers who then don't know what to buy | .56 | |
| | Preannouncing hurts our other products' sales | .81 | |
| | Preannouncing frequently lowers the sales of other products in our line | .77 | .92 |
| Competitive reaction | The benefits of preannouncing are much smaller than the drawbacks of telling our competitors what we are up to | .97 | |
| | If we preannounce, this simply encourages competitors to get to the market sooner | .70 | |
| | Preannouncing leads to greater competitive reactions | .78 | |
| | Preannouncing benefits competitors more than it benefits us | .79 | .87 |
| Inability to deliver | Preannouncing is risky because we may not be able to deliver at the time promised | .61 | |
| | Preannouncing is risky because the product specifications might change before actual market introduction | .73 | |
| | Preannouncing may lead to credibility problems because preannouncements are sometimes overly ambitious | .83 | .80 |
| Antitrust concern | Preannouncing can lead to antitrust problems by "overhanging" the market | .65 | |
| | Preannouncing may encourage legal action by competitors if the preannouncement is considered preemptive | .71 | |
| | It is difficult to preannounce without charges of unfair competition | .94 | .91 |

to obtain additional insight into the goodness of the classification results. On the basis of the proportional chance criterion, the percentage correctly classified is 50%. The maximum chance criterion yields 51% correct classification. The probit-based percentage of correct classification (72%) compares favorably with these two benchmarks.

### DISCUSSION

Our research intent is to bring attention to an unresearched topic within marketing: Under what conditions are firms likely to preannounce new products? It is a topic of some value to managers, especially in technology-based industries where preannouncing is particularly prevalent.

The literature domain from which we draw is primarily market signaling theory (Heil 1988; Spence 1974). We posit a set of variables and hypotheses likely to account for new product preannouncements. Initial results from a survey among business executives suggest reasonable success in differentiating preannouncing and non-preannouncing firms on the basis of probit analyses. We

## TABLE 4
### PROBIT ESTIMATION[a]

| Variable | Estimated coefficient | Standard error | t-statistic |
|----------|----------------------|----------------|-------------|
| Market dominance | −.167 | .074 | −2.26[b] |
| Company size | −.135 | .063 | −2.13[b] |
| Likelihood of immediate competitive retaliation | −.021 | .084 | −.25 |
| Attractiveness of the competitive environment | .215 | .105 | 2.04[b] |
| Consumer learning | .039 | .059 | .66 |
| Product trial tendency | −.052 | .061 | −.86 |
| Customer switching costs | .123 | .054 | 2.29[b] |

[a]$n = 53$.
[b]Significant at the .05 level, one-tailed test.

**TABLE 5**
**CLASSIFICATION TABLES FOR PROBIT MODEL**

| | Predicted | | |
|---|---|---|---|
| | Preannouncing | Non-preannouncing | Total |
| *Actual* | | | |
| Preannouncing | 19 | 7 | 26 |
| | 73% | 26% | 100% |
| Non-preannouncing | 8 | 19 | 27 |
| | 30% | 70% | 100% |
| Total | 27 | 26 | 53 |
| | 52.17% | 47.83% | 100% |

therefore conclude that we have identified some of the factors affecting preannouncing behavior, though not a complete set.

Our research is preliminary and of limited scope. Additional factors would be worth specifying and improvements in construct measurement would be desirable to achieve higher levels of reliability. The sample size could be increased and the investigation could examine disaggregately different types of settings (e.g., industrial vs. consumer) as well as different types of products (e.g., durable vs. nondurable). The sample could be extended to multiple informants within each firm to check for consistency in responses. Though the key informants in our study held positions connected with preannouncing decisions, they were not all actual decision makers.

*Future Research: Toward a Theory of Market Signaling*

From our exploratory study and the research of Heil (1988) and Farquhar and Pratkanis (1986, 1987), development of a theory of market signaling might be possible. A first step would be to build a conceptual model of the factors relating to preannouncing behavior.

We examine only one form of marketing signaling—new product preannouncing. Other forms of preannouncing may relate to different explanatory factors. Future research could productively examine pricing preannouncements, channel of distribution preannouncements, and new market entry preannouncements. The objective would be to develop a more general model of signaling encompassing appropriate variables and interactions to explain the likelihood and value of preannouncements to the firm.

Research on signaling also can be extended by the delineation of audiences to whom preannouncements are addressed. In initiating our research, we viewed preannouncing as a generalized phenomenon and assumed that multiple audiences would be reached. However, as reported previously, firms assign different importance levels to each audience and different audiences drive the preannouncement decision, though reaching customers is considered substantially more important than reaching competitors. Future research should focus on the audi-

ence-specific logic and rationale for preannouncing.

Though we take the vantage point of the preannouncing firm or "source," research could also assess responses by target audiences. Ultimately, the question is, "What types of preannouncements lead to what forms of consumer or competitive reaction?" Game theory is one logical basis for addressing this question, but the range of reactions studied in game theory has been limited. In the competitive arena, for example, multiple forms of reaction to a new product preannouncement are possible: retaliating with a similar preannouncement, degrading the initial preannouncement in advertising, cutting prices on present products, or even increasing advertising support of present products. Competitors in the personal computer market have engaged in all of these actions in response to IBM's preannouncement of its next generation of PCs. Rather robust research procedures are needed to tap the breadth of possible reaction, as well as its speed and intensity.

Another future research opportunity is to understand better the nature of market signals and the impact on competitive or consumer reaction. Heil (1988), for example, provides preliminary evidence that a signal will be evaluated by the receiver along dimensions such as its consistency with other signals, its clarity, the commitment behind it (such as building a plant in support of a new product preannouncement), and the credibility of the signal sender. All of these factors affect the encoding of the signal, the attention paid to it, and the likely competitive reaction.

*Managerial Implications*

The incidence of new product preannouncements—51% in our study—suggests that the topic is of practical significance. Preannouncing seems to be driven by how managers perceive their environments and whether they believe preannouncing will be advantageous. Preannouncers and non-preannouncers arrive at different conclusions about the risk/benefit tradeoff for preannouncing. Preannouncing firms stress the benefits of image enhancement, distribution advantage, and demand stimulation. Non-preannouncing firms stress the risks of cannibalization, competitive reaction, possible inability to deliver, and antitrust actions. A logical question is, "Under what conditions should firms preannounce new products?" Though our research does not provide evidence on the "success" of preannouncing, we are able to specify the prevalent conditions for preannouncing, based on our conceptual expectations and the data from operating managers.

Preannouncing appears to be most prevalent, and perhaps most appropriate, for the following consumer- and competitive-driven reasons.

—*Consumer-driven.* When the new product will impose substantial customer switching costs, a significant relationship with preannouncing behavior is present. Preannouncing is also more likely (but not significant statisti-

cally) when the new product will require the customer to undertake considerable learning before adoption and when product trial is not necessary.

—*Competitive-driven.* Preannouncing is related significantly to (1) an attractive (i.e., noncombative) competitive environment, (2) a firm's low market dominance in the product category, and (3) a firm's small size in total sales and number of employees.

Future research, as outlined before, might be able to provide further insight about other forms of preannouncements and their value, such as advance pricing announcements. It might also provide managerial guidelines for the design of signaling messages and implications about the optimal timing of a signal in advance of market entry. Finally, a focus on the reaction side of signaling could provide better information about the likely effectiveness of signals in influencing the behavior of various target audiences.

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# ERRATUM

In the article, "Market Response, Competitive Behavior, and Time-Series Analysis," by Dominique M. Hanssens (November 1980), equation 2 on page 472 is incorrect. The equation should read

$$n_s = \sum_{j=1}^{J} T^{(j)} \left[ R(n_{PD} + n_{m_j}) \right]$$

where all elements are defined as in the article, except

$$T^{(j)} = \{t_{pq}\}$$

and

$$t_{pq} = 1 \text{ if } p = q = J(i - 1) + j \ (i = 1, M \text{ marketing variables}, j = 1, J \text{ competitors})$$

$$= 0 \text{ elsewhere.}$$

The remainder of the article is unaffected by the error.

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