



Signaling new product introduction delays: Determinants of clarity of delay-duration announcements

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ABSTRACT

To benefit from being first into the market, many firms deliberately release information about a new product well ahead of its actual introduction, but often subsequently fail to meet the pre-announced due date. The primary aim of the study reported here was to expand understanding of the determinants of the clarity of announcements concerning delays to new-product introductions, specifically by examining the antecedents of a firm's propensity to issue clear signals regarding the likely date of eventual availability. Empirical analysis of data collected by questionnaire from 113 manufacturers in the telecommunications, consumer electronics, and computer hardware and software sectors in Taiwan found that signal clarity can be explained by factors that are sender-specific (competitive equity building), product-related (prevalence of launch delays, expected duration of delay, and degree of control over delay), and receiver-related (competitive elasticity). A structural model is proposed, to serve as a framework for management decision-making.

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1. Introduction

The timing of the launch of a new product critically affects its market success (Calantone & Di Benedetto, 2007). Many studies reported in the literature have shown the benefits of speed to market and early entry: for example, those by Lieberman and Montgomery (1988) or Guiltinan (1999). When product life cycles are short, product competition is intense and the pace of technological innovation is rapid, the company that gets a new product to market quickly can typically demand a premium price, gain market share and earn higher margins (Kumar & Motwani, 1995; Nevens, Summe, & Uttal, 1990). It is thus important that marketing strategists pay close attention to the pace of new product development and the timescale of commercialization.

Many companies have found the practice of “pre-announcing” new products and services before they are available to be an effective marketing strategy (Lilly & Walters, 1997), the aim being to encourage current and potential customers to postpone any intention to purchase a competing product (Kohli, 1999). This tactic may have the secondary effects of: stimulating sales in complementary product lines; deterring competitors from entering the market segment; engendering positive opinions from market participants and market

influencers regarding the firm and its intention; and gaining access to efficient distribution systems (e.g., Lilly & Walters, 1997; Robinson & Fornell, 1985; Schatzel & Calantone, 2006). The managerial importance of launch signaling and pre-announcement of new product introductions led to their being prevalent research topics in the extant literature: see, for example, Eliashberg and Robertson (1988) and Hultink and Langerak (2002).

In practice, however, pre-announced new product launches are often delayed, especially in technology-intensive markets. For example, Bayus, Jain, and Rao (2001) found that as many as 47% of 123 software products announced before they were available eventually reached consumers more than three months later. Specifically, certain firms intentionally engage in “vaporware” – that is, intentionally false pre-announcements – to gain competitive advantage. More recent examples of major delays in introduction include Apple's iMac desktop computer, Sony's PlayStation 3, and Microsoft's Windows Vista (Hendricks & Singhal, 2008). These are by no means unsophisticated or reckless marketers.

Several recent research studies and review articles have focused on product launches (see Calantone & Di Benedetto, 2007). From this base, the phenomenon of introductions to the market being delayed beyond pre-announced deadlines has also attracted the attention of management and policy researchers and commentators. A related stream of research has examined the reasons for such delays (e.g., Chrysochoidis & Wong, 1998; Rosas-Vega & Vokurka, 2000; Wu, Balasubramanian, & Mahajan, 2004), the use of vaporware as a deterrent (e.g., Bayus et al., 2001; Haan, 2003), and the negative consequences of failing to fulfill promised introduction dates. Those

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latter include higher development and manufacturing costs, loss of market share, reduction in market value and profitability, and such intangible costs as a loss of customer goodwill and negative impressions of management's competence (e.g., Hendricks & Singhal, 1997, 2008; Nevens et al., 1990; Robinson & Fornell, 1985; Urban, Carter, Gaskin, & Mucha, 1986).

Firms that encounter delays in the introduction of new products may choose to inform the targeted market(s) and other significant audiences of new plans for the introduction program, in order to minimize possibly negative halo effects. This is, of course, a form of market signaling, defined by Kohli (1999) as any action by a firm that provides a direct or indirect indication of the firm's intention, motives, goals, or internal situation. Schatzel, Calantone, and Droge (2001) have indicated that pre-announcements of new product delay provide a firm with the opportunity to portray a delay in a relatively favorable light.

The expected duration of a delay is a vital component of any such pre-announcements. Hendricks and Singhal (1997) found that providing consumers with an estimate of the revised timescale had a less negative impact than giving them no information about the length of time they might have to wait. In practice, announcements of expected delays can vary in the clarity of the signal given. For instance, whereas Nokia announced a delay in the introduction of its delayed N91 from the end of 2005 to the "first quarter" of 2006 (*Wall Street Journal*, 2005), Apple announced that its Leopard operating system, due in June 2007, would be delayed to the fairly precise new date of "October" (Kevin, 2007).

However, the clearer the signal of the duration the less room for maneuver a firm has, due to the risk of seeming to act in bad faith. Furthermore, competitors in the market receive the information in such a signal immediately and accurately, and can react swiftly (Heil & Robertson, 1991). By accelerating the introduction of their own competing products, if that is feasible, or by launching heavy promotional initiatives if not, they will pose a strategic threat to the company announcing the revised launch schedule. If the announcement is relatively unclear about the duration of the delay, competitors can still issue various forms of potentially damaging negative commentary, while consumers lose interest and patience. Furthermore, manufacturers of complementary products will not be able to base their own production schedules on signals about timescales that do not deliver precise information about the actual revised timescale. Given the amount and degree of doubt about the clarity of announcements concerning the duration of a delay, a structural model of signal clarity would be a useful aid to strategic planners seeking to manage delayed new-product introductions strategically.

The existing literature provides insights into the existence, causes, and consequences of delays in new-product introductions, but has not so far systematically examined the role of the pre-announcements that update the status of delayed launches. The sole exception is the work of Schatzel et al. (2001), who found that reputation building, buyer involvement, and competitive hostility were the primary motivators of a firm's propensity to make advance announcements of withdrawals or delays. The investigation reported in this paper adds to the current understanding of pre-announcements of product-introduction delays by developing and testing an exploratory model to explain the determinants of the clarity of signals in announcements about a delayed product introduction. In particular, it examines how associated organizational, product-related, and receiver-related characteristics may affect a firm's propensity to issue a clear signal of the duration of a delay. The results will facilitate an understanding of the strategic role played by signal clarity in such pre-announcements.

2. Conceptual framework and hypotheses

A delay signal can be regarded as a tactical marketing communications initiative, communicating the status of new product plans to interested parties, for example by announcing the likely date of

eventual marketplace availability. Such a signal will be subject to factors related to the delay itself. The motivation for issuing a clear signal about a delay may be the announcing firm's desire to maintain a solid reputation. The level of clarity of an announcement will determine the nature of its impact on receivers, and in turn their responses to the delay. To mitigate the potential harm caused by a delay, an announcing firm's strategy should be to take account of the characteristics of the receivers in the process of constructing the content of the signal. Thus, any explanation of the determinants of the clarity of announcement of an expected delay must incorporate explanatory variables relating to the characteristics of the sender, the delayed product, and the receivers.

The process of selection of specific constructs related to the framework began with a large set of variables drawn from the existing literature on market signaling and pre-announcing behavior in general, which were then winnowed down to a smaller set of variables that were judged to be particularly salient for announcements concerning delays to new-product introductions. Input from interviews with practicing managers helped to ensure the practical soundness of the framework. The first outcome was to identify competitive equity building, with its focus on achieving a high-profile favorable reputation within the industry (Calantone & Schatzel, 2000), as the key driver of pre-announcing behavior. The study next examined three constructs relating to the delay itself: the prevalence of product-launch delays, the expected duration of a given delay, and the degree of control over that duration.

A further key variable was identified as the audiences targeted by the pre-announcement of a delay in the introduction of a new product, which might be industry partners, competitors, and customers. Relating to the first of those three, "partner dependence" may play an important role in the strategic decision whether or not to issue a clear signal of an expected delay. It may be defined as the extent to which a firm believes that the industry partners whose complementary products add value to its own depend on it. With regard to competitors, given that the clear indications of intent communicated by delay signals will form an input to competitors' strategic decision-making, plans to pre-announce must take account of what is known about their past behavior. Lastly, customer loyalty was identified as a variable that would have an impact on decisions regarding signal clarity, which should also be investigated by the study.

The resultant conceptual framework is summarized in Fig. 1, from which seven research hypotheses were developed.

2.1. Signal clarity and sender-related factors

One sender-related explanatory variable was considered: competitive equity building, which describes a firm's desire and efforts to influence the development of industry standards, to position its products as the market criterion, and to resolve market uncertainty in its own favor (Schatzel & Calantone, 2006). In practice, firms are likely to try to build a favorable corporate reputation within an industry (Weigelt & Camerer, 1988). In pursuit of such a reputation and the status of an industry leader, they often articulate a vision that includes their internal model of future actions, industry trends, and market practices (Calantone & Schatzel, 2000).

Schatzel and Calantone (2006) have hypothesized that competitive equity building motivates a firm's pre-announcement behavior. More specifically, Schatzel et al. (2001) had earlier argued that reputation-building firms pre-announced new product withdrawals or delays as a means to mitigate the negative effects of the unfulfilled introduction plan on their reputation, by explaining the reasons. Thus, competitive equity building should increase a firm's propensity to announce a delay, taking the "honesty route" by issuing a clear signal with multiple industry groups. It is therefore hypothesized that:

H1. Competitive equity building has a positive effect on the clarity of the signal in the delay announcement.

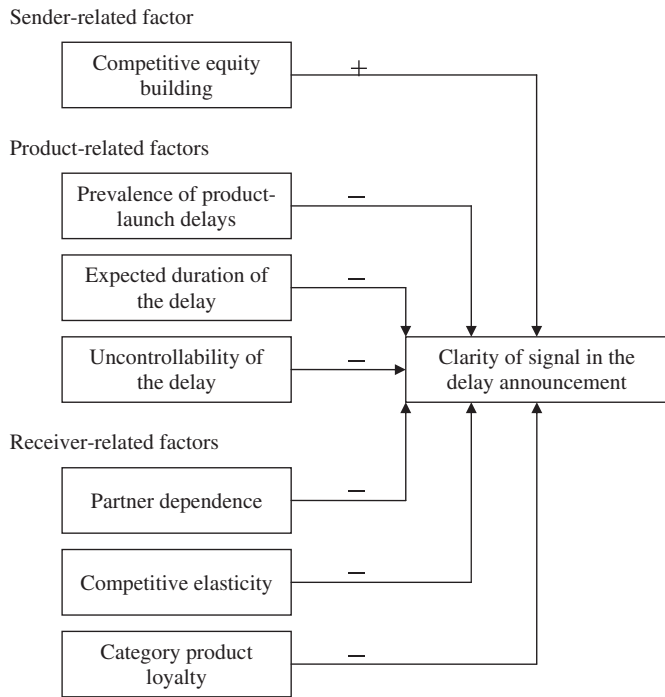


Fig. 1. Proposed model of the factors influencing signal clarity in the delay announcement.

2.2. Signal clarity and product-related factors

The first product-related factor is the prevalence of product-launch delays, describing how often delays beyond pre-announced deadlines occur for the industry as a whole. The level of prevalence varies across industries. Hendricks and Singhal (1997) found that computer hardware and software providers accounted together for 44% of 101 firms that had failed to meet introduction deadlines. Similarly, Rosas-Vega and Vokurka (2000) searched articles published between 1993 and 1997 for the keywords “product delay and announcement” and “introduction delay,” finding that the majority also related to the hardware and software industry.

When there are frequent product introduction delays among competing firms within a product category, the credibility of the whole sector is diminished. If stakeholders cannot evaluate the signals and therefore do not take them into account in their decision making, an announcing firm will be less likely to be cautious and deliberate about the content of the information. In an industry in which delays are infrequent, signals are more likely to be judged credible, and will be taken into account in the receivers' decision making. In such cases, the prominence of delayed introductions may demand a clear signal of the expected duration, to avoid damage to a firm's reputation for honesty in such matters. Thus:

H2. The prevalence of product-launch delays has a negative effect on the clarity of the signal in the delay announcement.

A second product-related factor, expected duration of the delay, defines the interval between the introduction date specified in the pre-announcement and the date the product is expected to be eventually available to customers. Facing a delay in new-product introduction, a firm will estimate the time needed to deal with it. If the cause has been a thorny problem, which the firm is unable to overcome within the limited lead time, there is a certain logic to issuing a signal that is deliberately imprecise, to avoid ultimately acting in bad faith and thereby damaging the firm's reputation. On the other hand, a short-scale estimate of when the delayed product will be ready will be taken as an indication that the problems in

developing the product are relatively minor. A firm will consequently be more confident in naming the date at which the delayed product will be ready, and should thus issue a clear signal about the expected delay, to preempt negative impressions of its technical or managerial competence. To sum up, it can be proposed that:

H3. The expected duration of a delay has a negative effect on the clarity of the signal in the delay announcement.

A third product-related factor, the uncontrollability of the delay, defines the level of the firm's control over the delay. There are many and various possible reasons for delays. A study by Hendricks and Singhal (1997) of 101 firms missing their deadlines found that the five most significant causes of delays to the introduction of new products were: technical, engineering, and development problems; the need to redesign the product; its failure to meet performance specifications; the need for additional testing and debugging; and the securing of approval from government agencies. Analyzing a sample of postponement announcements in the computer sector, Rosas-Vega and Vokurka (2000) found that that only just over one in five had been attributed to such external factors as third-party problems, market factors or consumer demand. The remainder related to internal factors, approximately four in every five stemming from technical problems and the few exceptions being classified as managerial problems. Most recently, reasons for delays have been categorized by Chen, Chung, Ho, and Lee (2007) as either “firm-specific” or “industry-wide”.

Where the cause of a delayed product introductions is internal, buyers are likely to reason that the level of the producer's control over the event was high, and that the firm should therefore be held accountable, according to Lewicki and Bunker (1996). If firms issue imprecise or ambiguous signals about the duration of such delay, there will be uncertainty among consumers regarding the likelihood that the product will ever be introduced. A direct consequence might be that customers doubt the firm's ability to assess and control the causes, switch to competitors' products, and thereby precipitate more pronounced intra-industry competition (Chen et al., 2007). If, on the other hand, a delay is attributed to such uncontrollable external factors as industry-wide problems, the firm is likely to be exonerated from responsibility. In such circumstances, even if a firm provides an unclear estimate of the duration of the delay, or none at all, consumers will be less likely to react by withdrawing their intention to purchase. Accordingly:

H4. The uncontrollability of the delay has a negative effect on the clarity of the signal in the delay announcement.

2.3. Signal clarity and receiver-related factors

The first in this group of factors, partner dependence, defined earlier in this section as the extent to which a firm believes that the industry partners whose complementary products add value to its own depend on it. When a delay occurs, significant impacts can be expected on such partners, given that they may not have access to independent markets. Delayed introductions are particularly harmful to partners in high-technology industries, where the pace of change is rapid and product life cycles are short, partners' complementary products are often developed in parallel with the product in question, and are based on its projected timing (Wu et al., 2004). One such negative impact might be to constrain a partner firm's expected cash flow.

Anderson and Narus (1990) define the difference between a firm's perception of its own dependence on the working relationship and that of its partner as the degree of relative dependence. When a firm's relative dependence level is high, resource dependency theory predicts that it will have a relatively greater willingness to satisfy the

demands of the partner firm and maintain and develop a long-term relationship in order to achieve desired goals (Hald, Cordón, & Vollmann, 2009). That might be achieved, for instance, by being more receptive to requests from the partner firm for a clear signal of the duration of the delay, which are a required input to the planning and management of concurrent product development. On the other hand, a partner's ability to exact "punishment" for the delay is curtailed when its own dependence on the maintenance of the working relationship is high, and the delaying firm will be less likely to clarify its own plans in the interests of its partner. Indeed, being deliberately unclear about the precise date of the delayed introduction would, logically, avoid the risk of being unable to deliver on the promises in a timely manner. So:

H5. Partner dependence has a negative effect on the clarity of the signal in the delay announcement.

The second receiver-related factor, competitive elasticity, is defined by Kohli (1999) as the expected level of competitive retaliation to an observed action, in terms of its timeliness and aggressiveness. Firms responding quickly and effectively to such a threat have in the past earned reputations as formidable competitors (Schatzel, Droge, & Calantone, 2003). The extent to which an industry environment is characterized as harsh and exacting, is defined by Schatzel et al. (2001) as competitive hostility. This generates an environment in which a firm's own initiatives count for little against significant competitive pressure (Covin & Slevin, 1989) and its own actions run a high risk of retaliation. Eliashberg and Robertson (1988) noted that competitive activity is a reflection of the combativeness of the competitors in the product category.

In a highly competitive industry, the capacity to develop and introduce new products faster and on time is likely to be an important source of differentiation and competitive advantage (Hendricks & Singhal, 1997). Furthermore, a delay in introducing new products in such a market environment is likely to encourage reactions by competitors and result in loss of sales and competitive advantage. In such cases, a signal that did not specify the exact duration of a delay would take time to decipher and delay the damaging responses (Heil & Robertson, 1991). The time and effort required of a competitor to evaluate the signal and assess alternative responses, as well as uncertainty about the information, could create an advantage for the delaying firm. By contrast, under conditions with little risk of competitive reaction, the clarity of the signal could be increased. Thus:

H6. Perceived competitive elasticity has a negative effect on the clarity of the signal in the delay announcement.

A third receiver-related factor, category product loyalty, describes the extent to which there is buyer loyalty to existing products, or little product or brand switching takes place when multiple choices are in fact available (Lilly & Walters, 1997). In categories with high brand loyalty, initial adoption is tied to recurring consideration, choice, and purchasing of the brand and such negative consumer behavior as abandoning the purchase and switching suppliers will be less readily triggered. This phenomenon would afford the firm the opportunity to issue a less clear signal when a product is delayed.

When category product loyalty is low, or switching among products or brands is prevalent, clear signals of expected delay can work as straightforward alerts to buyers, about the expected date at which the delayed product will be ready. Signals that are unclear about the duration of the delay, on the other hand, run the clear risk of providing an incentive for brand switching. Accordingly:

H7. Category product loyalty has a negative effect on the clarity of the signal in the delay announcement.

3. Method

3.1. Sampling and data collection

Two considerations motivated the choice of the pre-announcement of a new product delay as the unit of analysis, in the context of the telecommunications, consumer electronics, and computer hardware and software markets. Such industries typically place strong emphasis on new product development, and pre-announce new products more often than those in other industries. Firms failing to deliver new products on the promised introduction dates may feel the need to inform various stakeholder audiences of the delay. Furthermore, Wu et al. (2004) observed that product development and the external business environment factors vary widely across industries, while Kohli (1999) recommended limiting the scope of data collection to reduce the effects of extraneous factors.

The sampling frame for data collection was the membership directories of the Taiwan Electrical & Electronic Manufacturers' Association and Taipei Computer Association, from which 780 eligible survey respondents were systematically selected. A questionnaire and personalized cover letter were sent to each selected informant by e-mail. The letter introduced the study as an academic undertaking, rather than commercial, highlighted the potential value of the findings to marketing managers and planners. To encourage the best response, recipients were assured that they would remain anonymous and that only aggregated results would be reported, and were offered a copy of the research conclusions. These response incentives yielded a total of 136 returned questionnaires, of which 23 were eliminated as incomplete or unusable. Though the 113 valid data sets available for analysis represent a usable response rate of only 14.5%, Wu et al. (2004) obtained 201 returns of which 113 (coincidentally) were valid. Calantone and Schatzel (2000) have noted that commercially sensitive or even confidential nature of questions about the announcement of product-introduction delays would be expected to affect willingness to respond. In the study reported here, the targeted respondents were furthermore heads of marketing-related disciplines, whose time is normally scarce.

The great majority of the respondents' firms (87%) had been established for more than 6 years, and two thirds (65%) had been founded more than 10 years ago; most were large, 60% with more than 200 employees. Well over three quarters of all respondents (78%) held positions with responsibility for marketing, and for R & D decision-making.

To check for response bias, the collected data was divided on the basis of questionnaire-return dates either earlier or later than six weeks after mailing: "early" = 82; "late" = 31). Mean scores for the dependent variable, clarity of signal, and the seven explanatory variables were statistically indistinguishable between the two sub-samples, suggesting the absence of any significant response bias. All data sets therefore went forward for further analysis.

3.2. Construct measures

Following the lead of Wu et al. (2004), respondents were asked for extensive data with respect to the most recent pre-announcement of a new product delay during the previous 2 years. Adopting the criteria for deciding on the appropriate measurement model developed by Jarvis, Mackenzie, and Podsakoff (2003), all the constructs used in this study were modeled as having reflective indicators. All responses were measured by a seven-point Likert scale anchored by "strongly disagree" and "strongly agree" except for two explanatory variables: "expected duration of the delay" and "uncontrollability of the delay".

The first explanatory variable, competitive equity building, defined in the description of the conceptual framework of this study and embodied in H1, was measured by a scale adapted from studies by Calantone and Schatzel (2000) and Schatzel et al. (2001), assessing a

firm's pursuit of a significant public position as an industry leader through extensive participation in industry forums.

A two-item scale operationalized the prevalence of product-launch delays construct (H2), measuring respondents' perceptions of the degree and frequency of delays within the product categories under consideration.

To measure the expected duration of the delay (H3), respondents were simply asked to state their expectation of the time lag between the pre-announced and actual dates, in weeks.

With respect to the fourth explanatory variable, the uncontrollability of the delay (H4), a three-item semantic differential scale, adapted from Hui, Tse, and Zhou (2006), measured the extent to which respondents thought a delay had been uncontrollable. Specifically, they were asked to say where the causes lay within three ranges of possibility: from firm-specific (= 1) to industry-wide (= 7), from controllable (= 1) to uncontrollable (= 7); and from internal (= 1) to external (= 7).

The degree of partner dependence (H5) was measured by a two-item scale adopted from a study by Wu et al. (2004).

The competitive elasticity construct (H6) was measured by a five-item scale adapted from Kohli (1999) and Eliashberg and Robertson (1988), which gauged a firm's retaliatory behavior in response to competitive stimulus, in terms of its timeliness and aggressiveness.

The final explanatory variable, category product loyalty (H7), based on the Lilly and Walters (1997) conceptualization, can be readily measured by the degree of buyer loyalty to existing products or brands, and the level of switching among products or brands.

The dependent variable, clarity of signal in the delay announcement, was measured by a two-item scale, assessing how clear the signal of expected delay was perceived to have been.

3.3. Measure validation

In a preliminary analysis, confirmatory factor analysis based on LISREL 8.54 with maximum likelihood estimation was used to estimate a measurement model. The resultant fit indices indicate that the scale measures are internally consistent and provide acceptable fit for the factor model of the data: chi-square value of measurement model = 185.83 ($df = 143$); comparative fit index (CFI) = 0.98; incremental fit index (IFI) = 0.98; and root mean square error of approximation (RMSEA) = 0.044.

Construct validity was examined in terms of convergent and discriminant validity. The former was estimated by the factor-loading degree, represented by the standardized coefficient associated with each manifest variable. The results are summarized in Table 1, which shows that all estimated factor-loading measures were substantially high (≥ 0.70) and statistically significant ($p = 0.01$), indicating an acceptable degree of convergent validity. To test the discriminant validity of the constructs, the respective confidence-intervals associated with construct–correlation measures were estimated. None covered the value of 1, meaning that the discriminant validity of the specified constructs was also acceptable (Smith & Barclay, 1997).

The construct reliability of each construct was tested by Cronbach's alpha coupled with Squared Multiple Correlation (SMC) indices generated by LISREL. Table 1 shows that all the estimated alpha coefficients fall within the range 0.78 to 0.94, well above the acceptable level of 0.70. All but one of the SMC values was above the recommended level of 0.50, implying acceptable overall construct reliability.

3.4. Common method bias analysis

Since the data for this study were collected from a single source, as with all self-report data, there is potential for common-method variance (Podsakoff & Organ, 1986). To analyze the extent of this bias with respect to the measures used in the study, Harman's one-factor

test was conducted. Unrotated principal components factor analysis revealed six factors with eigenvalues greater than one, collectively accounting for 77.15% of total variance, with the first factor alone contributing 29.61%. These results suggest that common-method effects are not a likely contaminant of the observed results. To confirm them, a confirmatory factor analysis was performed as a more sophisticated test of the hypothesis that a single (method) factor can account for all of the variance, following the lead of Mossholder, Bennett, Kemery, and Wesolowski (1998). A one-factor model did not fit the current data well (CFI = 0.60, RMSEA = 0.20). Furthermore, the correlated uniqueness model suggested by Podsakoff, MacKenzie, and Podsakoff (2003) was also used to test for common method bias. The comparison of models with³ ($\chi^2(115) = 155.35$) and without ($\chi^2(143) = 185.83$) measurement error correlations does not show a significant chi-square difference ($\chi^2(28) = 30.48$, $p = 0.341$). These post hoc tests thus demonstrate that common-method variance is not of great concern.

4. Analysis and results

The correlations, means, and standard deviations for the measures are reported in Table 2. Seven hypotheses were tested, each proposing a direct relationship between one explanatory variable and the clarity of signal in the delay announcement. The analysis of the research model was tested by the Partial Least Squares (PLS) algorithm. As might be expected from the rigorous preliminary analysis, measurement results were strong. Composite reliabilities (internal consistency) were all above 0.80 and average variances extracted all greater than 0.50 (Table 3), an indication of convergent validity (Smith & Barclay, 1997). The variance shared between two constructs (R^2) was less than the average variance extracted by the constructs, and all measures loaded higher on intended constructs than on others, confirming discriminant validity.

This empirical analysis demonstrated that the model has significant explanatory power, explaining 44.03% of the variance in the dependent variable: see Table 4. With respect to factors relating to the firm communicating the delay information signals, itself, the results provide support for H1: the proposed positive relationship between competitive equity building and signal clarity ($\beta = 0.26$, $p < 0.01$).

As hypothesized, all factors related to the nature of the delay had negative effects on signal clarity: H2, prevalence of product-launch delays, $\beta = -0.25$, $p < 0.01$; H3, expected duration of the delay, $\beta = -0.28$, $p < 0.01$; and H4, uncontrollability of the delay, $\beta = -0.17$, $p < 0.1$. With regard to the duration of the delay, the average time lag between the pre-announcement and the expected introduction of the product was, in the respondents' experience, fractionally over nine weeks between a minimum of one week and a maximum of 52. These findings are broadly consistent with those of Kohli (1999) and Wu et al. (2004).

Lastly, regarding factors related to the receivers of a delay announcement, the results provide support for H6, proposing a negative relationship between competitive elasticity and signal clarity: $\beta = -0.19$, $p < 0.05$. However, neither partner dependence nor category product loyalty ($\beta = -0.01$; $\beta = -0.07$) was found to have any effect on signal clarity. H5 and H7 were therefore rejected.

5. Discussion

This study examined the antecedent constructs of a firm's propensity to issue a clear signal regarding the expected duration of a delay to the introduction of a new product. As Fig. 1 shows, the seven

³ For identification purposes, it was necessary to constrain several theta-delta values to be equal (the measurement error correlations between one item of each exogenous factor and the two endogenous items, except for the expected duration of delay) when estimating this model.

Table 1
Construct items, reliability and CFA factor loadings.

Construct items	Factor loading (t-value)	SMC index
<i>Competitive equity building^a (Cronbach's $\alpha=0.78$; Averaged SMC=0.55)</i>		
1. Your firm seeks a significant public profile via its participation in industry forums and activities.	0.81(8.66)	0.66
2. Your firm seeks role of industry leader.	0.70(7.36)	0.48
3. Your firm's management frequently issues public statements regarding their opinions of industry trends and market conditions.	0.70(7.37)	0.50
<i>Prevalence of product-launch delays^a (Cronbach's $\alpha=0.92$; Averaged SMC=0.86)</i>		
4. In the product category, pre-announced products are often delayed.	0.87(10.76)	0.76
5. In the product category, firms customarily fail to deliver their new products on the promised introduction dates.	0.98(12.71)	0.96
<i>Expected duration of the delay</i>		
6. Please identify expected duration of the delay beyond the pre-announced deadline (in weeks).	1.00(14.97)	1.00
<i>Uncontrollability of the delay^b (Cronbach's $\alpha=0.87$; Averaged SMC=0.70)</i>		
7. The causes of the delay were due to the firm-specific/ industry-wide factors.	0.83(10.16)	0.68
8. The causes of the delay were controllable/uncontrollable by your firm.	0.80(9.79)	0.65
9. The causes of the delay originated in internal/external factors.	0.88(11.03)	0.77
<i>Partner dependence^a (Cronbach's $\alpha=0.86$; Averaged SMC=0.76)</i>		
10. Producers of complementary products are very dependent on your product to serve their customers.	0.95(10.22)	0.89
11. Producers of complementary products will need to rely on you in the future even if your relationship is not on the best terms.	0.80(8.56)	0.63
<i>Competitive elasticity^a (Cronbach's $\alpha=0.94$; Averaged SMC=0.77)</i>		
12. Your competitors react promptly to new product introduction.	0.76(9.41)	0.58
13. The product introduction is expected to be quickly matched by the competitors.	0.90(12.27)	0.82
14. Your competitors respond aggressively to your firm's action.	0.91(12.39)	0.82
15. Your competitors are expected to respond to product announcement with their announcement.	0.93(13.01)	0.87
16. Your competitors react intensely to new product delay announcement.	0.86(11.29)	0.74
<i>Category product loyalty^a (Cronbach's $\alpha=0.90$; Averaged SMC=0.84)</i>		
17. Buyer loyalty to existing products or brands tends to be strong in the delayed product category.	0.85(7.60)	0.73
18. Little product or brand switching takes place in the delayed product category.	0.97(8.32)	0.95
<i>Signal clarity^a (Cronbach's $\alpha=0.88$; Averaged SMC=0.79)</i>		
19. With respect to the delay in question, your firm issues a clear signal of when you are likely to introduce the delayed product.	0.95(11.92)	0.90
20. With respect to the delay in question, your firm clearly specifies the time of when you are likely to introduce the delayed product in new product delay announcement.	0.82(9.85)	0.68

^a Seven-point scales anchored at "strongly disagree" and "strongly agree".

^b Seven-point semantic differential scales.

hypothesized antecedents comprised one relating to the characteristics of the sender, three to the delayed product, and three to the characteristics of the receivers.

5.1. Findings

The first possible influence on the clarity of delay-duration signals to be investigated was a firm's propensity to position itself as an industry leader and aim for a favorable industry reputation. Strong support was obtained for the effect of this competitive equity building on signal clarity. The higher the propensity of a firm to pursue competitive equity through strategic marketing activities, the more likely it will be to issue clear information about the duration of a delay to the introduction of a pre-announced product. This finding supplements those of Calantone and Schatzel (2000) and Schatzel et al. (2001), which found empirical evidence for a positive relationship

between the building of competitive equity and a firm's propensity to preannounce, whereas the study reported here found it to be positively linked to the clarity of signals related to the duration of the delay.

The study next examined three constructs relating to the delay itself: the prevalence of product-launch delays, the expected duration of a delay, and the uncontrollability of a delay. The findings were that the firms in the sample took account of those product-specific factors in deciding whether or not to give a clear signal of an expected delay.

In industries in which the prevalence of delays is high, firms that pre-announce product introductions, but fail to deliver the new products on the promised dates, are less likely to react to delays in new product introductions by issuing a signal that clearly updates the status of the new-product information. When the occurrence of delays is low, occasional disappointments with new product introductions can be observed, and various stakeholders will demand a clear signal

Table 2
Descriptive statistics and Pearson correlation matrix.

	M	SD	1	2	3	4	5	6	7	8
1. Competitive equity building	4.78	1.20	1.00							
2. Prevalence of product-launch delays	3.78	1.60	-0.01	1.00						
3. Expected duration of the delay	9.04	9.56	0.04	0.24*	1.00					
4. Uncontrollability of the delay	3.78	1.80	-0.02	0.39**	0.16	1.00				
5. Partner dependence	4.48	1.29	0.06	0.14	0.00	-0.11	1.00			
6. Competitive elasticity	4.49	1.42	0.09	0.42**	0.11	0.30**	0.38**	1.00		
7. Category product loyalty	4.55	1.24	0.04	0.11	-0.09	-0.08	0.24*	0.05	1.00	
8. Signal clarity	4.06	1.42	0.21*	-0.49**	-0.38**	-0.38**	-0.09	-0.37**	-0.02	1.00

Note: * $p < 0.05$; ** $p < 0.01$.

Table 3
Partial Least Squares measurement results.

Variable	AVE	Composite reliability
Competitive equity building	0.66	0.85
Prevalence of product-launch delays	0.93	0.96
Expected duration of the delay	1.00	1.00
Uncontrollability of the delay	0.79	0.92
Partner dependence	0.87	0.93
Competitive elasticity	0.81	0.95
Category product loyalty	0.79	0.88
Signal clarity	0.89	0.94

Note: AVE = average variance extracted.

regarding future actions, to meet their own information needs. If it is not given, the delaying firm's reputation will be damaged.

Convincing support was found for the effect of the expected duration of a delay on the clarity of the related information in the pre-announcement. The results indicated that, the longer the time needed to deal with the delays the more reluctant a firm will be to send clear signals. Announcements of limited specificity announcements are therefore made, in order to increase the flexibility of future actions and avoid acting in bad faith.

Turning to the influence of uncontrollability of the delay on the clarity of signals, the findings support the assertion that a firm is more likely to provide a clear estimate of the expected delay when it has a high degree of control over the duration. The absence of clear announcements will evoke uncertainty in the minds of stakeholders about whether or not the delayed product will eventually be introduced. If that doubt is focused on a particular firm, the danger that customers will switch allegiance to a competitor (Chen et al., 2007) can be mitigated by clear signals. If, on the other hand, a firm's control is lower and a delay is attributed to uncontrollable industry-wide factors or time-consuming regulatory processes, it is less likely to issue a clear announcement. The rationale may lie in the difficulty of judging the duration of the delay. Studies have found that customers blame a firm less severely if an account of the external forces is offered than if it is not (Crant & Bateman, 1993; Wood & Mitchell, 1981). Given that they will then be less likely to punish it by withdrawing their intention to purchase, it could be argued that the opportunity exists to issue a less-than-precise signal.

The study further examined the effect of three receiver-related factors on the clarity of the signal in delay announcements: partner dependence, competitive elasticity, and category product loyalty. The hypothesized negative relationship between competitive elasticity and the clarity of expected delay signals received strong empirical support. This finding lends credence to the theory of competitive market signaling (Heil & Robertson, 1991). Generally, competitors receiving an unclear signal need considerable time and effort to interpret the intentions implied in the message with any degree of certainty, which may delay their reactions. In a hostile competitive environment, sending out such a signal therefore indicates the sender's intent to defer competitors' reactions and thereby gain a competitive advantage.

Table 4
Partial Least Squares structural results.

Variable	Path coefficient
H1 Competitive equity building	0.26***
H2 Prevalence of product-launch delays	-0.25***
H3 Expected duration of the delay	-0.28***
H4 Uncontrollability of the delay	-0.17*
H5 Partner dependence	-0.01
H6 Competitive elasticity	-0.19**
H7 Category product loyalty	-0.07

Notes: (a) R-square, 0.4403, number of observations, 113.

(b) * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Partner dependence did not show a significant relationship with the clarity of the signal in delay announcements. A plausible explanation for this finding is that the markets for complementary products are competitive in Taiwan, where the empirical research took place, and the choice of providers is wide. Thus, partner dependency is not the primary driver of a firm's propensity to issue a clear signal.

Furthermore, resource dependency theory suggests that when a firm's relative dependence level is low, it will not be so careful to meet the partners' needs to maintain the relationship. However, a social exchange perspective assumes that those receiving favorable treatment from others will reciprocate in a manner that meets those parties' expectation or needs (Kamdar, McAllister, & Turban, 2006). When the relationship with a firm is seen as a reward and the partners invest effort in satisfying the demands of a firm so as to maintain it, the firm that feels valued will reciprocate with behaviors that benefit the partners. The sense of obligation that emerges as a response to favorable treatment could be reflected in clarification of its own plans in the interests of its partners. These two contradictory forces could be the reason why partner dependence was not found to have any effect on signal clarity.

The hypothesis of a negative relationship between category product loyalty and the clarity of the signal in delay announcements was not supported by the test results. Two explanations are plausible. First, there may be two opposite effects at work. On the one hand, when brand loyalty is high, initial adoption is tied to continued purchases for the brand, and such negative consumer behavior as abandoning the purchase and switching suppliers will be less readily triggered. This phenomenon would afford the firm the opportunity to issue a less clear signal when a product is delayed. On the other hand, resource-based theory treats firm-specific resources and capabilities as the cornerstone of competitive advantage and corporate performance (Barney, 1991; Conner, 1991). Category product loyalty will be positively related to the achievement of a comparative market advantage for the firm. To sustain that, the delaying firm will be more likely to clarify its own plans in the interests of its customers. Similarly, social exchange theory predicts that firms will meet consumers' expectations or needs in exchange for their loyalty and effort. These two opposite effects may be the explanation for the lack of support for the hypothesis.

A second explanation for these findings can be derived from a study by Thompson and Sinha (2008). They demonstrated that higher levels of loyalty led to a reduced likelihood of adopting rivals' new products, which is consistent with conventional wisdom, but only when a comparable product was available from the preferred brand. If a rival brand is first to the market, the delaying firm may not be able to rely on its existing buyer loyalty to prevent customers from defecting to the competition. In those circumstances, a signal that does not precisely specify the expected duration of the delay may actually encourage a loyal buyer to switch to the competitor's product.

5.2. Managerial implications

This study sought to develop a structural model to explain the antecedents of the clarity of a firm's signals regarding the expected duration of a delay to the introduction of a new product. Its intended purpose is to be a framework to guide decision-making with respect to the clarity, in a given situation, of the information given in a pre-announcement of a delay. It can thus help managers responsible for those decisions to take a more organized approach to a complex decision of considerable strategic significance, by isolating the various factors that need to be considered in a methodical manner.

A firm engaged in competitive equity-building will often initiate pre-announcements of various aspects of their strategic plans, in order to resolve uncertainty, influence the opinions and actions of stakeholders in the industry (buyers, employees, channel members,

partners, investors, and the like), and achieve a reputation that is both high-profile and favorable. When a product introduction is delayed, such firms will lose nothing by issuing a clear signal of the expected delay, to address concerns stemming from rumors and uncertainty, and thereby restore trust.

From the perspective of managers in the announcing firm, the findings of the study draw attention to factors related to the delay itself that can influence the signal-clarity decision. If an industry is characterized by a high prevalence of delays, signals will often go unfulfilled, making stakeholders less inclined to process them seriously, or stop paying attention to them at all. In such circumstances, it can be logical strategically to be unspecific about the duration of the delay. Where the incidence of delays is low, firms will tend to issue signals that clarify the status of delayed products, to avoid diluting their marketplace credibility.

Managers must next consider the strategic implications of the expected duration of a delay. The thornier the problem causing it, the longer that period will be. It will be difficult to predict the impact of such problems, and the consequences for the timing of the eventual introduction. In that case, the content of the announcement should be short enough on detail to avoid giving a false signal, and ultimately acting in bad faith. When the time needed to deal with the causes of a delay is shorter, a firm will be more confident in naming the date at which the delayed product will be available to customers, and should offer more detail about the timing of delayed introduction.

Signal clarity may also depend on the reasons for a delay. If a firm can show that those were uncontrollable external factors, customers will mostly be ready to exonerate it and unlikely to want to punish it by withdrawing their intention to purchase. It can therefore afford to be somewhat unclear about the duration. If internal factors seem to be the cause of a delay, doubt will be cast on the firm's technical or managerial competence, and consumers' tolerance levels are likely to diminish. A clear signal should therefore be given, to forestall customer migration to the competitors.

Given that delay signals are direct indications of intent, which can form the basis of competitors' strategic decision-making, plans to pre-announce must take account of what is known about competitors' past behavior, especially the risk that an alert competitor takes advantage of the delay. When analysis of the competitive environment suggests that such opportunistic responses are a strong possibility, the ability to reduce their likelihood can restore the competitive balance (Schatzel et al., 2003). One tactic for deferring such responses would be signal an expected delay in a relatively non-specific way that increases the difficulty of signal processing. In a competitive environment in which opportunistic responses are less likely, firms will very probably feel that there is no reason not to issue a clear signal.

Lastly, because the hypothesized relationships between the clarity of the signal in delay announcements and both partner dependence and category product loyalty were not supported by the test results, management should avoid basing signaling decisions on either of those without further knowledge of these two relationships, and research into them.

5.3. Limitations and future research directions

The study on which the model is based would ideally have collected more managers' opinions and incorporated other variables that could influence signal-clarity decisions related to the announcement of an expected delay. For example, future researchers might usefully investigate the effect of relative advantage as an antecedent of signal clarity. It could be hypothesized that customers will have no real option but to be patient in the event of delay to the launch of a new product that enjoys a clear and significant advantage over currently available alternatives, as for example the iPhone did. Competitors will find it difficult to respond immediately with a genuinely competitive substitute, and the strategic option of low

signal clarity will be available. Future studies might also focus on channel power: the influence of channel partners, such as distributors, as distinct from the "partner dependence" of the producers of complementary products who were the focus of the fifth hypothesis in this study.

A simple sum-of-effects model is also proposed and tested in this study. Future researchers could furthermore test a contingent model, to see if the competitive factors interact with or moderate the controllable management-driven factors, such as competitive equity-building and relative product advantage. Such a model would assess the varying effectiveness of management initiatives, based on the strength of the environmental-competitive challenges faced in the market.

Refinement and expansion of the scales used, most of which were transferred from earlier studies, would be a worthwhile methodological development in future research. This is particularly true of those measuring the prevalence of product-launch delays, which currently comprise two items developed specifically for this study. Furthermore, two items with slightly different nuances of meaning were included in statements measuring signal clarity. According to Rossiter (2002), one concrete item is all that is necessary for concrete constructs. It may therefore be valuable to further refine the scales used into a single item.

The focus on a subset of high-technology industries was a device to reduce inter-industry confounding, but the study could be replicated in other settings to provide conclusive, generalizable evidence regarding the likelihood that a firm will, in practice, issue a clear signal of an expected delay.

To improve confidence in that generalizability, all reasonable efforts should be made to increase the number of usable returns available as the source of the data for analysis. The Method section explains that the usable response rate of 14.5% compares favorably with that of a similar study in 2004, that the commercially sensitive nature of the questions naturally limits willingness to provide full answers, and that the number of data sets obtained from the very large sampling frame was in itself statistically sufficient. Nevertheless, future research could usefully make more strenuous attempts to achieve usable responses from time-pressured senior marketing executives.

Two themes present particularly worthwhile research opportunities within the broader topic of inquiry. First, the focus of this study has been on the clarity of announcements with respect to the duration of a delay, but not to the reasons for it. Yet, in practice, a company postponing the introduction of a new product, normally does include an explanation of the cause in its announcement of the delay. For example, computer-game software launches have been postponed on account of major programming errors, the availability of high-technology products has been compromised by production capacity, and some other product categories have suffered delays caused by compliance with regulatory controls. For future studies, a model that explores the drivers of clarity of the signals regarding explanations of the cause for delay should be examined.

Second, delays in introduction to the market are not necessarily one-off events, but may sometimes be cumulative. In practice, repeatedly delayed introductions are a common occurrence, again especially in the high-technology sector. For example, now familiar X-box gameware was eventually released only after several postponements. Given that all stakeholders' trust will certainly decrease in proportion to the number of past unfulfilled expectations, a closer examination is required of the ways in which a firm manages the entire process of information exchange with the marketplace during the repeated introduction delays.

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