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Given the importance of new products, firms may be prone to overmanage sales personnel by using behavior-based control systems that dictate the performance of particular activities related to the introduction. Such controls may be especially tempting given the findings that favorable salesperson product perceptions actually yield less effort on the new product, and behavior-based controls can offset this tendency. However, using longitudinal data from a sample of 226 salespeople, along with external ratings from customers and archival measures of effort and sales performance, the authors demonstrate that such a strategy is shortsighted. Behavior-based controls constrain a salesperson's ability to appropriately allocate effort across his or her customer base, negatively affecting customer product perceptions and, ultimately, new product sales. In contrast, outcome-based control systems enable salespeople to work smarter, and their corresponding effort on behalf of the new product has a more positive effect on customer product perceptions and new product sales.

Keywords: control systems, new products, product perceptions, sales management, salesperson effort

Managing Sales Force Product Perceptions and Control Systems in the Success of New Product Introductions

One of the most important missions of a firm is the successful introduction of new products. A firm's ability to successfully launch new products is well established as being critical to its growth and continued survival (Cohen, Eliashberg, and Ho 1997; Pauwels et al. 2004). As a result, companies invest substantial resources on the research and development, manufacturing, and marketing of new products. Still, new product introductions have a high rate of failure (Montoya-Weiss and Calantone 1994), reinforcing the need for both academia and industry to better under-

stand various factors that may facilitate or impede new product success.

Spanning boundaries between a company and its customers, the sales force plays a significant role in the success of new products. However, research on the sales force's role in the new product success has largely been neglected (Atuahene-Gima 1997). Given that a typical new product's success depends on the success of the sales force in selling the product, the lack of research in this area is surprising. Companies in the United States spend more than \$1 trillion annually on their sales forces and accompanying support, more than four times the amount spent on advertising (Zoltners and Sinha 2005). The deployment of these substantial resources on behalf of a new product can be pivotal to that product's success in the market. Despite such investment, several studies have pointed to salespeople's lack of commitment as a contributing factor to the low success rates of new products (Atuahene-Gima 1997; Basu et al. 1985).

A salesperson's lack of commitment to new products could be due to various reasons. For example, new products can be complex, and salespeople may not have the time or

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access to proper training to develop the necessary product knowledge (Rackham 1998). They may even be unwilling to expend the energy necessary to sell a new product (Anderson 1985; Hultink and Atuahene-Gima 2000), preferring instead to focus on selling established products because this requires less effort and engenders greater certainty than attempting to generate interest in a new product. In addition, the control system under which a salesperson works may influence this choice between investing resources in developing a market for a new product and pushing established products. Exploratory studies have suggested that firms often fail to adjust their control systems in a way that provides the appropriate incentives and rewards for their salespeople to sell new products, and researchers have called for additional empirical research on the role of both the salesperson and the control systems in the success of new product introductions (Atuahene-Gima 1997; Hultink and Atuahene-Gima 2000).

Therefore, the purpose of this research is to develop and empirically test a conceptual model that provides insights into the process of how an organization can use sales force control systems to improve new product success. First, we posit that a key factor for new product success is the extent to which salespeople believe in the usefulness and value of the product because this influences the effort they expend on the product. Intuition suggests that salespeople are likely to place more effort on a product when they “believe in” the product. We use the new institutional economics perspective to argue that, on the contrary, positive salesperson product perceptions result in *less* effort expended on a new product.

Second, we examine the critical moderating influence of sales force control systems on this relationship. In particular, we suggest that the firm’s choice of control systems has a major impact on the direction and extent to which product beliefs translate into sales force behavior. Specifically, by using a behavior-based control system, a firm may be able to buffer the negative relationship between salesperson product beliefs and effort. That is, by exerting more control over its salespeople under a behavior-based control system, a firm can ensure that the salespeople exert efforts on the new product regardless of their perceptions of the product.

Third, because the success of the new product is the firm’s ultimate objective, we also examine a mediator—the role of customer product perceptions—through which salesperson efforts translate into new product success, along with the influence of control systems on the relationship between salesperson effort and customer product perceptions. The literature on new product introductions has identified customer product perceptions as critical to the success of new products (Henard and Szymanski 2001). We argue that behavior-based control systems reduce the effectiveness of a salesperson’s efforts in shaping a customer’s product perceptions, thereby adversely affecting the sales of the new product.

This latter point is critical because a sales manager might be tempted, given the importance of new products, to micromanage his or her salespeople during product launch by using a behavior-based control system. This way, the sales manager can ensure that salespeople exert prescribed effort on the new product regardless of their perceptions of the product. However, we suggest that this view would be short-sighted because such micromanagement reduces the effec-

tiveness of the salesperson’s efforts in shaping a customer’s product perceptions. Because of their closeness to the market and regular interaction with customers, salespeople are in a unique position to develop knowledge about specific selling situations and adapt their planning and behavior accordingly, a practice called “working smart” (Sujan 1986). Because behavioral controls constrain the salesperson’s ability to channel effort in a direction that fully leverages such knowledge, we argue that sales managers are better off staying away from such micromanagement during a new product launch by using outcome-based control. They might have less control over their salespeople’s allocation of effort on the new product, but this effort will be more successful in shaping customer perceptions. We are aware of no other study that has empirically examined this critical role of sales force control systems on the success of new products.

Finally, we contribute to the literature by using a unique longitudinal multisource data set that includes objective performance measures. This is a significant advancement over much of the existing new product sales literature, which has used cross-sectional single-source data, often with self-reported performance measures.

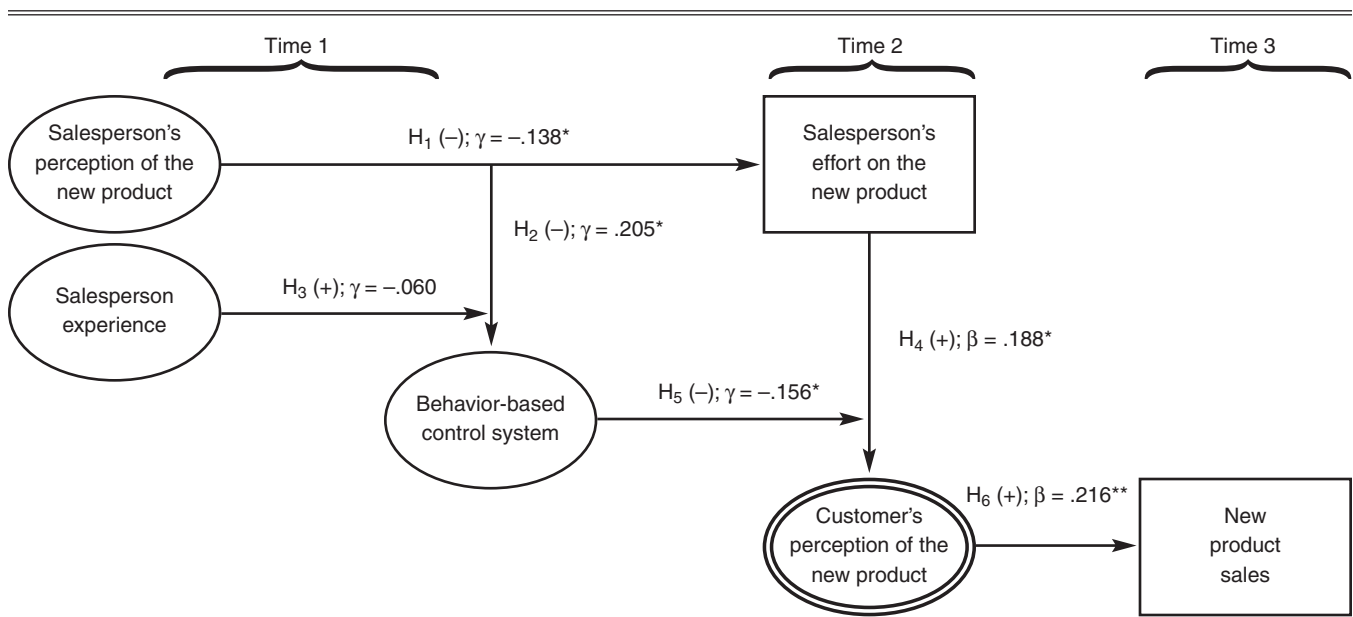
Although we believe that the hypotheses and findings (see Figure 1) should generalize to multiple settings, we selected the pharmaceutical industry as the context for the research. The successful launch of new products is particularly important to pharmaceutical firms, which spend an average of \$25 billion each year developing new products and introduce an average of 41 new products each year (Manchanda et al. 2005; Sanders 2005). Moreover, pharmaceutical companies are particularly reliant on sales representatives to persuade physicians to prescribe their products, both new and existing; in 2002, pharmaceutical companies employed more than 90,000 sales representatives in the United States and spent more than \$7 billion on their sales forces (Robinson 2003). This persuasion stems from what is called “missionary” sales—a term derived from likening the sales situation to that of a missionary “preaching the gospel.” Given the original intention behind the term, we anticipate missionary sales to be a particularly salient context in which to test the model, which speaks to the importance of “belief” in a company’s product. Missionary sales jobs are commonplace in business-to-business selling. For example, salespeople in the consumer packaged goods industry, financial services wholesalers, and industries in which manufacturers sell through merchants all engage in missionary selling.

THEORY AND HYPOTHESES

The Role of Salesperson Product Perception

Beliefs and behavior are often connected, and it is likely that a key factor influencing how much effort salespeople put into a new product (behavior) is their perceptions of the product’s superiority over existing competitors’ products (belief). In this study, we define “salesperson product perception” as the extent to which the salesperson believes the new product is beneficial and desirable to both physicians and consumers relative to existing competitors’ products. Salespeople form an impression about the value and marketing potential of a new product based on the information the firm provides and their own understanding of the mar-

Figure 1
HYPOTHESIZED MODEL



* $p < .05$.

Notes: We obtained data from three different sources at three different times: Circles indicate data collected from survey of salespeople, double-lined circle indicates data collected from survey of physicians, and rectangles indicate data obtained from company records. Time 1 indicates data collected at time $t = 0$, Time 2 indicates data collected at time $t = 6$ months, and Time 3 indicates data collected at time $t = 12$ months.

ket. Given the salesperson's frequent need to allocate effort across a portfolio of products (Rangaswamy, Sinha, and Zoltners 1990), the perception of the new product's relative value and market potential should affect how salespeople adapt their level of effort in selling this new product. Although the impact of salesperson product perception on salesperson effort has been untested to date, intuition suggests that when salespeople believe in the value and market potential of a new product, they are likely to invest greater effort in fully exploiting the salability of the product. Alternatively, if salespeople perceive the new product as having only limited market potential, they will invest less effort on this product and continue putting relatively more effort on time-tested products in their portfolios.

However, new institutional economics suggests an opposite effect: If salespeople believe that the new product offers substantial benefits over existing products, they may decide to expend relatively less effort on the product. This counterintuitive decision is driven by an opportunity to leverage the company's marketing and sales efforts—such as advertising, the cultivation of opinion leaders, and sponsorship of continuing medical education programs—as well as the positive effects of social contagion and word of mouth that potentially surround such a new product (Eisenhardt 1989; Van den Bulte and Lilien 2001). There is a greater likelihood of the physician becoming aware of a substantially better new product from these complementary external sources. Thus, salespeople may believe that such a new product can “sell itself” with little effort on their part, and as a result, they may divert efforts to current products in the portfolio that have demonstrated success in the past. This enables the salespeople to improve their overall sales performance.

Conversely, if salespeople believe that the new product offers only marginal benefits over existing products, they may adapt accordingly and put forth greater effort to sell this product. This counterintuitive decision is driven by a relatively lower likelihood of the physician becoming aware of a marginally better new product from complementary external sources. Because external sources may not sufficiently complement effort spent on a new product the salespeople believe to be less advantageous, they are likely to compensate by increasing their efforts. Compared with an intuitive stand-alone view, new institutional economics takes into account the group dynamics underlying salespeople's criteria of allocating effort to maximize overall performance (Bergen, Dutta, and Walker 1992), thus capturing how salespeople adapt their effort levels to their product perceptions in real life.

Note that the psychological literature on human motivation further supports this view (Weiner 1980). This literature suggests that as the difficulty of a task increases from very easy to moderately difficult, the amount of effort a person is likely to put in increases as well. Because selling a substantially better product is believed to be an easy task, salespeople tend to invest a small amount of effort on the product. Conversely, selling a marginally better product is perceived as a relatively more difficult task, and as a result, salespeople are motivated to put in a relatively greater amount of effort. Thus:

H_1 : A salesperson's new product perception negatively influences the amount of effort demonstrated on the focal product.

The Role of Sales Force Control Systems

In an effort to increase sales force productivity and align salesperson behavior with organizational priorities, firms typically have formal control systems in place. Briefly, a control system is “an organization’s set of procedures for monitoring, directing, evaluating, and compensating its employees” (Anderson and Oliver 1987, p. 76). Sales force control systems can be outcome based, behavior based, or some point along a continuum between the two. Outcome-based control systems hold salespeople accountable for tangible results, with relatively little management direction or monitoring of the methods used to achieve the results. In contrast, behavior-based control systems are characterized by high levels of direction and close monitoring of activities that management considers important in achieving desired tangible and intangible results. Most firms use a combination of outcome-based and behavior-based control systems. Even within a single firm, managers may employ varying degrees of outcome- and behavior-based control systems according to their own management styles and preferences, their assessment of the context, and the responsiveness of particular employees.

Because salesperson performance is assessed and rewarded differently under the two control systems, resultant salesperson behavior differs as well. This difference in salesperson behavior is likely to extend to a person’s approach to selling a new product. New product introductions are usually uncertain: With no history to gauge market potential, there is an element of risk to the salesperson in investing resources in a new product. Furthermore, new products are both time and service intensive, involving much more preparation, communication, and follow-up than selling an existing proven product. Thus, salespeople, primarily driven by risk aversion (Eisenhardt 1989), may be reluctant to invest resources in new products.

Under outcome-based control systems, salespeople’s compensation usually depends on their overall sales (Anderson and Oliver 1987). Thus, the salesperson’s objective is to allocate efforts in a way that maximizes overall sales. Because effort placed on the new product correspondingly reduces effort on current products, salespeople are likely to consider the potential of the new product before deciding on the amount of resources to invest in it. This is particularly true in a pharmaceutical setting, in which the salesperson usually has limited time with the physician on any given sales call. If a salesperson believes that the new product offers substantial benefits over existing competitors, he or she may decide to exert relatively less effort on this product. This decision is driven by the opportunity to leverage complementary external sources: Because the salesperson believes that such a product will “sell itself” with little effort, he or she is prone to divert efforts to other products in the portfolio to maximize overall sales. The salesperson is likely to behave this way even if the firm provides specific incentives for the new product, such as rewards for achieving new product sales targets. However, if the salesperson believes that the new product offers only marginal benefits, he or she may exert relatively more effort on this product. For such a product, there is less opportunity for the salesperson to leverage complementary external sources, and the salesperson is less confident that the product will

succeed without effort. Thus, the salesperson is likely to compensate by increasing effort on the product.

Under a behavior-based control system, the salesperson’s compensation and career progression largely depend on following the directions of the firm (Anderson and Oliver 1987). This structure creates incentives for the salespeople to follow a firm’s directives and reduces the inherent risk they face from environmental uncertainty. Moreover, because their actions are under greater scrutiny, they have less opportunity to adapt their behavior to their perceptions even if they recognize the need. Thus, salespeople are motivated to allocate effort on various products in their portfolio in line with the firm’s directives. Given that a firm is typically interested in pushing its new products, a salesperson is likely to exert a larger proportion of effort on the new product in accordance with the firm’s directives. For example, in the pharmaceutical industry, a salesperson under a behavior-based control system is likely to receive specific objectives from the firm, such as the number of sales calls to make on behalf of the new product, the amount of samples to distribute, and the kinds of promotional material to provide to the physicians. Thus:

H₂: A behavior-based control system reduces the negative relationship between the salesperson’s new product perception of and effort on the focal product, whereas an outcome-based control system enhances the negative relationship.

The Role of Salesperson Experience

Do all salespeople respond similarly to a control system, or do they differ? Considerable research has explored the role of experience in salespeople’s motivation, job attitudes, and work perceptions (Cron and Slocum 1986), as well as in various work behaviors and performance. Among other things, research has shown that early in their careers, salespeople have inadequate job knowledge and only a vague idea about the skills and abilities required to perform effectively. As salespeople evolve and gain experience, their expanded knowledge base helps clarify the requirements for effective performance. Because of its strong relevance and high predictive value, several recent studies have also examined the role of experience as a moderator of relationships between various constructs (e.g., Rapp et al. 2006).

We propose that experience is likely to influence the effect of control systems on a salesperson’s adaptive behavior. An experienced salesperson has developed more elaborate knowledge of the selling environment and is more likely to have witnessed that while substantially better products sell on their own, products that are only marginally better than the competition require more effort. In addition, more experienced salespeople better understand the boundaries of job rewards, enabling them to more confidently make effort–outcome judgments and adapt their selling and support activities accordingly. Thus, the adaptive response of experienced salespeople under an outcome-based control system will be more pronounced because they are more likely than less experienced salespeople to adapt to or act on their beliefs. Less experienced salespeople are less likely to deviate from the implied managerial direction that may exist during the new product launch. As we discussed previously, experienced salespeople have the freedom and motivation to adapt their effort level only under an outcome-based control

system; they are constrained under a behavior-based control system. Thus:

H₃: The duration of salesperson experience exacerbates the negative effect of outcome-based control systems on the relationship between a salesperson's product perception of and effort on the product.

The Role of Customer Product Perception

Research in boundary-spanning employee relationships suggests a link between a salesperson's advocacy of a product and the resulting customer perception (Czepiel, Solomon, and Surprenant 1985). By expending more effort on a new product, a salesperson is more likely to provide the customer with current, relevant, and useful information. The high level of effort also conveys to the customer the value of the product and the salesperson's confidence in the product. Therefore, customers are likely to have more positive product perceptions when salespeople put forth higher levels of effort on the product.

Because pharmaceutical salespeople provide information on new developments and the results of latest clinical studies, physicians consider them an important source of current medical information. Various other means that pharmaceutical salespeople use to push new products include providing free samples and invitations to sponsored seminars and conferences. Because all these activities help physicians assess the relevance and usefulness of the product (Moreau, Lehmann, and Markman 2001), the level of effort the salespeople put into a new product helps shape the physician's perception of the product (Oliver and Swan 1989). Thus:

H₄: A salesperson's effort on a new product positively influences the customer's perception of that product.

However, we believe that the company's choice of control systems will play an important role in this relationship. Under outcome-based control systems, salespeople have the flexibility to adapt their effort allocation across products (Anderson and Oliver 1987; Eisenhardt 1989). There tends to be no formal directive from the firm to place relatively more effort on one product over another. Thus, such salespeople are likely to consider the return on their efforts on each product to arrive at an allocation of efforts over various products in the portfolio. As we proposed previously, salespeople under outcome-based control systems invest less effort in a substantially better product that they believe can sell on its own. They primarily rely on other external sources to complement their minimal efforts in shaping a favorable customer perception of the product and channel their effort in a way that maximizes overall performance across the portfolio of products for which they are responsible. Conversely, salespeople expend relatively more effort on a product they believe to be only marginally better than competitors. Thus, under an outcome-based control system, salespeople are more adaptive, making use of the contextual intelligence gained in their customer contact role, and calibrate efforts to the new product's potential and customer requirements. This implies that a salesperson's efforts on a new product are more likely to improve customer product perceptions correspondingly.

Under a behavior-based control system, however, salespeople have the incentive to follow the firm's directives in

allocating their efforts over various products in the portfolio (Anderson and Oliver 1987; Eisenhardt 1989). Assuming that a firm pushes its new product with maximal effort, a risk is that salespeople under a behavior-based control system will overdo their efforts on the new product in one of two ways. First, because they are being evaluated on activities rather than on end results, these salespeople lack the motivation and flexibility to adapt the allocation of their personal resources to fully leverage their market knowledge. As a result, they may make suboptimal decisions on which clients to call on because they have incentives to meet particular behavioral requirements, (e.g., a predetermined number of calls on particular physicians pertaining to the new product launch). Second, these salespeople may make suboptimal decisions regarding what they focus on during the sales call. For example, they are likely to push the focal product in accordance with the firm's directives even if they are aware that it would be more meaningful to focus on other products in the portfolio. The salespeople do so because their compensation depends on following the firm's directives and not necessarily their sales performance. As a result of either or both scenarios, such effort by a salesperson on behalf of the new product is not likely to yield commensurate positive returns. Salespeople have a unique opportunity to pick up on subtle environmental and customer cues, enabling them to develop "street smarts" that can be used to both their and the company's advantage in targeting, planning, and executing sales calls (Sujan 1999). Though well intended, behavior-based control systems force the salesperson into a prescribed set of activities that inhibit him or her from leveraging this knowledge. In summary, under a behavior-based control system, the salesperson is less likely to be able to adapt effort to meet specific customer requirements, and as a result, we would expect a weaker relationship between salesperson effort and customer product perceptions. Indeed, this more extensive dampening effect of behavior-based control systems on the relationship between salesperson effort and customer product perceptions creates a dilemma for the firms: Firms can elicit strong sales force effort on the new product through behavior-based control systems but at the cost of inhibiting the effectiveness of this effort in enhancing customer product perception. Overall, we predict the following:

H₅: A behavior-based control system reduces the positive relationship between a salesperson's effort on a new product and the customer's product perception, whereas an outcome-based control system enhances the positive relationship.

Increased knowledge about a product enables a physician to develop more confidence in the product and increases his or her overall product perception. Research has shown a positive relationship between product perceptions and favorable outcomes, such as purchase intentions (Smith and Park 1992). Thus, a physician with a higher product perception is likely to prescribe the product more, which will lead to higher sales. Thus:

H₆: A customer's perception of the new product positively influences its sales.

DATA AND METHOD

Sample and Procedure

The sample was drawn in a longitudinal manner from the female health care division of a midsized pharmaceutical company. Each sales representative was responsible for the sales of five products, including the new product. We collected data from three separate sources over three periods. First, salesperson product perceptions, experience, and perceptions of the control system were collected after the launch of the new product. All salespeople attended product training and rollout meetings for the new product before the launch. Six months after the launch, we obtained salesperson effort (call activity for six months) from company records. Second, we obtained product perceptions from customers (physicians) in each salesperson's territory six months after launch. Third, we obtained each salesperson's sales of the new product (percent to quota) from company records for the one-year period following the new product launch.

Sales representative survey. We surveyed 254 sales representatives of the female health care division and obtained 226 usable survey responses (88.9%). Approximately 60% of the sample were women and had an average tenure with this organization of 6.8 years ($SD = 7.0$). All representatives sold individually and marketed directly to physicians.

Customer survey. We mailed a survey to 3000 physicians offering a \$30 honorarium with a letter stating that the research was completely confidential and was being conducted by a major U.S. research university. To eliminate any potential biases toward the focal firm, the survey was balanced such that all ratings on the survey related to any specific company or product were collected for all major competitors. Approximately 5% of questionnaires were returned because of incorrect addresses, and 428 (~15%) usable questionnaires were received. We conducted tests to rule out nonresponse bias by comparing early and late responders, as well as nonresponders and responders using secondary data sources.

Measures

The development of salesperson and customer product perception measures began with a review of the relevant literature and an exploratory qualitative grounding. We conducted ten in-depth interviews with sales representatives and ten one-on-one interviews with physicians who were customers of these sales representatives. We constructed a draft questionnaire and pretested it with six company managers and representatives and two industry experts. We employed standard procedures to adapt and validate both the reflective and formative scales (Diamantopoulos and Winklhofer 2001). Following the pretests, we made minor wording adjustments to ensure applicability.

We assessed "salesperson product perceptions" with a four-item formative scale that included the main attributes considered when evaluating a brand in the focal product category (e.g., "Please rate product X on the following attributes—efficacy, ease of use, patients' willingness to accept, and safety/side-effects—relative to other products in the category"). Responses were on a five-point scale anchored by "poor" and "excellent."

We assessed "customer product perceptions" using a four-item formative scale that included items identical to those on the salesperson survey. This scale mirrored the scale used to measure salesperson product perceptions.

We measured "control systems perception of the salespeople" using the scale that Oliver and Anderson (1994) developed. The scale consisted of 21 separate items representing five unique dimensions of the perceptions of a salesperson's control system. Following Oliver and Anderson's procedure, we converted all subscales to z-scores and additively combined them to form an index of control system in which an outcome-based control system is represented by a lower score on the index.

"Experience" was a composite measure consisting of three separate measures of sales experience, including time in sales territory, time with the company, and time in the sales profession. We z-scored these scores and averaged them to form an overall experience index.

We assessed "effort" as the total number of sales calls made to physicians within a salesperson's territory for the new product in the postlaunch six-month period. Objective effort—or the number of sales calls—was tracked by the company's customer relationship management (CRM) system (Siebel). Furthermore, these sales calls are validated by the Food and Drug Administration because it is necessary that physicians "sign off" every time a sales representative drops off product samples. We use actual sales calls reported rather than sample drops because the measure is more inclusive of all sales interactions with customers.

We obtained "new product sales performance" from company records. As a measure, we used the "percentage of sales quota" achieved by each salesperson on the product of interest in the female health care division for the postlaunch one-year period. The company sets quotas on the basis of the predictors of territory potential (e.g., number of physicians, territory size).

Model and Estimation

To test the proposed model and enable the modeling of both formative and reflective constructs, we adopted a partial least squares (PLS) approach. Unlike other structural equation modeling approaches, PLS does not provide specific measures of fit per se (e.g., comparative fit index, root mean square error of approximation). To assess relative fit, we examined interitem correlations that demonstrate that individual items are more strongly related to items from the same latent construct, as opposed to other items. We also examined latent construct correlations (see Table 1) to ensure that no constructs have correlations approaching 1, which would suggest singularity.

To test the proposed relationships, we first fit a linear effects model (Model 1) that amounts to the hypothesized model depicted in Figure 1, less the interactions (i.e., without H_2 , H_3 , and H_5). We fit this model to examine the measurement properties of the model and to test the linear relationships between salesperson product perceptions and effort (H_1) and between effort and customer product perceptions (H_4). Next, to test the interaction effects (Model 2), we followed the two-step score construction procedure that Chin, Marcolin, and Newsted (2003) suggest for formative constructs. We then included these scores in the model. Model 3 includes the three-way interaction term calculated

Table 1
MEANS, STANDARD DEVIATIONS, RELIABILITIES, AND INTERCONSTRUCT CORRELATIONS

Variable	M	SD	1	2	3	4	5	6
1. Salesperson perceptions	4.08	.77	1.000					
2. Effort	408.96	199.56	-.145*	1.000				
3. Experience	9.60	6.44	-.104	.038	1.000			
4. Customer perceptions	4.21	.93	.118	.151*	.058	1.000		
5. New product sales	94.89	55.18	.053	.197**	.060	.230**	1.000	
6. Control system	.06	2.64	-.061	.073	-.088	-.131	.020	1.000

* $p < .05$.

** $p < .01$.

Notes: For control system, values are before standardizing.

from the previously mentioned approach. Finally, we conducted additional post hoc analyses (Model 4). To test the significance of the findings, we conducted a bootstrapping procedure (500 runs) that estimates the sampling distribution of a statistic by using the resampling method (Chin 2001).

RESULTS

Hypothesized

As Table 2 indicates, the results support all three main effects and two of the three hypothesized interactions. As Model 1 shows, we found that a salesperson's product perceptions demonstrate a significant, negative influence on effort (H_1 ; $\gamma = -.16$, $p < .05$). A second focus of this research was to examine how a salesperson's effort influences the customer's product perceptions (H_4). We found support for this proposed relationship. Effort positively influenced customers' product perceptions (H_4 ; $\beta = .21$, $p < .01$). Finally, customer product perceptions had a significant effect on new product sales performance (H_6 ; $\beta = .19$, $p < .05$).

Next, we estimated the interactive effects (Model 2). For each of the moderating effects, we added the moderator to the PLS model as an independent variable and estimated the associated path coefficients. Both H_2 and H_5 were supported by a significant interaction between salesperson product perceptions and control systems and between control systems and salesperson effort, respectively. The results indicate that a behavior-based control system overcomes the negative effect of salesperson product perceptions on the amount of effort demonstrated (H_2 ; $\gamma = .19$, $p < .05$). However, we also found that a behavior-based control system hindered the relationship between salesperson effort and customer product perceptions (H_5 ; $\gamma = -.16$, $p < .05$).

We did not find support for the three-way interaction among control systems, salesperson experience, and salesperson product perceptions (H_3 ; $\gamma = -.06$, $p > .10$). However, in the process of testing the three lower-level two-way interactions, we discovered that experience is a significant moderator of salesperson product perceptions to effort ($\gamma = -.24$, $p < .01$).

Table 2
RESULTS OF STRUCTURAL EQUATIONS ANALYSES

Hypothesized Path	Standardized Estimate			
	Model 1 Linear Effects	Model 2 Interactive Effects	Model 3 Hypothesized Model	Model 4 Post Hoc Analysis
<i>Salesperson's Effort on the New Product^a</i>				
H_1 : Salesperson's perception of new product (SRNP) → salesperson's effort on the new product (main effect)	-.162*	-.143*	-.138*	-.138*
(main effect) Salesperson experience → salesperson's effort on the new product	.035	.059	.044	.042
(main effect) Behavior-based control system → salesperson's effort on the new product	.064	.029	.030	.027
SRNP → new product sales	—	—	—	.171*
H_2 : (Two-way) Behavior-based control system × SRNP → salesperson's effort on the new product	—	.192*	.205*	.206*
(Two-way) Salesperson experience × SRNP → salesperson's effort on the new product	—	-.250**	-.239**	-.243**
(Two-way) Behavior-based control system × salesperson experience → salesperson's effort on the new product	—	-.026	.002	.004
H_3 : Behavior-based control system × SRNP × salesperson experience → salesperson's effort on the new product (three-way interaction)	—	—	-.060	-.065
<i>Customer Perception of the New Product^a</i>				
H_4 : Salesperson's effort on new product (SENP) → customer perception of the new product (main effect)	.206**	.188*	.188*	.188*
(main effect) Behavior-based control system → customer perception of the new product	-.184**	-.152	-.152	-.152
H_5 : Behavior-based control system × SENP → customer perception of the new product	—	-.156*	-.156*	-.156*
<i>New Product Sales^a</i>				
H_6 : Customer perception of the new product → new product sales	.034	.047	.047	.101
Salesperson's effort on the new product → new product sales	.185*	.216**	.216**	.175*
	—	—	—	.192**

* $p < .05$.

** $p < .01$.

^aVariance explained in endogenous variables.

Notes: t-value is for one-tailed test only. Critical values: 2.35 ($p < .01$), 1.65 ($p < .05$).

To interpret the nature of the interactions, we plotted the relationships using the information from the hypothesized model analyses. Specifically, we plotted the relationship between salesperson product perceptions and the dependent variable salesperson effort that corresponds to the average, low (one standard deviation below the mean), and high (one standard deviation above the mean) values of the control system moderator (see Figure 2). When predicting a salesperson's level of effort, we found that the slope for salesperson product perceptions was negative for the outcome-based control systems and relatively flat for the behavior-based control system.

Though not hypothesized, the moderating effect of experience on salesperson product perceptions to level of effort was uncovered in the analysis. The findings suggest that salespeople with high levels of experience tend to exert considerably less effort when they hold stronger product perceptions (see Figure 3). Salespeople with low levels of experience exert similar levels of effort regardless of their perception of the product.

Finally, when analyzing the effect of a salesperson's level of effort on customer product perceptions, we found a significant moderating effect of control systems. The results show that under the condition of a high behavior-based control system, there is a less steep slope, as opposed to that of an outcome-based control system, for which the slope is steeper (see Figure 4). This suggests that under an outcome-based system, sales representatives have more control over the necessary number of sales calls to conduct and can have a greater influence on customer product perceptions than in situations in which a behavior-based system is in place.

Post Hoc Analysis

To test the robustness of the parameter estimates in the presence of other nonhypothesized relationships, we estimated a fourth and final model. This model included all the linear relationships not previously tested on the two remaining endogenous variables—customer product perceptions and new product sales. The findings show that none of the hypothesized significant relationships are attenuated. Notably, we found that two additional relationships were statistically significant. As we mentioned previously, the results of the study show that customer product perception is a facilitating mechanism for the effect of a salesperson's level of effort on the sales of a new product ($\beta = .21, p < .01$). By including the direct influence of salesperson effort on performance, we found that the level of effort demonstrated has a significant direct influence on performance ($\beta = .19, p < .01$) and that the relationship between customer product perceptions and performance remains significant ($\beta = .17, p < .05$). Thus, the relationship between effort and new product sales is only partially mediated by customer new product perceptions. In addition, we uncovered a direct relationship between salesperson product perceptions and new product sales ($\gamma = .17, p < .05$), indicating that there may be other mediating mechanisms that facilitate the transfer of positive salesperson product perceptions to new product sales.

DISCUSSION

The purpose of this research was to develop and empirically test a conceptual model that provides insights into the

Figure 2
SALESPERSON PRODUCT PERCEPTIONS MODERATED BY CONTROL SYSTEMS ON LEVEL OF EFFORT

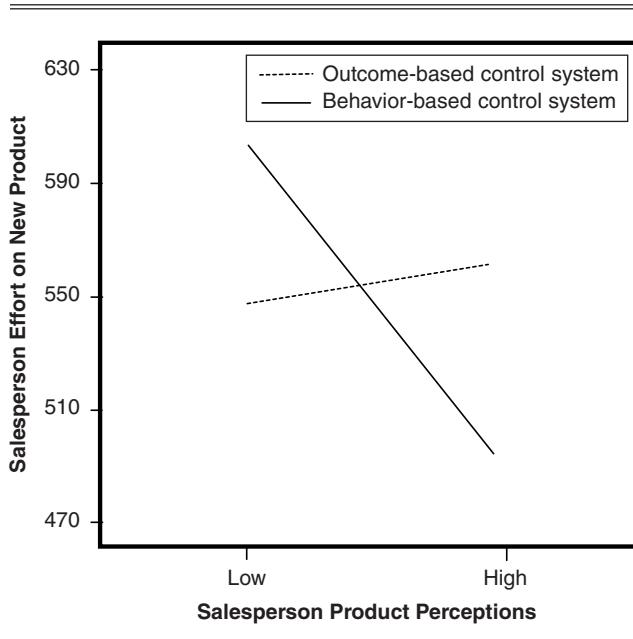
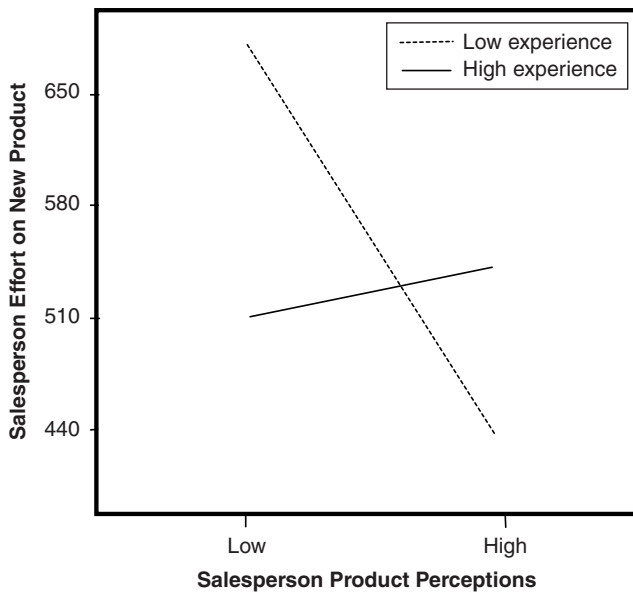
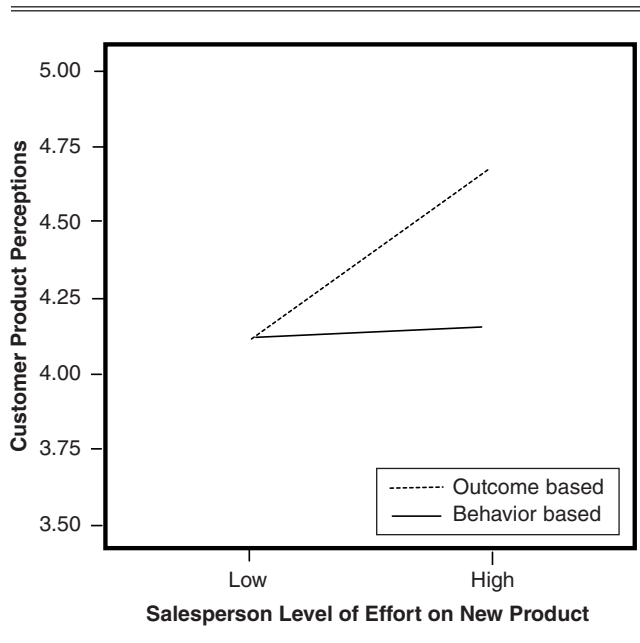


Figure 3
SALESPERSON PRODUCT PERCEPTIONS MODERATED BY EXPERIENCE ON LEVEL OF EFFORT



process of how an organization can successfully leverage its sales force in selling new products. With the paradigm shift from transactional marketing to relationship marketing, customers—rather than products—have moved to the forefront of marketing attention. Successful firms devote considerable attention to building sustainable competitive advantages by developing and maintaining close customer relationships and by investing extensive time and money in

Figure 4
SALESPERSON LEVEL OF EFFORT MODERATED BY CONTROL SYSTEMS ON CUSTOMER PRODUCT PERCEPTIONS



understanding what influences their customers (Goff et al. 1997). Although customers' product perceptions, both in business-to-consumer and business-to-business settings, have been the subject of considerable research, we believe that the importance of the perceptions held by another important constituent—the firm's sales force—has been neglected. Given how critical new products can be to a firm's ongoing vitality and the pivotal role of the sales force in their commercialization, nowhere is this more important than in the context of a new product launch. This study suggests that when firms introduce a new product, factors beyond the product and customer must be considered—specifically, the type of control system used to manage the sales force and the salesperson perceptions of the new product, because both influence the extent to which and the way information pertaining to the product is conveyed to the customer, along with the ultimate impressions formed by the customer.

Using longitudinal survey data from a sample of 226 salespeople in the pharmaceutical field, along with external ratings from customers and objective measures of effort and performance, we tested the effect of salesperson product perceptions on salesperson effort, along with the resultant impact on customer product perceptions and, ultimately, new product sales, while examining the moderating effects of behavior-based control systems and salesperson experience. In the process, we uncovered three key findings that have important implications for both researchers and managers.

First, contrary to conventional wisdom (but supported by new institutional economic theory and the literature on human motivation), positive salesperson product perceptions actually work to the detriment of the new product, in that the more the salesperson believes the new product is superior to existing competitors, the less effort he or she is likely to expend selling the new product. If the salesperson

believes that the new product will “sell itself,” he or she will be prone to rely on external sales, marketing support, and word of mouth generated by the new product and instead attempt to improve his or her overall sales performance by diverting efforts to other products in the portfolio.

Critically, the results show that control systems play a pivotal role in influencing the relationship between salespeople's perceptions of the new product and the amount of effort they expend in selling the product. An outcome-based control system makes the relationship even more negative. Under this system, salespeople have greater discretion regarding the specific activities they perform in the marketplace and thus are afforded more flexibility to adapt their effort allocation across all the products in their portfolio. The strategic mind-set of most salespeople is that their overall performance within the territory is derived from the sales of all products. When faced with a potentially unlimited amount of work—and a scarcity of resources with which to accomplish this work—salespeople under outcome-based control systems will make choices about how to allocate their limited resources by comparing the marginal utility of the effort spent on each customer. Given this drive to allocate resources efficiently, a salesperson with high new product perceptions will be more likely to trust the new product to sell on its own merits and thus will focus on other products to maximize overall performance. As the control system becomes more behavior based, however, the negative relationship between the salesperson's product perception and the accompanying effort on the new product will be attenuated. A reason for this could be the decreased flexibility and motivation on the part of the salespeople to adapt their effort allocation.

Second, the negative relationship between product perceptions and salesperson effort is exacerbated by experience. We hypothesized a three-way interaction among salesperson experience, control system, and salesperson effort because we believe that experienced salespeople are likely to be more adaptive under an outcome-based control system. However, the results suggest that, in general, experienced salespeople are able to be more adaptive than newer salespeople—the kind of control system does not seem to make a difference. Experienced salespeople ostensibly are able to draw on their knowledge and experience to ascertain the market potential of a new product and its ability to succeed without a corresponding increase in effort. This, along with perhaps a stronger inclination and ability to adapt, biases the experienced salesperson in the direction of allocating effort away from the highly perceived new product and toward other products in the portfolio to maximize overall performance. Conversely, the newer salesperson lacks the experience with which to form these effort allocation judgments and, as a result, tends to expend effort in a manner more consistent with product beliefs. Note that the relationship is specifically about adaptation of effort allocation across various products; in no way does it imply reduction or increase in the total amount of effort.

Third, although the moderating effect of control systems on the salesperson perception–salesperson effort relationship seems to imply that a company may be better off using behavior-based control systems to launch new products—especially ones that may be radically new or markedly superior to existing competitors—the results demonstrate that

this course of action may be shortsighted. Control systems also influence the relationship between salesperson effort and customer product perceptions. Specifically, behavior-based controls result in a less successful shift in physician product beliefs, adversely affecting new product sales performance.

We show that the effort a salesperson puts into a new product influences the customer's perception of the new product and that these customer perceptions directly affect new product sales. In addition to providing current product information that enables the customer to form an informed opinion about the product's relevant features and benefits, the effort the salesperson puts forth conveys his or her confidence in the product's value. In the pharmaceutical context of this study, customers (physicians) rely heavily on salespeople for product information. The increased product knowledge that results from a salesperson's call activity enables a physician to develop more confidence in the new product and form a more favorable perception of the product's potential value to patients. In turn, this leads to a larger number of prescriptions by physicians and, thus, stronger new product sales.

Under an outcome-based control system, salespeople have the flexibility to allocate effort across all the products in their portfolio in whatever way they believe is optimal. Thus, salespeople are more adaptive, calibrating their efforts to the new product's potential and customers' requirements. This reduces the risk of misallocating efforts on the new product, which in turn ensures a positive relationship between their effort and corresponding customer perceptions of the product. Under a behavior-based control system, salespeople are less adaptive—that is, they are less able and willing to calibrate their efforts to meet specific customer requirements. Instead, they are more likely to follow the firm's directives pertaining to new product-related activities (Anderson and Oliver 1987; Eisenhardt 1989). Given that sales managers themselves often were experienced salespeople, ideally they would be expected to devise an optimal control system based on their knowledge of the relationship between a salesperson's activities and customer perceptions of the new product. Thus, they would be expected to issue directives to their salespeople such that the allocation of effort on the new product optimally affects customer perceptions. However, either because of their new role as product advocates or because they lack the richness of information that salespeople have about the nuances of their territory and customer base, sales managers who use behavioral control systems may end up misguiding their salespeople in the deployment of effort on the new product. If sales managers were omniscient, they would impose the optimal behavioral control system, but to the extent that their knowledge is imperfect, their behavioral prescriptions will systematically misdirect sales personnel. Thus, salespeople following the dictates of behavior-based control systems run the risk of misallocating their efforts on the new product with some customers. Heightened effort on a new product implies not only reduced effort on other products but also less time spent planning, thus potentially constraining both the quality of targeting and the quality of the sales call. By making unneeded and/or misdirected calls, salesperson efforts on behalf of the new product do not yield commensurate positive returns, leading to a weaker relation-

ship between salesperson effort and customer product perceptions.

Indeed, this dampening effect of behavior-based control systems on customer product perceptions in conjunction with its encouraging effect on salesperson effort creates an intriguing dilemma for the firm in that managers may succumb to the temptation of using a behavior-based control system to elicit strong sales force effort on the new product, but at the cost of sacrificing the effectiveness of this effort in enhancing customer product perceptions. This research suggests that a more enlightened approach is to use an outcome-based control system to let salespeople adapt the level of effort on the new product, which may ultimately be more effective in enhancing customer product perceptions. In a sense, even when following their self-interests, salespeople under an outcome-based control system help the company's cause. When juxtaposed, the two kinds of control systems reflect different cultures: An outcome-based control system seems to make people work *smarter*, while a behavior-based control system seems to make people work *harder* (Sujan 1986; Sujan, Weitz, and Sujan 1988). Notably, our findings go against Ouchi's (1979, p. 3) proposition that if the company can both measure outcomes and understand the input-output transformation process, "either form of control system and conceivably both are feasible and neither is a priori preferable." We demonstrate empirically that even when both conditions hold, the form of control system used can have important consequences on the success of the new product.

MANAGERIAL IMPLICATIONS

Traditionally, pharmaceutical companies have employed the use of sales representatives as a valuable marketing tool to persuade physicians to prescribe the company's specific products. In 1998, approximately 65% of total spending was on face-to-face selling by approximately 57,500 sales representatives (Hradecky 1999). Estimates of the number of pharmaceutical sales representatives in the United States alone exceeded 90,000 in 2003, having more than doubled from 1995 (Robinson 2003). Although these figures are specific to one organizational setting, the data are parallel to the growth of sales representatives across multiple industries. It is well known that salespeople are the primary source of product information and marketing/sales spending in the vast majority of business-to-business settings. This growth in the sales force is an indication of the increasing emphasis on relationship marketing across many industries, and this shift underscores the importance of gaining an understanding of how sales representatives' product perceptions influence customer product perceptions. Because successful new product introductions are a key component of ongoing marketing strategy for a multitude of industries, including pharmaceuticals, this is especially relevant in the case of a new product. Given that the sales role in the pharmaceutical industry is similar to that in other business-to-business settings, such as consumer packaged goods sales, financial service wholesalers, or other industries that sell through merchants, we expect that these findings will hold true in other settings.

The findings have important implications for managers who oversee sales representatives and for those who coordinate new product launches. It is evident that managers must

be cognizant of the interacting role of product perceptions and control systems in influencing salesperson effort on new products and their ultimate success in the market. Given that positive product perceptions may actually *reduce* salesperson effort on a new product, the firm should be careful in its internal marketing practices not to oversell the product to the sales force, particularly to more experienced salespeople. However, this is easier said than done because, without question, the sales force must be provided with sufficient information about the product to represent it effectively to potential customers. To this point, it might be appropriate for managers to emphasize to the sales force the challenges and potential obstacles that exist in the marketplace so as to inhibit the development of overconfidence in the new product and the potential corresponding belief that the product can sell itself with little salesperson effort. This may help ensure that the sales representatives effectively communicate information about the product offering no matter what their perceptions are of the product.

It is readily apparent that desired outcomes are contingent on salespeople engaging in and demonstrating effort in their tasks. Because the results show that behavior-based control systems can mitigate the negative relationship of product perceptions on salesperson effort, the firm might be tempted to simply put into place a behavior-based control system that monitors and rewards the execution of activities supporting the new product (e.g., specific call requirements). Because of their importance to the firm, new product initiatives can invite considerable postlaunch scrutiny, adding to the appeal of this option. Moreover, the CRM literature points to an increasing reliance on CRM systems to target marketing resources toward specific customers and to direct employee behavior accordingly (Kumar and Reinartz 2005). Because personal selling dominates marketing communications in a business-to-business context (Zoltners and Sinha 2005), managers may be prone to take information gleaned from such CRM systems to mandate specific call plans and selling behavior for their sales personnel. The current research indicates that such a strategy might be a mistake. The same behavior-based control systems that elicit stronger effort on the new product can actually diminish the effectiveness of that effort in positively influencing customer product perceptions (thus hurting new product sales performance) by inhibiting the salesperson's ability and/or willingness to use his or her closeness to the market to the firm's advantage in allocating effort across the portfolio of products and customers. Given a limited number of calls that can be made in a day, when a salesperson has multiple products to sell, he or she must make resource allocation decisions with respect to the amount and type of attention that should optimally be placed on each product within the portfolio with each customer—decisions that the salesperson arguably is in the best position to make. By controlling the salesperson's actions, managers fail to adequately recognize the salesperson's time constraints and market knowledge, restrict the salesperson's opportunity to engage in adaptive selling (Sujan, Weitz, and Sujan 1988), and potentially direct the salesperson to misallocate effort—all of which serve to reduce the salesperson's effectiveness in shaping customer product perceptions. Therefore, managers are ill-advised to turn to a behavior-based control system to

force salespeople to hit activity targets. Well-designed CRM systems may capture valuable information that both management and sales personnel can use effectively, but overcontrolling the sales force through top-down mandates of which customers to call, how often and when to call on them, and what to say to them is likely to yield suboptimal results in the case of a new product launch. Much of the contextual intelligence, or "street smarts," that exists within the sales force does not reside within an internal database, and salespeople require the flexibility to act on this knowledge. What sales managers may construe to be shirking on the part of their salespeople may actually be adaptive behavior that optimizes performance.

In business-to-business markets, the sales force is a major product- and brand-building tool, which—if trained on and leveraged properly—can create a significant competitive advantage. In the context of a new product introduction, the results of this study suggest that managers must (1) carefully administer the internal flow of information about the new product such that sales personnel are well versed in its relevant features and benefits without becoming overconfident in its ability to "sell itself" to customers and (2) resist the temptation to employ a top-down, behavior-based approach of control and instead provide appropriate flexibility to salespeople in managing their call activity through more outcome-based control systems. This will maximize the chance that customers form positive perceptions of the new product, leading to greater sales and a more successful new product launch.

LIMITATIONS AND FURTHER RESEARCH

This study provides key insights into the influence of sales force control systems on new product success by affecting salesperson effort level and customer product perceptions. However, as with all research, the empirical study has some limitations that restrict its generalizability but open up worthwhile areas for further research.

First, for the sake of parsimony and understanding, we constrained our conceptual framework to only key constructs of theoretical importance. This implies that there could be other mediating and moderating variables, such as the role of adaptive selling or customer orientation, that would be of interest for researchers and could enhance the richness of our findings. Second, although we make an effort to take into account the causal order of events in the model by using time-lagged data, it is possible that alternative causal sequences exist. Additional research that examines these and other relationships in different stages of the sales encounter would be beneficial. For example, the salesperson product perceptions data are temporally static in nature because they were collected at the introduction of the new product. Further research could be conducted that measures both customer and salesperson product perceptions at multiple periods following the product launch. Third, this study has a short-term perspective of new product success (i.e., sales performance six months after the launch). It might be worthwhile to take a long-term perspective; although there is no reason to believe so, a sustained long-term salesperson effort under behavior-based control might have a different effect on sales performance. Fourth, this research demonstrates that, overall, a marginal unit of

effort expended on a new product under a behavior-based control is less efficient than that expended according to the salesperson's discretion. This suggests that for a salesperson optimizing his or her limited number of sales calls each day over multiple products, returns from a marginal unit of effort spent on another product could dominate the returns from the focal product. Researchers might consider measuring salesperson product perception of, salesperson effort on, and performance of each individual product in a salesperson's portfolio. Replication using data from the full portfolio of products would further support the findings. Fifth, given that the fundamentals of both selling and sales management in a pharmaceutical sales environment are not dramatically different from those in other sales settings, particularly those in other missionary or business-to-business contexts, we believe that the results should generalize to other settings. However, it would be beneficial to reexamine this model under other sales settings. Sixth, literature on human motivation suggests an inverted U-shaped relationship between task difficulty and the level of effort. Because the salesperson perceptions in this study are between the easy to moderate task-difficulty range, we could not validate the suggested relationship over the entire curve. Further research into salesperson perceptions over the entire range of task difficulty could help validate the curvilinear relationship.

The findings pave the way for additional research that might uncover important moderating influences on the tested relationships that further inform both theory and practice. For example, when considering a salesperson's level of experience and control systems, two research questions are applicable. First, does more experience act as a substitute for leadership, and do more experienced salespeople act independently of their control system, relying on past experiences and relationships to influence customer perceptions and performance? Second, do more experienced salespeople demonstrate significantly different perceptions of a new product than less experienced salespeople, ultimately changing their behaviors and information communicated? Another area of interest refers to the product portfolio of the salesperson. In the current setting, the portfolio remained constant across all salespeople. However, in some settings, these portfolios vary. Under such circumstances, examining issues such as difficulty of selling, sales cycle, and perceived value of products within the portfolio would be valuable. Finally, although we demonstrate that an outcome-based control system is more likely to lead to more favorable customer perceptions of a new product than a behavior-based control system, researchers might want to study a scenario in which sales managers clearly have greater insight than salespeople. In such a scenario, the advantage of the outcome-based control system over a behavior-based control system might go away or even be reversed. This would enable researchers to develop useful distinctions between appropriate control and overcontrol.

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