The Synergistic Effect of Market Orientation and Learning Orientation on Organizational Performance

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Although a large body of research theoretically asserts a positive relationship between market orientation and organizational performance, fewer empirical studies demonstrate it using multiple and varied organizational performance measures. Additionally, a series of recent studies have theoretically proposed, but not empirically demonstrated, that a firm's learning orientation is likely to indirectly affect organizational performance by improving the quality of its market-oriented behaviors and directly influence organizational performance by facilitating the type of generative learning that leads to innovations in products, procedures, and systems. This empirical study supports all of these specific contentions and the more global notion that higher order learning processes may be critical in creating a sustainable competitive advantage in the firm.

Learning processes are playing a prominent role in new theories on competitive advantage (Dickson 1996; Hunt and Morgan 1996). There has been an important recent debate regarding the extent of their role in creating and maintaining competitive advantage. Hunt and Morgan (1996) believe that learning is an important complex resource of the firm that can create competitive advantage, but they do not consider it the only resource by which a firm might do so. Since theirs is, foremost, a general theory of competition, they include learning as one of a host of complex resources that can yield marketplace positions of competitive advantage. Dickson (1996), however, argues that learning is preeminent over other resources because only it enables firms to maintain long-term competitive advantages by continuously improving market information processing (MIP) activities at a faster rate than rivals do. He notes that Day (1994a) "has described how a firm can use higher-order-learning processes . . . to improve its market orientation and market-driven processes" (p. 104).

This research does not resolve (nor does it seek to resolve) the debate. We refer to it merely to illustrate that, by virtue of their debate, these scholars believe that (1) learning is an important facilitator of competitive advantage, and (2) market orientation and learning are not one and the same. Dickson (1996) emphasizes that the MIP behaviors that accompany a strong market orientation can be readily copied but that the learning environment that organizes and translates the output of these behaviors into a comparative advantage cannot. Accordingly, a superior learning environment will leverage the use of all resources, including the behaviors that accompany a market orientation.

There are other researchers who differentiate market orientation from learning. Day (1994a) discusses how the firm can improve the quality of the MIP behaviors that accompany a strong market orientation by increasing its emphasis on learning. He notes that success depends not just on the acts of acquiring, disseminating, and responding to market information in a timely manner. It also depends on the ability of managers to question the organizational norms that are used by the firm to determine what information is acquired, disseminated, and acted on, and more important, on how such information is interpreted to draw implications for future organizational actions. It has been suggested that a single-minded focus on customers, channels, and competitors without the ability to engage in higher order learning may actually hinder the generation

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of breakthrough concepts, systems, and procedures by limiting firms to incremental adaptive behaviors within existing decision-making frameworks (Kohli and Jaworski 1990; Slater and Narver 1995).

The purpose of this article is to study the relationship between two related but distinct organizational characteristics—learning orientation (Sinkula, Baker, and Noordewier 1997) and market orientation—and organizational performance. Both constructs influence MIP activity. Market orientation influences the scope of MIP activity directed at customers, competitors, and channels and prioritizes its use in the strategic process. Learning orientation is an organizational characteristic that reflects the value that a firm places not only on adroitly responding to changes in the environment but on constantly challenging the assumptions that frame the organization's relationship with the environment.

A general assertion of the article is that organizations have a higher likelihood of creating a sustainable competitive advantage if they have both a strong market orientation and a strong learning orientation. A strong market orientation is required to focus the company on those environmental events that are likely to affect their ability to maximize customer satisfaction relative to competitors, but it is a mechanism that primarily facilitates adaptive learning. Adaptive learning is capable of facilitating incremental innovation (i.e., innovation within a working paradigm), but it is not intrinsically capable of facilitating discontinuous innovation (i.e., innovation that creates new paradigms) (Foster 1986). Learning orientation is a mechanism that directly affects a firm's ability to challenge old assumptions about the market and how a firm should be organized to address it. It does facilitate discontinuous innovation. It also, however, can lead an organization astray if a strong market orientation is not present to provide grounding. The two constructs are expected to have independent and often synergistic effects on performance.

The article is organized as follows. First, we examine the distinction between market orientation and learning orientation and introduce a conceptual framework regarding their interplay with company performance. Next, a series of hypotheses pertaining to this interplay are proposed and empirically tested. The results are presented along with a discussion of their implications for organizations. Future research directions are identified.

ORGANIZATIONAL LEARNING, MARKET ORIENTATION, AND LEARNING ORIENTATION

Organizational Learning

Organizational learning is dynamic. Individuals' actions lead to organizational interactions with the environment, the environment responds, and these responses are interpreted by individuals who learn by updating their beliefs about cause-effect relationships (Lee, Courtney, and O'Keefe 1992). Organizational learning occurs by detecting a mismatch of outcome to expectation, which disconfirms theory in use (Argyris and Schön 1978). When this occurs, the firm moves to error correction, which results in a change in theory in use. If the correction does not involve a change to the organizational norms (e.g., mental models and dominant logics) guiding the firm's behavior, then single-loop or adaptive learning is said to occur. Most organizational learning is single-loop, adaptive learning. If, however, the correction leads to a change in organizational norms and if the learning results from proactive organizational behavior not in direct response to environmental events, then the learning is said to be double-loop or generative (Argyris and Schön 1978; Bateson 1972; Sinkula 1994).

Adaptive, single-loop learning is sufficient to motivate tactical adjustments to operations, production, and planning. Generative, double-loop learning is typically prerequisite to more fundamental strategic shifts in these areas. Generative and double-loop learning are pivotal because they reflect an organization's capacity to change its "view of the world" by unlearning obsolete perspectives, systems, and procedures and proactively replacing them with approaches that are capable of creating or maintaining competitive advantage (Day 1991; Dickson 1996).

Formal and informal MIP generates the knowledge that facilitates organizational learning. It is typically conceptualized as comprising four primary dimensions: information acquisition (the process by which information is obtained), distribution (the process by which information is shared), interpretation (the process by which information is given meaning and thus is transformed into knowledge), and memory (the process by which information/knowledge is stored for further use) (Huber 1991).

Market Orientation

While there are numerous interpretations of market orientation (Day 1994a; Deshpande, Farley, and Webster 1993; Kohli and Jaworski 1990; Narver and Slater 1990), all have an operational focus on MIP activities regarding customers and competitors, particularly information acquisition, information distribution, and the ability to behaviorally respond to what is received. For example, Kohli and Jaworski (1990) define market orientation as "the organization-wide generation of market intelligence pertaining to current and future customer needs, dissemination of the intelligence across departments, and organization-wide responsiveness to it" (p. 6). Likewise, Narver and Slater's (1990) approach to market orientation suggests that MIP is critical because one cannot have a customer orientation, competitor orientation, and

interfunctional coordination without effective information acquisition and dissemination programs.

Following past research, we view market orientation as a characteristic of an organization that determines the priority that is placed on MIP activity and its use in the strategic process. It influences the scope and importance of MIP activity. As Dickson (1996) notes, "market orientation describes a set of . . . processes that *enable* the firm to learn" (p. 104, emphasis added). Hence, MIP activity inspired by market orientation *may* lead to adaptive (or even generative) learning, but learning is not a *necessary* outcome of the process. The output of MIP activity may simply act as inputs into ongoing systems, models, and procedures (customer satisfaction research, sales and inventory tracking systems, advertising pretest procedures, etc.).

We think of market orientation not as a discrete phenomenon but as continuous. Hence, even market-oriented firms can improve their market-driven processes. Sound MIP interpretive and memory functions are regarded as essential for creating a superior market orientation (Day 1994a; Slater and Narver 1995). The success of these functions depends on the often tacit decision rules for selecting or rejecting information, the mental models used to transform information into knowledge, and the prevailing assumptions about how customers and competitors will react to actions taken by the firm in response to new information (Day 1994a).

Market-oriented firms do not necessarily have superior interpretive and memory functions in their MIP systems. In fact, there is a liability to success. Success breeds resistance to learning and hence to accurate interpretation and efficient memory storage (Sinkula 1994). In successful firms, the presumed effectiveness of past actions and interpretations is reinforced by repeated success, and the ensuing complacency breeds rejection of discrepant information that conflicts with conventional wisdom. So, while market-oriented firms, by definition, will actively acquire, distribute, and respond to market intelligence, over time they may increasingly prioritize the gathering and distribution of deficient information. Equally as important, biased interpretive and memory MIP functions may lead to the misinterpretation and inadequate storage of distributed information. Flawed, incomplete, or distorted mental models do not prevent market-oriented firms from taking actions. In many, if not most, cases, the organization will be unaware of the flaws and distortion (Day 1994a).

Learning Orientation

Higher order learning (i.e., generative, double-loop learning) is required for firms to unlearn obsolete market knowledge and norms (Nystrom and Starbuck 1984) and eradicate the perceptual filters that bias which new information is attended to and acted on (Hedberg 1981). Such learning will better enable firms to not only accomplish within-paradigm improvements (e.g., continuous improvement) but also paradigm shifts (e.g., breakthrough innovation).

While market orientation is an organizational characteristic that directs and prioritizes MIP activity, learning orientation is an organizational characteristic that affects a firm's propensity to value generative and double-loop learning. Market orientation is reflected by *knowledge-producing behaviors*. Learning orientation is reflected by a set of *knowledge-questioning values* (Sinkula et al. 1997).

Learning orientation goes beyond a marketplace focus. Learning orientation is conceptualized as a set of values that influence the degree to which an organization is satisfied with its theories in use (Argyris and Schön 1978), mental models (de Geus 1988), and dominant logics (Bettis and Prahalad 1995), which may or may not have their bases in the marketplace. Firms with strong learning orientations encourage, or even require, employees to constantly question the organizational norms that guide their MIP activities and organizational actions (Day 1991; Garvin 1993; Sinkula 1994; Sinkula et al. 1997). In this respect, learning orientation affects the degree to which organizational members are encouraged, even required, to "think outside the box." Hence, it has a direct bearing on the degree to which higher order learning occurs (Slater and Narver 1995).

Values that are routinely associated with the organization's learning capabilities revolve around its (1) commitment to learning, (2) open-mindedness, and (3) shared vision (Day 1991, 1994a; Senge 1990, 1992; Sinkula et al. 1997). Companies that are committed to learning value the need to understand the cause and effects of their actions (Shaw and Perkins 1991), which, in turn, is necessary for firms to regularly detect and correct errors in theory in use. If an organization places little value on learning, little learning is likely to occur (Sackmann 1991). Commitment to learning is related to Senge's (1990) discussion of learning principles (i.e., whether learning activity is viewed as axiomatic), Tobin's (1993) notion of "thinking literacy" (i.e., whether the ability to think and reason is viewed as axiomatic), and Galer and van der Heijden's (1992:11) belief that a "culture amenable to learning" is prerequisite to its ability to improve its understanding of its environment over time.

As time passes, mental models may no longer hold true. They will, however, limit us to familiar ways of thinking and acting unless we are open-minded enough to surface, confront, and question them (Porac and Thomas 1990; Senge 1992, 1990). In this respect, open-mindedness is linked to the notion of unlearning (Nystrom and Starbuck 1984). When organizations proactively question long-held routines, assumptions, and beliefs, they are engaging in the practice of unlearning. Hence, unlearning is at the

heart of organizational change, and open-mindedness is an organizational value that is necessary for unlearning efforts to transpire.

Without shared vision, individuals are less likely to share dominant logics (e.g., business mission) or desired outcomes (e.g., sales, market share, return on investment, rate of new product introduction, customer satisfaction) (Dougherty 1989). Tobin (1993) describes such vision as "visible leadership"; Galer and van der Heijden (1992) describe it as "goal convergence." Divergent or conflicting assumptions undermine the ability of the management team to agree on the interpretation of market information and, thus, their ability to respond quickly to emerging trends or problems. The lack of a universally understood organizational focus also lowers the motivation to learn (Day 1991, 1994a; Galer and van der Heijden 1992; Tobin 1993). It is important to note that a vision, like any organizational assumption, is subject to examination and is likely to evolve over time. The critical aspect of the vision is that it is universally known, understood, and used in a manner that gives the organization a sense of purpose and direction.

A learning orientation is likely to increase the rate of internal and external change in a company, but the process of establishing a learning orientation takes time. Changes in a firm's learning orientation, as Garvin (1993) notes, are "the product of carefully cultivated attitudes, commitments, and management processes that have accrued slowly and steadily over time" (p. 91). Market-oriented behaviors can be more rapidly changed (Dickson 1996) and are, hence, more likely to have an immediate positive effect on profitability (Narver and Slater 1990).

While a strong market orientation may routinely lead to adaptive and single-loop learning (Slater and Narver 1995) about customers, competitors, and other constituencies, it will not routinely lead to generative and double-loop learning unless it is accompanied by a strong learning orientation (Argyris and Schön 1978; Senge 1990; Sinkula 1994). It is the combination of a strong market orientation and a strong learning orientation that is likely to lead to the type of learning that has been cited as the true source of sustained competitive advantage (Day 1994a; Dickson 1996; Stata 1992).

A primary assertion of this article is that market orientation and learning orientation have a positive, synergistic effect on organizational behavior (Slater and Narver 1995). This synergy is explicated by Day's (1994b) conceptualization of outside-in (e.g., market orientation) and inside-out (e.g., learning orientation) processes and their mutual involvement in optimizing spanning processes (customer service delivery, new product development, strategy development) that directly influence the firm's performance.

RESEARCH HYPOTHESES

The focus of our research is on the synergistic effect of market orientation and learning orientation on organizational performance. The conceptual model underlying our research is shown in Figure 1.

Past research has operationalized organizational performance with measures of return on assets, sales growth, new product success (Narver and Slater 1990; Slater and Narver 1994), and market share and overall performance (Jaworski and Kohli 1993). Following past studies, this research uses new product success and overall performance as indicators of organizational performance. We also introduce a new performance measure, change in market share relative to the firm's largest competitor (ΔMS).

Our measures of performance were chosen not only to replicate proven measures used in past research but also because Walker and Ruekert (1987) regard them as "performance dimensions of primary importance to top corporate and business unit managers" (p. 19). They go on to state that overall performance and ΔMS represent an *effectiveness* dimension of performance, the "success of a business' products and programs in relation to those of its competitors in the market . . . measured by such items as sales growth in comparison with that of competitors or *changes in market share*."

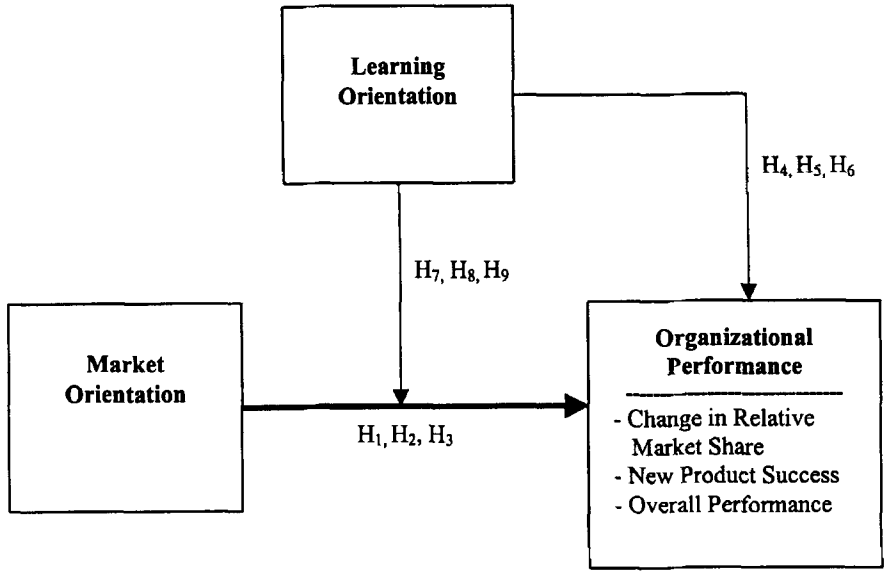
Organizational performance can be measured on a variety of dimensions, and no single business approach can be expected to have the same effect on all dimensions (Walker and Ruekert 1987). Take, for example, the dimension of business unit adaptability. New product success represents an *adaptability* dimension, one that reflects "the business' success in responding over time to changing conditions and opportunities in the environment" (Walker and Ruekert 1987:19). Clearly, adaptability is a different dimension of performance than is effectiveness. Hence, it is not inconceivable that market orientation or learning orientation might affect one dimension of performance in a certain manner and the other dimension of performance in a different manner (or not at all).

Direct Effects of Market Orientation

Market orientation exists on a continuum characterized by the degree to which firms acquire, disseminate, and respond to information gleaned from customers, channels, and competitors (Jaworski and Kohli 1993; Kohli and Jaworski 1990; Kohli, Jaworski, and Kumar 1993). As conceptualized here, market orientation refers to the quantity and speed of these activities, not necessarily the quality.

There is evidence that supports the positive effect that market orientation has on certain dimensions of organizational performance (Jaworski and Kohli 1993; Narver and

FIGURE 1
A Conceptual Framework of Market Orientation, Learning Orientation, and Organizational Performance



Slater 1990; Slater and Narver 1994). Independent of the effects of learning orientation, market-oriented firms are expected to be adept at reacting to formal and informal feedback received from customers, channels, and competitors.

Hypothesis 1: There is a positive relationship between an organization's market orientation and its overall performance.

Hypothesis 2: There is a positive relationship between an organization's market orientation and its change in relative market share.

Hypothesis 3: There is a positive relationship between an organization's market orientation and its new product success.

Direct Effects of Learning Orientation

Learning orientation influences the propensity of the firm to create and use all kinds of knowledge, not just market-based knowledge. More important, it influences the degree to which firms are likely to promote generative learning as a core competency (Sinkula et al. 1997).

Firms that have enhanced learning orientations are more willing to question long-held assumptions about their fundamental operating philosophies (Senge 1990; Slater and Narver 1995). These firms might even question the assumption that market-oriented behaviors are appropriate in every situation. Such firms, rather than being market led, may at times believe it is more appropriate to lead the market. Firms with a strong learning orientation may question the logic of a purely market-oriented approach to new product development. Jacobson (1992) notes that "the very nature of competition suggests that no replicable strategy will allow businesses to earn long-run supranormal profits" (p. 794).

This in no way suggests that firms with strong learning orientations should not also practice a strong market orientation; it merely recognizes that breakthroughs do not always come from reacting to the market as it is. Innovation sometimes requires the vision to predict what the market may become. That is, a firm with a strong learning orientation may recognize that customer satisfaction may not always be maximized through a strict interpretation of the feedback received from current customers, channels, and competitors but instead through innovative disruptions to the status quo that consider, but do not rely solely on, outside-in processes. Hence, our hypotheses regarding learning orientation are stated as follows:

Hypothesis 4: There is a positive relationship between an organization's learning orientation and its overall performance.

Hypothesis 5: There is a positive relationship between an organization's learning orientation and its change in relative market share.

Hypothesis 6: There is a positive relationship between an organization's learning orientation and its new product success.

Synergistic Effects of Market Orientation and Learning Orientation

Learning orientation is an organizational characteristic. Conceptualizing organizational characteristics as moderators of organizational behaviors is consistent with past research on learning (Sinkula 1994) and with past research on the relationship between market orientation and performance (Gatignon and Xuereb 1997).

Learning orientation, market orientation, and effectiveness. Firms with lower learning capabilities might have an inflexible construction of market orientation. We view learning orientation as the qualitative engine behind market orientation that prevents rigidity. If members of an organization have an enhanced learning orientation, they will not only gather and disseminate information about markets but also constantly examine the quality of their interpretive and storage functions and the validity of the dominant logic that guides the entire process. Hence, the quality of market-oriented behaviors will be enhanced.

Market-oriented behaviors facilitate, but do not guarantee, optimal learning. Slater and Narver (1995) note that "for a business to maximize its ability to learn about markets, creating a market orientation is only a start" (p. 63). This perspective is also highly consistent with Day's (1994b) notion of the synergy created by inside-out and outside-in processes, Jaworski and Kohli's (1993) qualitative antecedents to market orientation, and Dickson's (1996) assertion that superior higher order learning processes are required to sustain competitive advantage.

Hypothesis 7: The greater an organization's learning orientation, the stronger the positive relationship between its market orientation and its change in relative market share.

Hypothesis 8: The greater an organization's learning orientation, the stronger the positive relationship between its market orientation and its overall performance.

Learning orientation, market orientation and adaptability. New product success is a dimension of performance that involves the firm's ability to adapt to changing conditions and opportunities in the environment (Walker and Ruekert 1987). A strong learning orientation is likely to reduce an organization's reliance on market feedback as the only route to new product development. That is, firms with high learning orientation may not always follow a purely market-oriented approach to new product development because they do not require direct signals from the market to lead their new product development process. They are more likely to engage in innovative learning regardless of their market orientation.

Likewise, firms with a strong market orientation are likely to engage in aggressive product development regardless of their learning orientation. Firms with high market orientations and lower learning orientations, however, may be more likely to engage in imitative rather than innovative learning practices and may "emphasize product-line extensions for its current customers, rather than pursue a deep understanding of the latent needs of current and new customers and, hence, innovative new products and opportunities in new markets" (Slater and Narver 1995:68).

Since new product development can occur at a robust rate with either a strong market orientation or a strong learning orientation, a strong synergy between market orientation and learning orientation is not expected. However, firms without either a strong market orientation or a strong learning orientation are expected to have difficulty introducing successful new products.

We theorize that market orientation is a significant positive factor to new product success. However, we also argue that the greater an organization's learning orientation, the less it relies solely on market orientation to achieve new product success. Therefore,

Hypothesis 9: The greater an organization's learning orientation, the weaker the positive effect of market orientation on new product success.

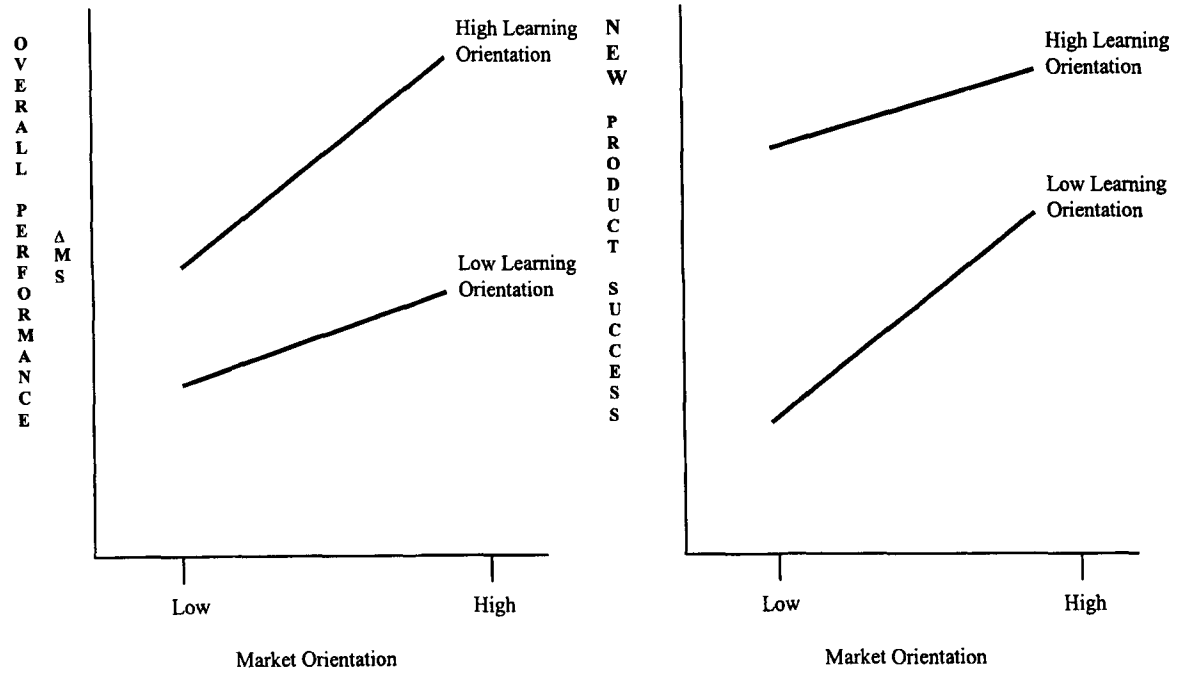
Figure 2 graphically illustrates our expectations about the relationship between market orientation and performance given varying levels of learning orientation.

METHOD

Data

Our data come from a nationwide direct mail survey. The bulk of the instrument is composed of items that have been used in past research on market orientation and organizational learning (Jaworski and Kohli 1993; Kohli et al. 1993; Narver and Slater 1990; Sinkula et al. 1997). Consistent with the extant research on market orientation, we included marketers and nonmarketers in the sample (see Jaworski and Kohli 1993; Kohli et al. 1993). In so doing, we used a commercially available list of business executives who held, at minimum, a vice-presidential

FIGURE 2
Hypothesized Interactions



rank. These executives came from a broad cross section of industries. To bolster the generalizability of the study, we specified that half of the sample be composed of firms with more than $500 million in sales and that the other half be composed of smaller firms. A total of 2,000 questionnaires were mailed: half to marketing executives and half to nonmarketers. A second mailing to the initial nonrespondents was conducted. Only 15 questionnaires were returned "undeliverable," and 17 potential respondents either wrote or telephoned to state that a reply to the questionnaire would violate company policy. A total of 411 questionnaires were returned (surprisingly, none of which was unusable), yielding a response rate of 21 percent. Approximately 47 percent of responses came from firms with sales of less than $500 million. Similar to the response pattern found in Jaworski and Kohli (1993), a greater proportion of responses came from marketers (60%) than nonmarketers (40%). Early versus late responder analyses (Armstrong and Overton 1977) provided no evidence of nonresponse bias. Following Narver and Slater (1990), the unit of analysis in our study is the respondent's "business unit" as it operates in its "principal served market."

Ours is a cross-sectional design. If learning orientation were not so enduring and stable, one might argue that a better approach would be to capture lagged effects of learning orientation on current performance. It seems reasonable to assume, however, that a firm with a strong learning orientation has had such an orientation in place for some time (Garvin 1993) and that its current performance has been influenced by that orientation.

Measures

All but one of our primary measures have been used in past research. Market Orientation was operationalized with the MARKOR scale (Kohli et al. 1993). Learning Orientation was adapted from the scale developed by Sinkula et al. (1997). Change in market share was measured as related to the largest competitor (Day 1977). Overall Performance was captured with Jaworski and Kohli's (1993) two-item measure. New Product Success is a new scale that has much of its grounding in Moorman's (1995) and Moorman and Miner's (1997) work in the area of new product performance, timeliness, and creativity.

Following past research, ours are self-explicated measures of performance. Prior research has used such measures because of consistent evidence that subjective and objective measures of performance are highly correlated (Dess and Robinson 1984).

A number of control variables deemed to be important determinants of performance (Aaker 1988; Bain 1959; Boulding and Staelin 1990; Day 1984; Jacobson and Aaker 1987; Scherer 1980) have been included in the analysis. The majority of these measures (market growth, buyer power, supplier power, seller concentration, ease of entry, and technological change) were taken from Narver and Slater (1990), who include them as control variables in their assessment of the relationship between market orientation and performance. Following Jaworski and Kohli (1993), we include competitive intensity as a covariate. In addition, we include measures of market dynamism and government control. Finally, since we wished to control for effects of company size and respondent type, we included measures of total corporate sales and marketer/nonmarketer as covariates. All of our measures are provided in the appendix.

In accordance with accepted practice (Anderson 1987; Churchill 1979; Gerbing and Anderson 1988), we assessed the properties of scales for unidimensionality, discriminant validity, and reliability. In conducting our tests of unidimensionality, we first split the relevant constructs into three sets of theoretically related variables: the three pertaining to learning orientation, the three dimensions of market orientation, and the two multiitem performance measures. We did this for two reasons: (1) to test for construct convergence within maximally similar sets of variables and (2) to avoid violating recommended minimal sample size to parameter estimate ratios (see Bentler and Cho 1988). Confirmatory factor analyses (CFA) using covariance matrices were modeled for each of the three sets of variables.

Following Sinkula et al. (1997), Learning Orientation was operationalized as a second-order construct with three dimensions (Commitment to Learning, Shared Vision, and Open-mindedness). Results of a second-order CFA suggest that the hypothesized model fits the data well (comparative fit index [CFI] = .94, goodness-of-fit index [GFI] = .91, $\chi^2(133) = 383.13$, root mean square error of approximation [RMSEA] = .07). As further evidence of convergent validity, all factor loadings were large and highly significant (t values ranging from 12.40 to 18.78).

Despite the fact that MARKOR is a well-established and accepted measure of market orientation, we revisit its scale properties here. In so doing, we tested a first-order CFA with three dimensions (Intelligence Generation, Intelligence Dissemination, and Responsiveness). Findings reveal an adequate overall model fit (CFI = .85, GFI = .88, $\chi^2(167) = 491.13$, RMSEA = .06). As expected, all factor loadings were significant (t values ranging from 3.47 to 9.91).

TABLE 1
Construct Correlations

Construct	*1*	*2*	*3*	*4*	*5*	*6*	*7*
1. Intelligence generation							
2. Intelligence dissemination	.55						
3. Responsiveness	.57	.66					
4. Commitment to learning	.33	.42	.50				
5. Shared vision	.45	.50	.61	.57			
6. Open-mindedness	.43	.42	.57	.62	.67		
7. New product success	.34	.37	.46	.38	.45	.46	
8. Overall performance	.25	.23	.41	.32	.43	.33	.39

NOTE: All correlations are significant at the .05 alpha level. The correlation between learning orientation and market orientation is .65.

We conducted three-factor CFAs for the Market Orientation and Learning Orientation scales to keep consistent with prior research (Jaworski and Kohli 1993; Sinkula et al. 1997). However, a strong correlation between the three MARKOR components (see Table 1) suggests that they converge to a common construct. The same is true for the components of Learning Orientation.[1] This, and an interest in parsimony, led us to operationalize the two scales as summates. This operationalization is entirely consistent with those employed for market orientation by Jaworski and Kohli (1993), Narver and Slater (1990), and Slater and Narver (1994). Reliability of the two summate scales was assessed by the determination of coefficient alpha. The reliability estimates for the 20-item MARKOR scale (α = .88) and the 18-item Learning Orientation scale (α = .94) indicate a high level of internal consistency.

The final set of variables used in our assessment of unidimensionality consisted of the two multiitem performance measures. A two-factor CFA fit well with the data (CFI = .97, GFI = .96, $\chi^2(13) = 54.08$, RMSEA = .09). All factor loadings were large and highly significant (t values ranging from 8.61 to 24.05). The reliability estimates for New Product Success (α = .83) and Overall Performance (ρ = .79) indicate high levels of internal consistency.

Discriminant validity for the eight constructs was assessed by conducting a series of two-factor CFA models for each of all possible ($8 \times 7 / 2 = 28$) pairs of constructs (Bagozzi and Phillips 1982; Anderson 1987). In each model, the phi coefficient was constrained to unity and then freed. A chi-difference test was then performed. In all cases, the model with the free parameter was found to be superior, providing evidence of the discriminant validity of the constructs.

Tests of Hypotheses

Ordinary least squares regression was employed to test the hypotheses. Three separate regressions were specified

(one for each of the performance measures) that, in the predictive set, included the multiplicative interaction of market orientation and learning orientation as well as their first-order (main) effects (Pedhazur 1982). Following the advice of Aiken and West (1991) and Smith and Sasaki (1979), we centered the first-order variables prior to calculating the interaction term to deal with potential multicollinearity and interpretation issues. The covariates described earlier were included in all regression models to control for compelling alternative explanations of performance and to fit models of similar form to those used in past research on market orientation (Jaworski and Kohli 1993; Narver and Slater 1990; Slater and Narver 1994). A series of regression diagnostics were conducted to verify model adequacy.[2] Interaction effects were further analyzed using the technique recommended by Aiken and West, who "derive procedures for post hoc statistical probing of interactions between continuous variables that closely parallel simple effects testing within the ANOVA framework" (p. 5). This procedure requires derivation of what Aiken and West refer to as "simple slopes" or the slope of the regression of Y on X at single values of Z. Typically, one assesses the relationship between the criterion and predictor variables at plus-and-minus one standard deviation of the moderator. Hence, the procedure allowed us to assess differences in the effect (slope) of market orientation on performance at specified levels of learning orientation.

RESULTS

The results of the regression analyses are presented in Table 2. In all cases, the models were highly significant. The three models are interaction models with the main effects for market orientation and learning orientation still included. The first model, involving ΔMS, explains a significant amount of variance (adjusted $R^2 = .168$, $F = 6.93$, $p < .0000$). The variance in new product success explained by the second model (adjusted $R^2 = .307$, $F = 13.95$, $p < .0000$) is somewhat larger than that found (adjusted $R^2 = .22$, $F = 3.91$, $p < .001$) by Slater and Narver (1994), who regress new product success on market orientation and a similar set of control variables but do not include a measure of learning. The third model, as shown in Table 2, is also highly significant (adjusted $R^2 = .371$, $F = 18.26$, $p < .0000$), explaining somewhat more variance in Jaworski and Kohli's (1993) measure of overall performance than did their original study (adjusted $R^2 = .25$). While specific hypotheses were not offered in regards to the control variables, it is notable that market growth exhibits a significant relationship with ΔMS ($b = .227$, $p < .05$), new product success ($b = .162$, $p < .05$), and with overall performance ($b = .386$, $p < .01$). Additionally, supplier power ($b = .071$, $p < .05$) is significantly related to new product success. Last, controlling for technical change would appear to be important ($b = -.083$, $p < .05$) when interpreting the regression involving overall performance.

Hypothesis Tests: Main Effects

Many recent studies have hypothesized and interpreted main effects along with their interactions in regression models (Andrews and Smith 1996; Frazier and Lassar 1996; Heide 1994). In the presence of an interaction term, a main effect (provided that the variables in question are centered) is interpreted as the effect of a given predictor when the predictor it interacts with is at its mean (Finney, Mitchell, Cronkite, and Moos 1984). Aiken and West (1991) refer to main effects as "conditional effects" and note that

> the interpretation of b_1 or b_2 as conditional effects of predictors at the mean of other predictors may well be useful in clarifying relationships under investigation . . . we agree . . . that these effects should not be disregarded simply because they are not constant effects. (P. 39)

They effectively argue that the centered overall regression analysis provides regression coefficients for the first-order terms that can be informative, noting that "this also conforms to the familiar model used in ANOVA: Each main effect is estimated when the value of all other factors are equal to their respective means" (p. 38). Hence, we discuss the main effect of market orientation "conditioned" on the fact that learning orientation is at its mean (and vice versa).

Market orientation evidences a significant positive relationship with ΔMS ($b = .266$, $p < .05$), furnishing support for Hypothesis 1. Market orientation also has a significant positive relationship with new product success ($b = .465$, $p < .01$), providing support for Hypothesis 2. Drawing on past research, Hypothesis 3 predicted that market orientation is positively related to overall performance. Results confirm the hypothesis ($b = .355$, $p < .05$), bolstering conclusions drawn by Jaworski and Kohli (1993:64), who place confidence in their findings despite the fact that the criterion variable is a "judgmental" measure of overall performance.

As hypothesized, results show that learning orientation is significantly related to ΔMS ($b = .302$, $p < .01$), offering support for Hypothesis 4. Learning orientation also exhibits a significant positive relationship with new product success ($b = .403$, $p < .01$), providing support for Hypothesis 5. Finally, Hypothesis 6, which proposed that learning orientation is positively related to overall performance, is supported ($b = .392$, $p < .01$).

Hypothesis Tests: Interaction Effects

Hypothesis 7 predicted that the strength of the relationship between market orientation and ΔMS would increase

TABLE 2
Estimates of Relationships

	Dependent Variables					
	Change in Relative Market Share		*New Product Success*		*Overall Performance*	
	Hypothesis	*Unstandardized Coefficient*	*Hypothesis*	*Unstandardized Coefficient*	*Hypothesis*	*Unstandardized Coefficient*
Market orientation	Hypothesis 1, +	.266* (.130)	Hypothesis 2, +	.465** (.114)	Hypothesis 3, +	.355** (.119)
Learning orientation	Hypothesis 4, +	.302** (.120)	Hypothesis 5, +	.403** (.105)	Hypothesis 6, +	.392** (.111)
Market orientation × Learning orientation	Hypothesis 7, +	.240* (.140)	Hypothesis 9, –	–.233* (.123)	Hypothesis 8, +	–.162 (.129)
Control variables						
Market growth		.227* (.039)		.162* (.034)		.386** (.036)
Buyer power		.013 (.035)		–.052 (.031)		.012 (.033)
Supplier power		–.009 (.042)		.071* (.036)		.016 (.038)
Seller concentration		–.047 (.039)		.011 (.034)		–.049 (.036)
Ease of entry		–.060 (.035)		–.042 (.031)		–.016 (.032)
Technological change		.028 (.043)		.013 (.035)		–.083* (.039)
Competitive intensity		.023 (.050)		.051 (.044)		.060 (.047)
Market dynamism		–.077 (.048)		–.008 (.042)		–.068 (.044)
Government regulation		.017 (.029)		–.002 (.025)		.050 (.029)
Company size		.107 (.109)		–.156 (.096)		.047 (.100)
Marketer/nonmarketer		–.104 (.107)		.007 (.094)		.113 (.099)
Constant		3.87** (.413)		3.49** (.363)		3.69** (.381)
Adjusted R^2		.168		.307		.371
F statistic		6.93**		13.95**		18.26**

NOTE: Tests of hypotheses are one-tailed tests. Numbers in parentheses are standard errors.
*$p < .05$. **$p < .01$.

as learning orientation increased. Table 2 reveals a significant interaction effect in the hypothesized direction ($b = .240, p < .05$), contributing support for Hypothesis 7 (See Figure 2). The details of this interaction were examined further by deriving the simple slopes as suggested by Aiken and West (1991). Regressions were conducted at high (one standard deviation above) and low (one standard deviation below) levels of learning orientation. In the case in which learning orientation was high, the relationship between market orientation and ΔMS was significant and positive ($b = .410, t = 2.61, p < .01$). However, this relationship was insignificant at low levels of learning orientation ($b = .123, t = 0.81, p < .42$).[3]

Hypothesis 8 posited that the strength of the relationship between market orientation and overall performance would be heightened as learning orientation increased. Results show that the interaction effect associated with Hypothesis 8 is not significant.[4] Hence, Hypothesis 8 is not supported.

Hypothesis 9 proposed that the strength of the relationship between market orientation and new product success would be weakened as learning orientation increased. The results provided in Table 2 show a significant interaction effect in the hypothesized direction ($b = –.233, p < .05$), offering support for Hypothesis 9 (see Figure 2). Again, the nature of this interaction was explored further by deriving the simple slopes at high and low levels of learning orientation. In both cases, the relationship between market orientation and new product success was significant and positive. However, the relationship was stronger at low levels of learning orientation ($b = .606, t = 4.53, p < .0000$) than it was at high levels of learning orientation ($b = .327, t = 2.31, p < .02$).[5] Hence, as we illustrate in Figure 2, the strength of the relationship weakened as learning orientation increased. Thus, it is possible that companies with higher learning orientations are less reliant on market orientation (or any orientation) as the only avenue to new product success. This finding is consistent with arguments that suggest that new product innovation can occur in many ways, not just those grounded in customer-voiced needs and wants (Von Hippel 1988).

DISCUSSION

The theory-testing approach pursued in this research is consistent with other research on the subject (Jaworski and Kohli 1993; Kohli et al. 1993; Narver and Slater 1990; Sinkula et al. 1997; Slater and Narver 1994). Hypotheses were examined by regressing company performance against the two orientation variables, the interaction between them, and the control variables. The results advance knowledge concerning a firm's marketplace

effectiveness and adaptability and, ultimately, competitive advantage.

Independent Effects of Market Orientation and Learning Orientation

The main effects tests are framed to answer the question, "Given a best estimate of a business unit's market orientation (learning orientation), what effect will learning orientation (market orientation) have on its effectiveness and adaptability in the marketplace?" The two measures of effectiveness are qualitatively different. Overall performance reflects a firm's ability to compete effectively but does not necessarily reflect the ability of a firm to create and sustain a competitive advantage. A positive change in relative market share, however, reflects the ability of a firm to outcompete its largest competitor, which more directly suggests the creating or sustaining of a competitive advantage.

All main effects were significant and positive. The results provide empirical validation of Slater and Narver's (1995) claim that as important as market orientation is, it must be complemented by an appropriate climate for learning. The results are also consistent with their argument that firms need both entrepreneurial and market-oriented culture elements to breed the adaptive and generative learning behavior required for success.

The main effects of market orientation on overall performance replicate and extend research conducted by Jaworski and Kohli (1993), who found a positive relationship with overall performance but not with market share. While there are differences in measurement of the dependent variables between their study and ours, the absence of an effect on market share in their study may be explained by the absence of learning orientation in the predictive set. As discussed below, the significant effect of market orientation on ΔMS in this study was limited to firms with high learning orientations. The main effect of market orientation on new product success replicates Slater and Narver's (1994) findings, this time with a different measure of market orientation, the MARKOR scale.

The main effect of learning orientation is uniformly significant and positive across all three dependent measures. This finding is an important extension of recent views of the role of higher order learning on building competitive advantage (Day 1994a; Dickson 1996; Hunt and Morgan 1996). These perspectives generally conceptualize the effects of higher order learning and their antecedents (e.g., learning orientation) as influencing performance indirectly through the qualitative improvement of market-oriented processes, not through a direct effect as was found here.

The Moderating Effect of Learning Orientation

We theorized that the effects of market orientation on overall performance and ΔMS would be stronger when learning orientation is heightened. Unexpectedly, there was no moderating effect of learning orientation when overall performance was the dependent variable. The predicted effect, however, was stronger than expected when ΔMS was the dependent variable. When learning orientation was low, market orientation had no effect on ΔMS. When it was high, as predicted, the effect of market orientation on ΔMS was significant and positive.

On reflection, these results make sense. Strong learning orientation or not, market-oriented firms are capable of adapting to explicit changes in the external environment. They may efficiently react to competitor innovations through imitative behaviors, and they may improve relationships with customers by efficiently reacting to their *manifest* needs and wants. These behaviors are likely to improve overall performance, but they are less likely to create or sustain a competitive advantage that leads to increases in market share relative to competitors. As noted before, Jaworski and Kohli (1993) did not find an effect of market orientation on market share. Importantly, the MARKOR scale does not explicitly measure qualitative differences in market-oriented processes. The Learning Orientation scale in this study does indirectly tap qualitative differences by examining the presence (or absence) of values that affect the quality of learning. The results support the idea that a strong learning orientation is prerequisite to engendering the type of *superior* market-oriented processes (e.g., processes that can produce accurate, unbiased intelligence on customers and competitors) that are capable of creating or sustaining a competitive advantage and, thus, that are capable of building market share relative to a firm's largest competitor. Without a strong learning orientation, market-oriented behaviors are less likely to foster a rate of performance improvement that exceeds that of competitors.

We also theorized that a strong learning orientation will weaken the relationship between market orientation and new product success. This occurred. A potential explanation for this result is that a strong learning orientation promotes a clear identification of the functional source of new product innovation (Von Hippel 1988). In most, if not many, cases, the source of innovation lies in the expressed needs of customers and, hence, carefully orchestrated market-oriented behaviors. In certain cases, however, the source of new product innovation may not lie in the overt, self-explicated needs of customers. Therefore, it is possible for firms with a strong learning orientation and a weaker market orientation to engage in significant new product development activity.

Market-oriented behaviors in the absence of a strong learning orientation may lead to more imitative development that can sustain performance but is less likely to lead to the type of competitive advantage that will build market share. Learning orientation in the absence of a strong market orientation may lead to more innovative development,

but it, too, is not a panacea. The disadvantage of a strong learning orientation without a strong market orientation is the potential that innovative behaviors may prove to be costly experiments whose market misses far exceed market hits (Slater and Narver 1995). In the absence of one or the other, it would be better for a firm to have a strong market orientation. A strong market orientation is likely to breed the type of adaptive learning that can keep a firm competitive in a dynamic market. A strong learning orientation may lead to an occasional "home run," but the beneficial effect of breakthrough innovations may be short-lived if they are not followed up by market-oriented processes that enable firms to make necessary strategic and tactical adjustments in responses to changes in the external market. The rapid rise and fall of many high-technology firms relative to their more successful counterparts may reflect the differences in long-term behavior between firms with strong learning orientations and firms with both strong learning orientations and strong market orientations. This is certainly an issue for future research.

A combination of market orientation and learning orientation will likely lead to long-term competitive advantage (Day 1994a; Slater and Narver 1995). The coupling of a strong market orientation with a strong learning orientation can offer lower risk innovation and the promise of ongoing modifying behaviors that are responsive to market needs after successful innovations are introduced.

Slater and Narver (1995) offer a somewhat different conceptualization of the interplay between a firm's values and beliefs, its learning-related behavior, and its performance. Their conceptualization focuses on the role of a firm's culture and climate. "Culture is the deeply rooted set of values and beliefs that provide norms for behavior in the organization. . . . Climate describes how the organization operationalizes its culture, the structure and processes that facilitate the achievement of the desired behavior" (p. 67). In essence, culture refers to the values that breed dominant behavioral learning styles. A market-oriented culture is one whose values and beliefs create behavioral norms that focus on manifest customer needs, and thus it promotes adaptive learning. An entrepreneurial culture (Slater and Narver 1995) is one whose values and beliefs create behavioral norms that focus on latent customer needs, and thus it promotes generative learning. Hence, to a large extent, culture dictates the direction (e.g., addressing manifest versus latent customer needs) and type (e.g., adaptive versus generative) of learning.

We, and Slater and Narver (1995), conclude that to maximize performance, firms must (1) generate the values necessary to create a learning organization (e.g., open-mindedness, shared vision), (2) focus on both customers' manifest and latent needs, and (3) create a balance between adaptive and generative learning. We both agree that accomplishing this requires more than a market orientation. The primary difference between the two perspectives is how values and behaviors are packaged into constructs. We attempt to explicitly demarcate the qualitative effect of values from the quantitative effect of behaviors. As a result, we conceptualize market orientation as an organizational characteristic that affects knowledge-producing behaviors and learning orientation as an organizational characteristic that affects knowledge-questioning values. We believe that by making a definitional distinction on the basis of values and behaviors, it will be easier to diagnose the degree to which companies have quantitative (insufficient market-oriented processes) or qualitative (flawed assumptions driving market-oriented processes) learning challenges.

Study Limitations and Future Research Priorities

While direct effects of both learning orientation and market orientation as well as moderating effects of learning orientation were all observed, the specific nature of these effects needs to be more specifically explained. Most notably, we can infer but not directly demonstrate from this research that effects of a strong market orientation result from adaptive learning and that effects of a strong learning orientation result from generative learning. Also, we can infer but not confirm that the inability of market orientation to affect ΔMS when learning orientation is low is due to the lack of generative learning. To address these issues, future research must find ways to operationalize adaptive learning and generative learning and model their effects as intervening constructs that mediate the effects of learning orientation and market orientation on a firm's effectiveness and adaptability. Finally, we speculate that when learning orientation is low, the nature of market-oriented behaviors relating to new product success is likely to be primarily imitative. And, when market orientation is low, we speculate that the nature of the effects of a strong learning orientation on new product success is likely to be innovative, yet possibly misdirected. Future research needs to operationalize imitative and innovative learning to explicitly test this interpretation of the empirical results.

A strong learning orientation is most likely to have a major impact on performance in product categories in which obsolete assumptions about the environment, and how the organization addresses the environment, get in the way of new ideas (e.g., U.S. automobile executives' belief that consumers only cared about style). One may argue that assumptions are most likely to become obsolete in dynamic external environments (e.g., changing customers, competitors, channels, technology). This may be true. On the other hand, one may argue that a strong learning

orientation is just as important in completely stable environments. It is precisely this type of environment in which executives may arguably become most complacent and most likely to settle into routinized modes of operation. In an environment in which no new overt signals from competitors, customers, or channels demand change, improving performance may depend totally on the motivation and ability of an organization to look proactively at the environment in a new way and, in essence, to change it themselves to their advantage. This demands a strong learning orientation. If U.S. automobile executives aggressively challenged their own assumptions about the automobile market while the market was still stable (i.e., before Japan and OPEC created the market for smaller, more efficient automobiles), then they may have prevented or minimized their decline. Shell Oil's decision to question all prevailing assumptions about the oil market and to develop strategic contingencies in the event of increasing oil prices set the stage for dramatic growth after OPEC was created (Senge 1992). Other oil companies that waited for new signals from the market were in no position to respond. The relationship between market conditions and the relative importance of market orientation and learning orientation is an important issue for future research.

Our results should be viewed in light of the constraints of the study. Specifically, the cross-sectional nature of the data limited the degree to which we were able to explore organizational improvement over time. While there is strong evidence that attests to the validity of the genre (Dess and Robinson 1984), our measures of performance are self-explicated as opposed to objective measures. In addition, we sampled primarily large, well-established organizations. It may be interesting to explore learning processes in smaller, struggling organizations.

Conclusion

Our conceptual framework and results extend past theories about market orientation and organizational performance. First, research up to this point has focused on external environmental moderators of the relationship between market orientation and organizational performance. While the findings from these studies have been significant in depicting the importance of market orientation as a source of competitive advantage, they also highlight a gap in the theory. This research addressed that gap by finding a significant effect of an internal environmental moderator of market orientation: learning orientation. To date, no one has operationalized and tested learning orientation in such a manner.

The direct and indirect effects of learning orientation on both new product success and ΔMS address the question, "Is organizational learning associated with superior performance?" (Slater and Narver 1995:71). Higher order learning has been theorized as influencing the quality of market-oriented processes and, ultimately, competitive advantage (Day 1994a; Dickson 1996; Slater and Narver 1995), but this is the first study to offer empirical support for this relationship.

Second, the findings suggest that both market orientation and learning orientation can independently lead to successful new product development activity. However, taken in concert with the positive moderating effect on performance, specifically ΔMS, the results suggest that new product development undertaken when both learning orientation and market orientation are high leads to stronger performance gains. Firms engaging in market-oriented behaviors without appropriate learning environments and processes are likely to be able to adapt current products and programs to the market. But they are less likely to foster a competitive advantage unless their internal environment encourages generative learning, thereby allowing them to lead customers and competitors.

Third, the direct independent effect of learning orientation on all three performance measures suggests, as others have theorized, that market-oriented processes are necessary but not sufficient to maintain competitive advantage. Reacting to market feedback may allow a firm to adapt successfully to explicit changes in the external environment, but it may limit a firm's ability to anticipate change in a proactive manner. So, while a strong market orientation may keep a firm on a steady course, alone, it may not be capable of propelling a firm into a position of market dominance. Firms with both strong learning and market orientations may be best able to uncover and respond to both explicit and latent environmental forces through a combination of adaptive and generative learning that enables innovative and reactive marketplace behaviors.

The Learning Orientation scale (Sinkula et al. 1997) in concert with the MARKOR scale (Jaworski and Kohli 1993) can test the expectations discussed above. The use of these scales may reveal to managers whether their organizational activities derive from (1) a balance of adaptive and generative learning processes that are capable of creating and sustaining competitive advantage (strong market orientation and strong learning orientation), (2) strong adaptive learning processes that are likely to lead to stable long-term performance through effective adaptive learning but less likely to lead to significant gains relative to major competitors (strong market orientation, weak learning orientation), (3) a relative absence of strong market-oriented processes but the ability to engage in highly innovative (albeit high-risk) behaviors that may lead to the creation of competitive advantage but probably not its sustaining (weak market orientation, strong learning orientation), or (4) a relative lack of either the ability to effectively adapt or innovate, which threatens long-term survival (weak market orientation, weak learning orientation).

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NOTES

1. In addition, we explicitly test for this convergence to a second-order construct in our CFA for Learning Orientation.

2. First, tolerance estimates were evaluated to judge whether multicollinearity was an issue. No problems were uncovered. To check for equality of variance, the residuals were plotted against the predicted values as well as against each independent variable. No evidence of heteroskedasticity was detected. Finally, the distribution of residuals was examined for normality. No aberrant patterns were found.

3. We confirmed this finding by conducting a multiple-level analysis to test the hypothesis of equality of regression coefficients across high and low learning orientation groups. Since ΔMS is a single-item indicator (i.e., manifest dependent variable), we followed the technique used by Moorman and Miner (1998). The regression coefficients between the two groups (which were defined by a median split) were examined for differences. Findings confirm the moderating effect of learning orientation on the relationship between market orientation and ΔMS in the hypothesized direction, $t(409) = 3.69$, $p \cong .002$.

4. We confirmed this finding by conducting a multiple-level analysis across the high and low learning orientation groups. Since overall performance is operationalized as a multiitem construct, we followed the method recommended by Bagozzi and Yi (1989) (see also Aiken and West 1991; West, Sandler, Pillow, Baca, and Gersten 1991). This involved comparing a full structural equations model with a restricted model that fixed the unstandardized regression coefficients to be equal in each group, hence there is no interaction effect. A comparison of the goodness of fit measure (χ^2) between models provides a test of the interaction term. With organizational performance as the dependent variable, we found no evidence of an interaction, $\chi^2(1) = .01$, $p \cong .99$.

5. Again, we confirmed this finding by using the same technique delineated in Note 4. We found a significant interaction in the hypothesized direction, $\chi^2(1) = 7.6$, $p \cong .01$, when new product success was the dependent variable.

APPENDIX

I. Independent variables

Market Orientation (MARKOR) — Kohli, Jaworski, and Kumar (1993)

(5-point scale, in which 5 = *strongly agree* and 1 = *strongly disagree*). A 20-item scale consisting of three subconstructs. Some slight wording changes were made to counteract floor and ceiling effects present in the Kohli et al. study.

1. Intelligence generation

- In this business unit, we meet with customers at least twice per year to find out what products or services they will need in the future.
- In this business unit, we do a lot of in-house market research.
- We are slow to detect changes in our customers' product preferences.
- We poll end users at least twice per year to assess the quality of our products and services.
- We are slow to detect fundamental shifts in our industry (e.g., competition, technology, regulation).
- We frequently review the likely effect of changes in our business environment (e.g., regulation) on customers.

2. Intelligence dissemination

- We have interdepartmental meetings at least once a quarter to discuss market trends and developments.
- Marketing personnel in our business unit regularly schedule meetings to discuss customers' future needs with other functional departments.
- When something important happens to a major customer or market, the whole business unit is informed about it within a short period.
- Data on customer satisfaction are disseminated at all levels in this business unit on a regular basis.
- When one department finds out something important about competitors, it is slow to alert other departments.

3. Responsiveness

- We are slow to decide how to respond to our competitors' price changes.
- For one reason or another we tend to react slowly to changes in our customer's product or service needs.
- We constantly review our product development efforts to ensure that they are in line with what customers want.
- Several departments get together periodically to plan a response to changes taking place in our business environment.
- If any competitor were to launch an intensive campaign targeted at our customers, we would implement a response immediately.
- The activities of the different departments in this business unit are well coordinated.

- The positive resolution of all customer complaints is not a top priority in this business unit.
- Even if we came up with a great marketing plan, we would probably not implement it in a timely fashion.
- When we find that customers would like us to modify a product or service, the departments involved make a concerted effort to do so.

Learning Orientation — Adapted from Sinkula, Baker, and Noordewier (1997)

(5-point scale, in which 5 = *strongly agree* and 1 = *strongly disagree*). An 18-item scale consisting of the following three subconstructs:

1. Commitment to learning

- Managers basically agree that our business unit's ability to learn is the key to our competitive advantage.
- The basic values of this business unit include learning as key to improvement.
- The sense around here is that employee learning is an investment, not an expense.
- Learning in my organization is seen as a key commodity necessary to guarantee organizational survival.
- Our culture is one that does not make employee learning a top priority.
- The collective wisdom in this enterprise is that once we quit learning, we endanger our future.

2. Shared vision

- There is a well-expressed concept of who we are and where we are going as a business unit.
- There is a total agreement on our business unit vision across all levels, functions, and divisions.
- All employees are committed to the goals of this business unit.
- Employees view themselves as partners in charting the direction of the business unit.
- Top leadership believes in sharing its vision for the business unit with the lower levels.
- We do not have a well-defined vision for the entire business unit.

3. Open-mindedness

- We are not afraid to reflect critically on the shared assumptions we have about the way we do business.
- Managers in this business unit do not want their "view of the world" to be questioned.
- Our business unit places a high value on open-mindedness.
- Managers encourage employees to "think outside of the box."
- An emphasis on constant innovation is not a part of our corporate culture.
- Original ideas are highly valued in this organization.

II. Dependent variables

Change in Relative Market Share — Adapted from Day (1977)

(7-point scale, in which 7 = *significant increase* and 1 = *significant decrease*). For your business unit's principal served market segment over the past year.

- Change in market share relative to your largest competitor.

New product success — New scale

(7-point scale, in which 7 = *high* and 1 = *low*). For your business unit's principal served market segment over the past 3 years.

- New product introduction rate relative to largest competitor.
- New product success rate relative to largest competitor.
- Degree of product differentiation.
- First to market with new applications.
- New product cycle time (i.e., inception to rollout) relative to competition.

Overall performance — Jaworski and Kohli (1993)

(7-point scale, in which 7 = *excellent* and 1 = *poor*)

- Overall performance in your business unit last year was:
- Relative to competition, overall performance in your business unit last year was:

III. Control variables

From Narver and Slater (1990)

(7-point scale, in which 7 = *high* and 1 = *low*). How would you describe:

Market growth: The average annual growth rate, over the past 3 years, of total sales in your principal served market segment.
Buyer power: The extent to which your unit's customers are able to negotiate lower prices.
Supplier power: The extent to which your unit is able to negotiate lower prices from your suppliers.
Seller concentration: The percentage of total sales accounted for by the top four competitors in your principal served market segment.
Ease of entry: The likelihood of a new competitor being able to earn satisfactory profits in your principal served market segment.
Technological change: The extent to which production/service technology in your principal market has changed over the past 3 years.

Other control variables

(7-point scale, in which 7 = *high* and 1 = *low*). How would you describe:
Competitive intensity: The level of competitive intensity in your principal served market segment.
Market dynamism: In general, the rate of change in the marketplace in your principal served market segment.
Government regulation: The extent to which government regulation inhibits your ability to expand product or customer markets.

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