

A Framework for Market-Based Organizational Learning: Linking Values, Knowledge, and Behavior

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The authors review the concept of organizational learning and present a broad conceptual framework for its modeling. Within this framework, one specific process for market-based organizational learning is postulated. An empirical test of this model leads the authors to conclude that a more positive learning orientation (a value-based construct) will directly result in increased market information generation and dissemination (knowledge-based constructs), which, in turn, directly affects the degree to which an organization makes changes in its marketing strategies (a behavioral construct). Managerial implications are discussed.

Organizations that are competent learners are called "learning organizations." Garvin (1993) defined a learning organization as "an organization skilled at creating, acquiring, and transferring knowledge, and at modifying its behavior to reflect new knowledge and insights" (p. 80). Most scholars view organizational learning as a process, a cognitive enterprise, that unfolds over time, but they differ on other important matters. Some believe that behavioral change is required for learning (Fiol and Lyles 1985); others insist that new ways of thinking are enough (Huber 1991). Some emphasize concrete market information-processing systems (i.e., information generation and dissemination) as the mechanism through which learning

should take place (Sinkula 1994); others stress the need for shared mental models, shared organizational visions, and open-minded approaches to problem solving (Senge 1990, 1992). The former link organizational learning to knowledge acquisition; the latter link organizational learning to value acquisition.

Despite the growing interest in organizational learning (Day 1991; Galer and van der Heijden 1992; Garvin 1993; Moorman 1995; Moorman and Miner 1997; Senge 1990; Tobin 1993), including an emerging appreciation of its relevance to organizational competitiveness, an ambiguity remains about the interrelationships among the factors that breed a desire to learn (i.e., organizational values) versus information-related behaviors that facilitate learning (i.e., market information processing) versus the changes in organizational systems, procedures, and market behaviors that reflect organizational learning (i.e., organizational actions). A growing body of scholarly research identifies these three elements as key components to organizational learning. However, to the best of our knowledge, no attempt has yet been made to empirically test an organizational learning framework that formally interrelates organizational values, market information-processing behaviors, and organizational actions. We assert that these three elements are necessary to maximize the efficiency and ultimate productivity of organizational learning. We propose and test a set of hypotheses based on one of many potential synergistic causal flows among the three elements.

First, we review the concept of organizational learning and introduce a broad conceptual framework for its modeling. Parallel to the discussion of this broader framework, one specific process is postulated. Next, hypotheses per-

taining to this process are proposed and empirically tested using a structural equations methodology. The results are presented, along with a discussion of their implications for organizations. Future research directions are identified.

THE ORGANIZATIONAL LEARNING FRAMEWORK

Organizational Learning

An organization's implicit or explicit understanding of how things are done is often referred to as its theory in use (Argyris and Schön 1978). Organizations act from theory in use. As an organization learns to make sense of its markets, it develops rules for processing information about markets that manifest themselves in internal (e.g., organizational norms, policies, training programs) and external (e.g., product, promotion, distribution, and pricing strategies and tactics) organizational actions. An examination of organizational action outcomes leads to a match or a mismatch of expectations with outcomes, and then to a confirmation or disconfirmation with theory in use (Argyris and Schön 1978; Gioia and Simms 1986).

"Organizational learning occurs when members of the organization act as learning agents for the organization, responding to changes in the internal and external environments of the organization by detecting and correcting errors in organizational theory in use, and embedding the results of their inquiry in private images and shared maps of organization" (Argyris and Schön 1978:23). The organizational learning process is cyclical. Individuals' actions lead to organizational interactions with the environment, and outcomes are interpreted by individuals who learn by updating their beliefs about cause-effect relationships (Lee, Courtney, and O'Keefe 1992).

The Process of Organizational Learning

If one accepts the proposition that organizations are cognitive enterprises (Deshpandé and Webster 1989), then it is important to examine the process of organizational learning using a cognitive framework. One such framework describes institutional learning as "the process whereby management teams change their shared mental models of their company, their markets and their competitors" (de Geus 1988:70). Another characterizes organizational learning as the process through which individual knowledge is transferred to the organization so that it can be used by individuals other than the progenitor (Sinkula 1994). Yet another maintains that an organization learns if "through its processing of information, the range of its potential behaviors has changed" (Huber 1991:89). All of these characterizations have appeal because the process that leads to error detection and correction can change radically from situation to situation.

Rather than define the process of organizational learning, we identify three core facilitators of the phenomenon:

organizational values, market information-processing behaviors, and organizational action. These facilitators are well identified in the literature, but their synergistic effects on one another have not been formally linked. As Figure 1 shows, the specific processes by which each of these three facilitators affect learning involves interrelationships between a number of constructs. We do not attempt to explicate all the constructs that may be involved in the learning process, nor do we attempt to describe all the potential relationships that may exist between the constructs. Descriptively, our proposed framework is a starting point for explicating these relationships. Normatively, it is a starting point for prescribing an optimal organizational learning process, one that has the greatest capacity to identify and correct errors in theory in use and one that is most able to facilitate the transformation of an organization into a learning organization, in which learning is a core competency that can be used to gain and hold a competitive advantage.

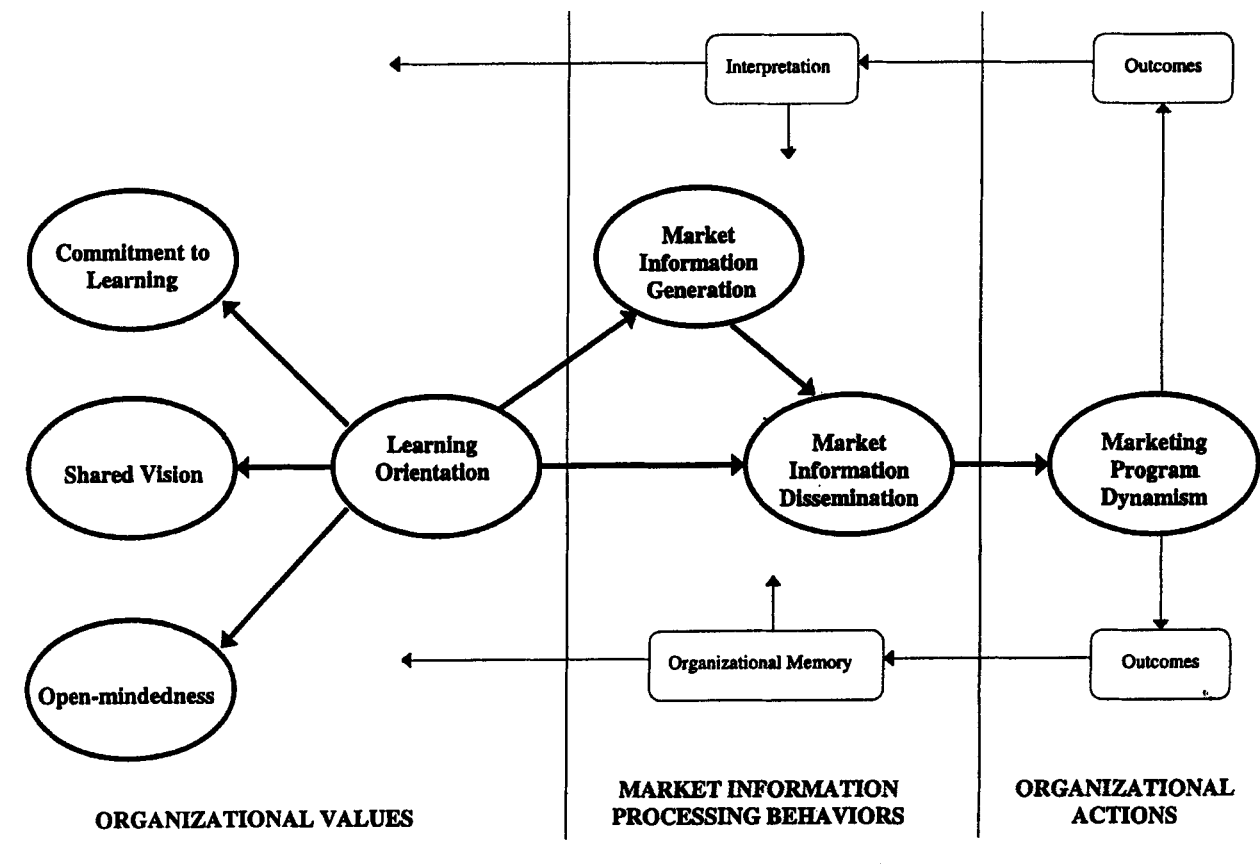
The relationships modeled within the framework displayed in Figure 1 depict effects of organizational values on organizational actions mediated by market information-processing behaviors. These relationships are the focus of the empirical part of this article for two reasons. First, whereas learning orientation pertains to a set of values, market information processing inherently involves knowledge-producing behaviors. Under the assumption that values drive behavior, it is logical to study this primary relationship (McClelland 1985). Second, managers who want to better understand how to maximize organizational learning not only need to know how to structure an organization that can efficiently engage in market information-processing activities, but they need to understand the type of organizational environment that will foster the desire to use this structure (Slater and Narver 1995).

In the next section, we will discuss each of the three core elements of the proposed organizational framework, as well as the specific constructs identified in Figure 1 that embody these elements. Afterwards, we will describe the test of the specific process that is the focus of the empirical portion of our research.

Organizational Actions

Most organizational learning theorists agree that organizational learning ultimately manifests itself through internal and external organizational actions that reflect the operationalization of changes in theory in use (Argyris 1977; Argyris and Schön 1978; Fiol and Lyles 1985; Garvin 1993; Levitt and March 1988; Senge 1990). Organizational actions can take many forms. For example, Kohli and Jaworski's (1990) responsiveness construct reflects market-based organizational actions. The role of organizational actions within the organizational learning framework is more diverse than that of organizational values and market information processing because actions are both the ultimate expression of learning (e.g., Chrysler introduces the cab forward design because aging baby boomers are putting greater emphasis on interior comfort

FIGURE 1
A Framework for Market-Based Organizational Learning



roominess) and a means to facilitate new learning (e.g., a magazine publisher studies differences in response rates in the subscription promotion programs of 10 of its magazines to assess which approach is most successful). The former represents a change in theory in use; the latter represents an experiment with theory in use, which may or may not facilitate a change in theory in use.

In a marketing context, marketing program dynamism (i.e., the frequency with which program modifications are made) may be the most appropriate short-term measure of organizational learning. Whereas market performance may be superior in the long run, short-term market performance measures may be less capable of revealing active learning behavior than marketing program dynamism measures because a change in market performance is not a simple function of absolute organizational learning. First, before market performance changes can be expected, absolute thresholds of improvement must be surpassed (e.g., an automobile manufacturer may improve the braking ability of its automobiles 10%, but a 25% improvement may be necessary before consumers are able to perceive and, hence, react to the improvement). Therefore, learning may be affecting the dynamism of new product development (improvement) without affecting market performance. Second, the rate of learning within an organization

must be at least equal to that of competitors if changes in market performance are to be expected (e.g., an automobile manufacturer must increase the fuel efficiency of its automobiles at a faster rate than that of its competitors if it expects to realize increases in market share among fuel-efficient-conscious consumers). For these reasons, in the short run, measures of market performance may mask real improvements in the learning capabilities of an organization.

Over the long run, however, organizations must be able to learn at a rate that at least equals environmental change if they are to develop and maintain core competencies that have value in the market (Stata 1992). Learning at a slower than baseline rate of environmental change is indicative of learning deficiencies that are likely to lead to an eroding position in the market, even if absolute dynamism is relatively strong. For example, over time, a semiconductor manufacturer may have an impressive array of new generation product introductions and a steep experience curve, but if other producers introduce new lines at a faster rate and lower cost, then the absolute marketing dynamism of the company is a misleading measure of the firm's long-term ability to learn. Thus, in the long run, the success of the learning activities should be addressed by performance measures (Pralhad and Hamel 1990; Stata 1992).

In the specific process that is the subject of the empirical portion of this article, organizational action is conceptualized as an outcome measure of the learning facilitated by organizational values and market information processing. Because the time frame of the empirical work is short term rather than long term, it is operationalized through measures of marketing program dynamism rather than market performance.

Market Information-Processing Behaviors

Because organizations are cognitive enterprises, understanding how they process market information is critical to understanding how they learn. Market information processing is a necessary condition for organizational learning; essentially, it is the process by which information is transformed into knowledge (Day 1994; Huber 1991; Sinkula 1994). Like all elements of the organizational learning framework, it can be both an antecedent and a consequence of learning.

Although there is some variance in the specifics, organizational learning scholars typically conceptualize market information processing as including four primary constructs: information generation, dissemination, interpretation, and memory (Day 1994; Dixon 1992; Huber 1991; Sinkula 1994; Zuboff 1988). Arguably, each of these constructs comprises microprocesses within the larger concept of market information processing. That is, information generation is the process by which information is collected. Information dissemination is the process by which information is shared and diffused horizontally and vertically throughout the organization (Argyris and Schön 1978; Jelinek 1979). Information interpretation is the process by which information is given one or more commonly understood meanings, and organizational memory is the process by which knowledge is stored, physically or cognitively, for future use.

Information generation and dissemination are overt, pivotal aspects of organizational information processing (Day 1991; Kohli and Jaworski 1990; March and Shapira 1982). Information generation is arguably the most important element of market information processing because, without it, there is no opportunity for the firm to keep abreast of its customer and competitor environments. Likewise, unless acquired information is efficiently disseminated to decision makers, there is no opportunity to employ it to detect and/or correct errors in theory in use (Daft and Huber 1987).

There is general consensus on the importance of information interpretation and organizational memory. Before an organization can act on the information it generates and disseminates, it must be interpreted. Managers employ mental models to interpret information (Day and Nedungadi 1994). The effectiveness of market information processing is ultimately dependent on the degree to which the mental models that are used to interpret information are adequate representations of reality and, specifically, whether the assumptions about the market and the key

relationships between actions and outcomes are accurate and shared throughout the organization (Day 1992a; Senge 1990, 1992). For example, an automobile manufacturer may do an excellent job of acquiring customer perceptions of the economy of operation, comfort, styling, and durability of its automobiles. However, if managers have flawed mental models that lead them to act on the assumption that comfort and styling are the two key criteria when in fact economy of operation and durability are critical, then misinterpretation of the information is likely to lead to flawed learning and thus flawed organizational actions.

Organizational memory is the collective knowledge of an organization and contains theories in use, shared mental models, information databases, formalized procedures and routines, and formal cultural mores that guide behavior (Slater and Narver 1995). The extent to which organizations are able to store and access past lessons of history will affect their ability to maintain a steady pace of long-term learning that continually builds from the past. Without an effective organizational memory, firms may be caught in a trap where ongoing learning efforts breed long-term marketing program dynamism but fail in producing long-term market performance improvements because they are trapped in a "two steps forward, one step back" quagmire.

Although information interpretation and organizational memory are key market information-processing constructs, it is far more difficult to explicitly model and measure their effects in a process sense. As noted, generation and dissemination activities are more overt, explicit, and observable. Conversely, interpretation and memory are more tacit, covert, and unobservable. Their tacit nature, particularly in the case of interpretation, makes them difficult not only to observe but to communicate relative to more explicit tasks and information (Nonaka 1991). For example, it is relatively easy for an automobile manufacturer to explain the formal and informal systems employed to collect and share information relevant to the design of an automobile, but it is far more difficult to communicate the mental models, perceptual filters, and information-processing biases that are stored and accessed from memory to interpret this information, partially because their effects often operate at the unconscious level (Nisbett and Wilson 1977). To date, the impact of interpretation and organizational memory on learning has, for the most part, been determined by analogy rather than by direct investigation.¹

Organizations need two information systems: a logistical system to handle the generation and dissemination of information and an interpretive system that enables parts of the system to come to agreement on the interpretation of information (Daft and Huber 1987). The former can be explicitly modeled as "nuts and bolts" market information-processing behaviors. The latter involves market information-processing behaviors, but because they are more cognitive and qualitative in nature, they are conceptualized here as more pervasive moderators of the quality of the entire organizational learning process (see Figure 1). That is, whereas generation and dissemination fit neatly into the

market information-processing element of the organizational learning framework, interpretation and memory have a more ubiquitous reciprocal relationship with organizational values, organizational actions, and the more overt market information-processing behaviors. The inherent difficulty in explicitly modeling and measuring these relationships limited the inclusion of interpretation and memory in the empirical portion of our research.

Organizational Values (Learning Orientation)

One can conceptualize learning orientation as giving rise to that set of organizational values that influence the propensity of the firm to create and use knowledge. Learning orientation influences the degree to which an organization is satisfied with its theory in use and, hence, the degree to which proactive learning occurs. In this respect, learning orientation affects the information that it attends to, interprets, evaluates, and ultimately accepts or rejects (Argyris and Schön 1978; Dixon 1992; Hedberg 1981). Three organizational values routinely associated with the predisposition of the firm to learn are commitment to learning, open-mindedness, and shared vision (Day 1991, 1994; Senge 1990, 1992; Tobin 1993). They are core components that reflect the learning orientation construct depicted in Figure 1.

Commitment to Learning

Central to the organization's learning orientation is the fundamental value it holds toward learning. This value influences whether an organization is likely to promote a learning culture. If an organization places little value on learning, little learning is likely to occur (Norman 1985; Sackmann 1991). Commitment to learning is related to Senge's (1990) discussion of learning principles (i.e., whether the value placed on the learning activity can be viewed as axiomatic), Tobin's (1993) notion of "thinking literacy" (i.e., whether the ability to think and reason is a value axiomatic to the organization), and Galer and van der Heijden's (1992:11) belief that a "culture amenable to learning" is a prerequisite to its ability to improve its understanding of its environment over time. Shaw and Perkins (1991) maintain that learning-efficient companies are reflective; that is, they must value the need to understand the causes and effects of their actions.

Open-Mindedness

Mental models, deeply held images of how the world works, limit us to familiar ways of thinking and acting (Day and Nedungadi 1994). Successes and failures of the past support the formation of mental models about how the marketplace works. As time passes, these models may no longer hold true but may still operate unless an organization has the open-mindedness to question them (Day 1994; Porac and Thomas 1990; Senge 1992; Sinkula 1994). 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 first phase of

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

Shared Vision

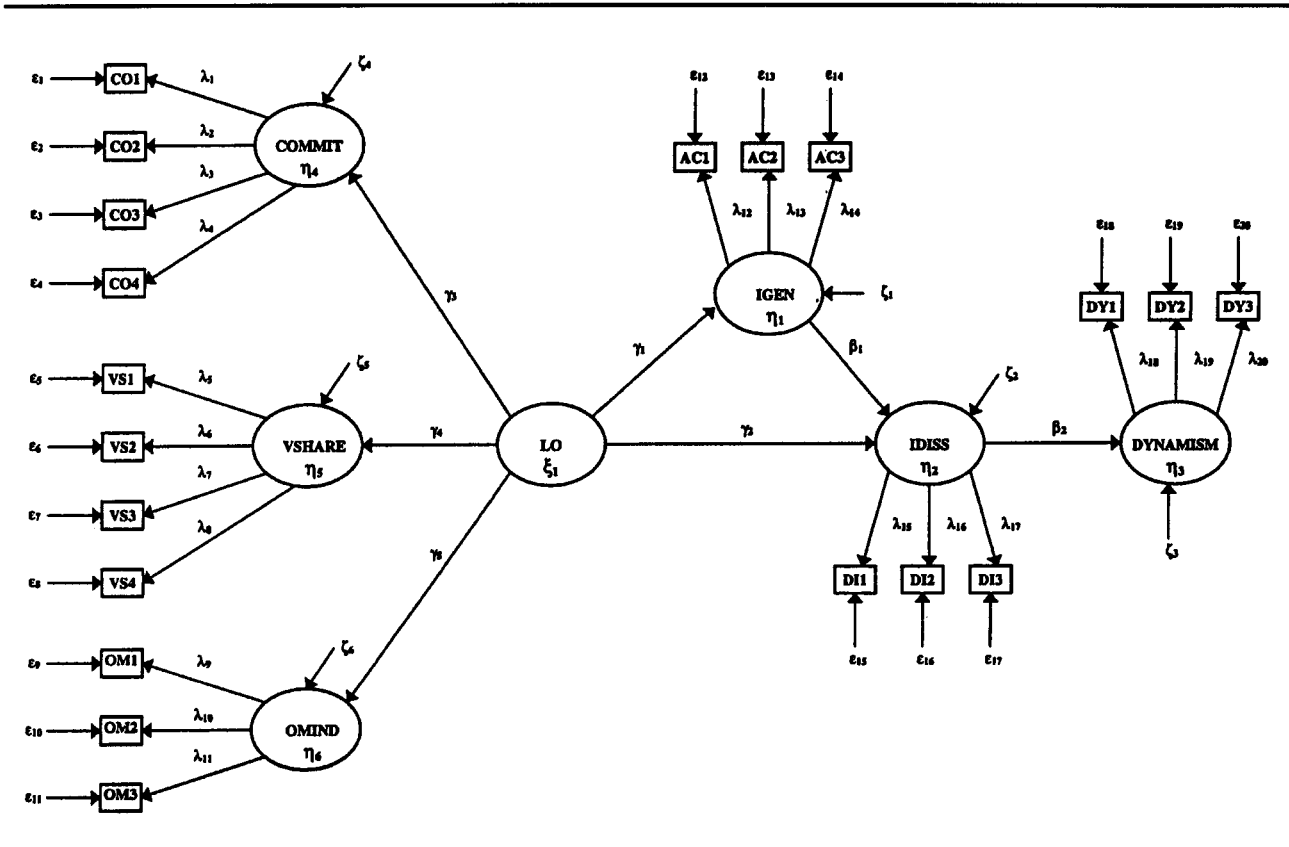
Shared vision is different from commitment to learning and open-mindedness in that it influences the direction of learning, whereas commitment and open-mindedness influence the intensity of learning. It is crucial to include both dimensions (direction and intensity) to build a comprehensive learning orientation construct that is in congruence with extant theory and practice. Most scholars who write about organizational learning view the concept of vision sharing as a crucial foundation for proactive learning because it provides direction—a focus for learning that fosters energy, commitment, and purpose among organizational members (Day 1994). Without commitment to and agreement with the direction the organization is taking, less motivation to learn is likely (McKee 1992; Norman 1985; Senge 1990). Furthermore, without a shared vision, individuals are less likely to know what organizational expectations exist, what outcomes to measure, or what theories in use are in operation. In this ambiguous environment, even if one is motivated to learn, it is difficult to know *what* to learn.

Companies without shared visions tend to have multiple "thought worlds" (Dougherty 1989). Even when employees work in teams, their collective interpretations may remain myopic to their function within the company because of unexamined differences in thought worlds. Collaboration on new product projects is especially susceptible to divergent views. For example, when project participants are asked what a new automobile vehicle concept means, some may define it by main component technologies; others by performance; others by the customer target; and still others by its image and personality (Clark and Fujimoto 1990; Day 1992a). Such divergent or conflicting assumptions undermine the ability of the management team to develop a focused response to market trends or environmental shocks, an ability that represents a true test of organizational capabilities.

A learning organization is more than adaptive—it is generative (Slater and Narver 1995). All companies will attempt to learn when environmental changes force change on them. Companies that can adapt when things are going well will be the long-term winners. Jaworski and Kohli (1993) regard the ability to sense and respond to markets as key elements of market orientation. In their conceptualization, organizations that are market oriented are better able to respond to negative environmental jolts and are likely to experience better overall financial performance.

In the short run, an increase in learning orientation is expected to directly affect the quality and quantity of the more explicit market information-processing behaviors (information generation and dissemination) and to indirectly increase marketing program dynamism through these market information-processing effects. In the long run, an increase in learning orientation is expected to also affect the quality of information interpretation and memory functions and to indirectly increase organizational

FIGURE 2
Tested Measurement Relations and Structural Paths



performance through the cumulative effects of all market information-processing improvements.

HYPOTHESES

To summarize our discussion, organizational learning is a dynamic process that involves three major elements. Any number of processes involving the three elements may lead to the identification of a discrepancy between expectation and outcomes that prompts a change in theory in use. However, we propose that firms that proactively address all three elements will have the greatest opportunity to learn frequently and effectively.

The process explicated in Figure 1 details how learning orientation affects organizational learning through its effect on market information processing. Because marketing program dynamism is the outcome measure of organizational learning, the domain of the study is short term. It is important to examine the degree to which values drive behavior (McClelland 1985); managers seeking to maximize organizational learning not only need to know how to develop efficient market information-processing activities, but they must also understand how to foster an organizational environment that will breed the desire to use this

structure (Slater and Narver 1995). The hypotheses are as follows:

- H1:** The extent to which an organization engages in market information generation will be a function of its learning orientation.
- H2:** An organization's dissemination of market information will be a direct and indirect function of its learning orientation. The indirect effect of learning orientation on market information dissemination occurs through its influence on market information generation.
- H3:** The frequency with which an organization changes its marketing programs (i.e., mix of products/brands, promotions, and sales strategies) will be a function of the extent to which it disseminates market information.

Based on these hypotheses, Figure 2 depicts the structural relations expected to exist among the major constructs underlying the process in Figure 1.² Employing the notation in Figure 2, the major empirically testable propositions are as follows: (1) learning orientation will positively affect market information generation, or $\gamma_1 > 0$; (2) market information generation will positively affect market information dissemination, or $\beta_1 > 0$; (3) learning

orientation will positively affect market information dissemination, or $\gamma_2 > 0$; and (4) market information dissemination will positively influence marketing program dynamism, or $\beta_2 > 0$.

METHOD

Sample and Data Collection

Prior to the collection of data, approximately a dozen business practitioners were personally interviewed to help determine whether differences in perceptions about the organizational learning process could be discerned across levels of managerial responsibility or across industries. The individuals selected represented a diversity of industries and a range of managerial hierarchy (from CEO to upper-level management). Based on numerous open-ended discussions, we concluded that it would be appropriate to sample subjects in upper to high organizational levels across different industries.

Data collection consisted of a random sample of key informants from organizations drawn from the 1994 American Marketing Association membership roster. A total of 276 names were drawn from this sampling frame after first eliminating those whose administrative titles suggested that they were not high enough in their organizational hierarchy to provide informed responses on the measures. Respondents were sent direct mail questionnaires in two waves. Usable responses were obtained from 125 key informants. Of those mailed, five questionnaires were returned as undeliverable. Hence, our usable response rate was approximately 46 percent. Nonresponse bias was assessed by a multivariate analysis of variance (MANOVA) that modeled key constructs as the dependent vector against early versus late respondents (Armstrong and Overton 1977). The results indicated no significant multivariate or univariate relationships; thus, we did not expect nonresponse bias. Table 1 provides selected descriptive statistics of the responding firms.

Measures

Learning Orientation Elements

Consistent with the conceptual framework, an organization's commitment to learning (COMMIT), shared vision (VSHARE), and open-mindedness (OMIND) are first-order indicators of a higher, second-order construct—namely, learning orientation (LO). Each of these first-order constructs was operationalized using a 5-point Likert-type scale ranging from *strongly agree* to *strongly disagree*. The items used for the measures, along with the other measures discussed below, are listed in the appendix.

Language for the items is well grounded in the literature. The specific wording of items for the COMMIT construct came from Galer and van der Heijden (1992), Garratt (1987), and Tobin (1993). Verbiage used to operationalize VSHARE is rooted in the writings of Senge (1990, 1992) and Tobin (1993). Day's (1991, 1992a,

TABLE 1
Sample Characteristics (125 firms)

Characteristic (Variable Name)	Category	%
Number of employees (SIZE)	Less than 100	4.1
	101 to 500	10.7
	501 to 1,000	11.6
	1,001 to 5,000	19.8
	5,001 to 25,000	22.3
	25,001 or more	31.4
Company age (AGE)	Less than 20 years	15.6
	21 to 50 years	23.0
	51 to 75 years	18.9
	76 to 100 years	19.7
	101 to 125 years	10.7
Company type (COTYPE)	More than 125 years	12.3
	Manufacturer	61.5
	Service firm	38.5

1992b) articles, as well as those of Senge (1990, 1992) and Slater and Narver (1994), heavily influenced the crafting of the OMIND items. The original items were then evaluated by a panel of business practitioners and academics. In this phase, numerous items were eliminated, added, and reworded. This stage of the measure development process yielded six measures that were judged to reflect different shades of meaning for each hypothetical construct (Churchill 1979). Item pruning and measure validation will be discussed in the next section.

Marketing Program Dynamism

Marketing program dynamism (DYNAMISM) refers to the frequency with which an organization changes its mix of products/brands, sales strategies, and sales promotion/advertising strategies. As noted above, we focus on marketing program dynamism as a short-term outcome measure of organizational learning. Marketing program dynamism was measured using Achrol and Stern's (1988) three-item measure. In keeping with their operationalization, a 7-point scale (from *no change* to *very frequent change*) was employed. The measure, which has its origins in the works of Child (1972) and Aldrich (1979), is intended to capture the perceived frequency of change in controllable, marketing strategy-related actions.

This operationalization does not embrace the entire universe of internal and external organizational actions that may be affected by learning, but it is sufficiently broad to allow for variation in the proposed model's focal variables and hence permits rigorous tests of the hypotheses. This study context provides "a rigorous test of boundary conditions" (Brown and Peterson 1994:73) in which the boundary we examine is that of marketing strategy-related change frequency in organizations. If the hypotheses hold up in this relatively focused context, then future efforts can examine application of the model to more broadly defined changes in internal and external organizational actions.

Market Information Generation

The generation of information by an organization (IGEN) was measured using three 5-point Likert-type scales (from *strongly agree* to *strongly disagree*) devel-

oped by Jaworski and Kohli (1993). These items measure what Jaworski and Kohli describe as the generation of market intelligence on current and future customer needs, a type of market information-processing behavior essential in order for learning to occur.

Market Information Dissemination

The dissemination of market information (IDISS) was measured using three 5-point Likert-type scales (from *strongly agree* to *strongly disagree*) proposed by Jaworski and Kohli (1993). The scales assess the dissemination of intelligence across the organization, a type of market information-processing behavior essential for detecting and correcting errors in theory in use.

ANALYSIS AND RESULTS

Measure Validation

Figure 2 illustrates the proposed latent variable model, showing all structural paths and measurement relations. Prior to testing this model and attempting to draw substantive inferences about the merits of the hypotheses, we discuss tests performed to establish the convergent and discriminant validity of the measures.

First-Order Factors

In the case of the first-order constructs (COMMIT, VSHARE, OMIND, IGEN, IDISS, and DYNAMISM), coefficient alpha was computed initially to assess the internal consistency reliability of the measures. Items exhibiting low correlations with the total score were deleted from the domain of each construct. As a result, the scales for IGEN and IDISS are abbreviated versions of Jaworski and Kohli's (1993) scales. Table 2 provides relevant measurement information. Because coefficient alpha neither takes measurement error into account nor provides an explicit test of the null hypothesis that a specific model adequately describes the observed data (Bagozzi 1980; Churchill 1979; Long 1983), confirmatory factor analyses were performed to assess the hypothesized factor structures.³

The measurement models for OMIND, IGEN, IDISS, and DYNAMISM each consist of simple first-order factors with three variable indicators. If one were to adhere to conventional procedures and assume one loading per model fixed at 1.0 to set the metric, each model would have six variances and covariances and six independent parameters and hence zero degrees of freedom. Specified this way, the models would be guaranteed to fit perfectly and would be of little substantive interest (Loehlin 1987). To test potentially rejectable models, it is necessary to gain at least one additional degree of freedom. Therefore, we constrained two of the loadings to be equal in the case of each three-variable indicator factor based on similarities in the magnitudes of the loadings in the unconstrained models. Confirmatory analyses of these more parsimonious models indicate that one cannot reject the null hypothesis that the items converge to single constructs.⁴ That is, conver-

TABLE 2
Measurement Information

Construct	(1)	(2)	(3)	(4)	(5)	(6)
(1) COMMIT	.87					
(2) VSHARE	.69 (.06)	.86				
(3) OMIND	.78 (.06)	.68 (.07)	.80			
(4) IGEN	.48 (.09)	.58 (.08)	.46 (.10)	.74		
(5) IDISS	.57 (.08)	.62 (.07)	.80 (.06)	.70 (.07)	.82	
(6) DYNAMISM ^a	.21 (.10)	.13 ^b (.10)	.30 (.10)	.08 ^b (.11)	.26 (.10)	.77

NOTE: The alpha coefficient for each construct is indicated in bold along the diagonal. Construct correlations are located off the diagonal. Standard errors are in parentheses.

a. Measured on a 7-point scale. All other constructs used 5-point measures.
b. Not significant at the .05 alpha level.

gent validity is established and, accordingly, the unidimensional representations of the constructs are supported. The amount of variation in the measures accounted for by the four constructs (Bagozzi 1980) ranges from 29 percent to 74 percent, with average R^2 values of .54 for OMIND, .48 for IGEN, .61 for IDISS, and .58 for DYNAMISM.

The measurement models for COMMIT and VSHARE each involve simple first-order factors with four variable indicators. Again, confirmatory analyses of these models provide evidence of convergence to single constructs.⁵ The amount of variation in the measures accounted for by the two constructs ranges from 46 percent to 77 percent, with average R^2 values of .63 for COMMIT and .59 for VSHARE.

Discriminant validity was assessed by examining the 95 percent confidence intervals (plus or minus 1.96 standard errors) around all $(6)(5)/2 = 15$ possible pairwise factor correlations to see whether they encompass 1.0 (Anderson 1987). Table 2 provides these correlations. As expected, the factor correlations range considerably in value, from $\phi_{ij} = .08$ (between IGEN and DYNAMISM) to $\phi_{ij} = .80$ (between OMIND and IDISS). However, none of the confidence intervals encompasses 1.0, indicating discriminant validity among the constructs.⁶

Second-Order Factor (Learning Orientation)

We conceptualize learning orientation (LO) as a higher ("second") order construct from which the subconstructs of COMMIT, VSHARE, and OMIND emanate. Specifically, we propose that the intercorrelations among the first-order factors of COMMIT, VSHARE, and OMIND are explainable in terms of a higher order learning orientation construct.

To establish the existence of a single second-order factor for LO, we explicitly tested the null hypothesis that the first-order factors converge to a single higher order construct. Table 3 shows the loadings, t statistics, and fit indices resulting from fitting this model to the data. As can

TABLE 3
Learning Orientation (LO) Second-Order Measurement Model

Indicator (Parameter)	COMMIT	VSHARE	OMIND
Standardized first-order loadings (λ_i) ^a			
CO1 (λ_1)	.784 ^b		
CO2 (λ_2)	.854 (10.07)		
CO3 (λ_3)	.725 (8.33)		
CO4 (λ_4)	.808 (9.45)		
VS1 (λ_5)		.739 ^b	
VS2 (λ_6)		.682 (7.20)	
VS3 (λ_7)		.775 (8.19)	
VS4 (λ_8)		.842 (8.79)	
OM1 (λ_9)			.680 ^b
OM2 (λ_{10})			.810 (7.31)
OM3 (λ_{11})			.720 (6.76)
Standardized second-order loadings (γ_j) ^a			
First-order construct (parameter)	Learning orientation (LO)		
COMMIT (γ_3)	.885 (8.16)		
VSHARE (γ_4)	.778 (6.94)		
OMIND (γ_5)	.880 (6.85)		
Goodness-of-fit statistics			
$\chi^2(41) = 51.15, p = .13$			
Bentler's comparative fit index = .99			
Bentler and Bonett's nonnormed index = .98			

a. *t* values from the unstandardized solution are shown in parentheses.
 b. Fixed parameter.

be seen, a unitary second-order factor fits the data quite well. There is evidence of convergence of the variable indicators within their respective first-order factors (COMMIT, VSHARE, and OMIND) and convergence of the first-order factors within the second-order (LO) construct. This second-order test of convergence yields first-order loadings parameters and overall goodness-of-fit statistics that are identical in all ways to those of a three-factor first-order model with unconstrained phi coefficients (for a discussion of this, see Bentler 1989). The amount of variation in the first-order factors accounted for by LO is 78 percent in the case of COMMIT, 60 percent for VSHARE, and 77 percent for OMIND. Since it adequately explains the intercorrelations among the first-order factors, we employ the second-order model to represent composite learning orientation (LO).

Hypotheses Tests

Given evidence of correspondence between the hypothesized constructs and their respective indicators (convergent validity), as well as evidence that the constructs are distinct (discriminant validity) (Bagozzi and Phillips 1982), we proceeded to test the overall model shown in Figure 2.

TABLE 4
Parameter Estimates for Measurement Relations and Causal Paths

Parameter	Standardized Parameter Estimate ^a
λ_1	.79 ^b
λ_2	.86 (10.17)
λ_3	.72 (8.28)
λ_4	.81 (9.49)
λ_5	.74 ^b
λ_6	.68 (7.16)
λ_7	.78 (8.26)
λ_8	.84 (8.83)
λ_9	.68 ^b
λ_{10}	.78 (7.36)
λ_{11}	.75 (7.12)
λ_{12}	.68 ^b
λ_{13}	.63 (5.64)
λ_{14}	.76 (6.23)
λ_{15}	.73 ^b
λ_{16}	.86 (8.70)
λ_{17}	.75 (7.78)
λ_{18}	.52 ^b
λ_{19}	.82 (5.54)
λ_{20}	.87 (5.43)
γ_1	.58 (4.44)
γ_2	.58 (4.39)
γ_3	.82 ^b
γ_4	.78 (6.03)
γ_5	.94 (6.12)
β_1	.36 (2.98)
β_2	.27 (2.42)
Goodness-of-fit statistics	
$\chi^2(163) = 181.3, p = .16$	
Bentler's comparative fit index = .98	
Bentler and Bonett's nonnormed index = .98	

a. *t* values from the unstandardized solution are shown in parentheses.
 b. Fixed parameter.

The standardized parameter estimates for the measurement relations and structural paths of the model are presented in Table 4. Based on the nonsignificant chi-square, $\chi^2(163) = 181.3, p = .16$, as well as such indicators of model adequacy as Bentler's comparative fit index (.98), the root mean square residual (.07), and Bentler and Bonett's nonnormed index (.98), the fit of the overall model to the data appears to be good.

Measurement Relations

With respect to the measurement portions of the model, all of the parameter estimates are large and statistically significant, which is consistent with the findings from the validation assessment. The amount of variation in the measures accounted for by the six first-order constructs ranges from .28 to .76, with average R^2 values of .63 for COMMIT, .55 for OMIND, .58 for VSHARE, .48 for IGEN, .61 for IDISS, and .57 for DYNAMISM. With respect to LO, the amount of variation in the first-order

constructs accounted for by the second-order construct is well over 50 percent for each of the three subdimensions. Specifically, the R^2 values are 67 percent for COMMIT, 61 percent for VSHARE, and 88 percent for OMIND.

Structural Paths

The parameter estimates for the structural paths γ_1 , γ_2 , β_1 , and β_2 are all positive and statistically significant, which is consistent with the direct and indirect effects predicted in the hypotheses. As hypothesized in H1, the endogenous construct, market information generation (IGEN), is a function ($\gamma_1 = .58$) of the exogenous construct, learning orientation (LO). In H2, we posited both direct and indirect effects of learning orientation on market information dissemination, with the indirect effect mediated by market information generation. In fact, the direct effect of LO on the endogenous construct, IDISS, is $\gamma_2 = .58$. Because IDISS is also a positive function of IGEN ($\beta_1 = .36$), the indirect (or secondary) effect of LO on IDISS can be calculated as $(\gamma_1)(\beta_1) = .21$. The total effect of LO on IDISS is then given by the sum of the direct effect and the indirect effect, or $.58 + .21 = .79$. Accordingly, whereas the direct effects of LO on IGEN and IDISS are the same (at $.58$ each), the total effect of LO on IDISS via the intervention of IGEN is substantially greater (.79). With respect to H3, the endogenous construct, marketing program dynamism (DYNAMISM), is a function ($\beta_2 = .27$) of market information dissemination (IDISS). The amount of variance in the endogenous constructs explained by the predictor variables, in every case statistically significant, varies considerably. Approximately 34 percent of the variance in IGEN is explained by LO, 70 percent of the variance in IDISS is explained by LO and IGEN, and 7 percent of the variance explained in DYNAMISM is due to IDISS. Finally, and on a descriptive note, we report the total effect of LO on DYNAMISM. This consists of the sum of two indirect effects: the indirect effect of LO on IGEN, which subsequently influences IDISS, which in turn affects DYNAMISM; and the indirect effect of LO on IDISS, followed by the influence of IDISS on DYNAMISM. This total effect of LO on DYNAMISM is given by $(\gamma_1)(\beta_1)(\beta_2) + (\gamma_2)(\beta_2) = (.58)(.36)(.27) + (.58)(.27) = .21$.

CONCLUSIONS

Study Conclusions and Limitations

An essential purpose of our effort has been not simply to conceptualize a process of organizational learning but to make the first empirical attempt to integrate some of its well-established yet disparate components. In attempting to understand the process, we observed that there is no "one way" that organizations learn. Organizations might learn actively or passively, by their own volition or through force, as a luxury or by necessity, through systematic analysis or by trial and error, and through long-term versus short-term feedback from a dynamic or stable environment. Hence, we do not propose *the* model of organizational learning. But we do propose that the quality and

efficiency at which an organization learns is a function of its core values as it interacts with its market information-processing behaviors and actions. Our empirical model measures learning orientation and enumerates the relationship between it and a short-term outcome-based measure of learning as mediated by overt market information-processing behaviors.

We find it reasonable to expect that, in practice, a higher order construct (learning orientation) exists, and it gives rise to organization-wide learning-specific values. Hence, our explication of the learning orientation construct leads us to conclude that it is best operationalized as a second-order factor. In so doing, our approach has been to sample from the domain (Churchill 1979) of first-order constructs to provide a meaningful, yet parsimonious, measure of learning-related organizational values. In the day-to-day operations of the firm, not only do these values allow learning to ensue, but they determine its speed and accuracy. Accordingly, we followed stringent and well-accepted protocols for scale development and testing (Anderson 1987; Bagozzi 1980; Bentler 1989; Long 1983) to configure a learning orientation measure that demonstrates an excellent second-order model fit with our observed data. Strong empirical findings confirm our original conceptualization of learning orientation.

Our tests of the hypotheses lead us to conclude that a more positive learning orientation will directly result in increased market information generation and dissemination. Additionally, learning orientation has an indirect effect on market information dissemination, a vital market information-processing behavior that, in turn, directly affects the degree to which an organization makes changes in its marketing strategies. Finally, we conclude that an organization's learning orientation, mediated by its market information-processing behaviors, affects the propensity to change (as exemplified by marketing strategy).

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. In addition, we sampled primarily large, well-established organizations. It may be interesting to see how smaller, struggling organizations go about learning. We do not explicitly include organizational interpretation and memory in our empirical model. Future efforts, particularly those that study the long-term effects of organizational learning on market performance, should strive to include these subprocesses. Finally, it should be noted that a certain degree of market program dynamism could be triggered by factors other than learning. Future efforts should explore the degree to which this occurs.

Implications and Further Directions

In 1992, the Marketing Science Institute encouraged researchers to investigate the following question: "How can firms instill and foster a learning orientation and better retain and store managerial knowledge?" Our findings provide guidance for a crucial first step, the assessment of the firm's current learning orientation. In so doing, top

managers may find, for example, that they have not conveyed their commitment to learning, vision, or the degree to which established mental models should be questioned. Assessing the organization's current learning orientation may also reveal certain disabling organizational structures and groupings. Such maladies in organizational design could restrict cross-functional teamwork and inhibit the degree to which experience lessons are communicated across departmental boundaries.

After an assessment of the firm's current learning orientation, an obvious second step would be to create an environment that is more instrumental to learning. However, forging a learning organization is not easy. As Garvin (1993:91) noted, "Most successful examples are the products of carefully cultivated attitudes, commitments, and management processes that have accrued slowly and steadily over time." Although modifications of organizational structure and with the formation of boundary-spanning teams can be implemented rather quickly, establishing a shared understanding of organizational vision and values and the mental models to operationalize them may take longer (or, indeed, never happen at all).

Accordingly, one of the foremost actions that managers can take to enhance the learning orientation of their firm is to "cultivate the art of open, attentive listening. Managers must be open to criticism" (Garvin 1993:87). Such openness will facilitate dialogue about individual beliefs and values, thereby inculcating a shared organizational vision. Managers must be willing to criticize constructively. Argyris (1994:79) considered two primary barriers to organizational learning to be "individual defensive reasoning," which occurs when managers "censor what everyone needs to say and hear . . . for the sake of 'morale' and 'considerateness,' and "organizational defensive routines," which are "policies, practices, and actions that prevent human beings from having to experience embarrassment or threat and, at the same time, prevent them from examining the nature and causes of that embarrassment or threat." Hence, creating an environment that is more instrumental means unlearning routines that discourage openness (Nystrom and Starbuck 1984; Senge 1990). Arguing that double-loop (i.e., generative) learning requires individuals in organizations to question their own behavior and assumptions, Argyris (1994) regards such managerial benevolence as "anti-learning." Senge (1992) concurred with this line of reasoning and proposed that organizational learning stems from individuals who are willing to question their mental models. He noted that the "discipline of managing mental models—surfacing, testing, and improving our internal pictures of how the world works—promises to be a major breakthrough for building learning organizations" (p. 4).

Most important, creating a conducive learning environment cannot be done without commitment from the top (Senge 1990). Slater and Narver (1995) noted that the leader must communicate a well-crafted, motivating vision for the organization. Such leaders have a personal, high commitment to learning. They view learning as a key ingredient in achieving competitive advantage. They mo-

tivate and instill a learning orientation in those around them. They get involved personally in facilitating a learning orientation in their organizations (Slater and Narver 1995).

As a third step, organizations should examine and attempt to improve on their market information-processing behaviors. Overt market information-processing behaviors (information generation and dissemination) will be most easily examined. Key questions might include some from the following partial list: How do we acquire information? How much market information is acquired and never disseminated? How do we route information? What are the logistical issues in routing information in the organization? Do logistical issues keep information from key individuals? Understanding the complex processes that underlie covert market information-processing behaviors (information interpretation and memory) will prove to be a much more difficult, albeit necessary, exercise. Key questions here might include some from the following partial list: How do managers' mental models represent marketplace realities? Do these mental models facilitate or inhibit managers' interpretation and retention of market information? Are attempts made to identify and reconcile differences in managers' mental models that lead to discrepant interpretive outcomes? Is market information interpreted only by marketers or by managers across the organization? Is there a means to accurately transfer individuals' knowledge into organizational memory? How retrievable is information from organizational memory?

Finally, the organization should examine how its values and market information-processing behaviors affect its propensity to act. Learning-efficient organizations are likely to be more nimble, changing their marketing strategies in a rapid and fluid manner to anticipate, neutralize, or possibly flourish from shocks incurred in unstable environments.

Findings derived from this study represent significant incremental knowledge that should be built on in three ways. First, our conceptualization can be best described as a macro model, a framework consisting of many potential subprocesses. Hence, we view this study as a starting point for research into each of these subprocesses, research that must be done to cast new light on organizational learning as it affects competitive advantage. Future research should explore, in greater detail, the process of information generation, the process of information dissemination, the process of organizational interpretation, and the components of organizational memory as they affect market performance. The focus here should be directed at improving the quality of these processes.

Second, our empirical component puts forth one process of organizational learning. Knowing more about the dynamics of learning values, market information-processing behaviors, and organizational action is relevant to our understanding of how organizations perform and improve. Much of the early conceptual work on organizational change (see Bennis, Benne, and Chin 1969) provided solid ground for empirical studies. However, few have been conducted in a marketing context.

Third, this study draws organizational learning theory into the debate about strategic decision making in organizations. Future research should explore the linkages between learning orientation, market information-processing behaviors, organizational action, and organizational performance. Whereas the literature on marketing strategy is renowned for exploring linkages between strategy and performance (Day 1992b; Day and Wensley 1983; Kohli and Jaworski 1990; Kotler 1980; Porter 1980, 1985; Walker and Ruekert 1987) and strategy and structure (Barnard 1968; Chandler 1962), only recently have various scholars indicated the importance of organizational learning in the strategic marketing process (Franwick, Ward, Hutt, and Reingen 1994). Of particular interest would be research that explores relationships between learning orientation, market orientation, and organizational performance.

Orientation toward learning—positive or negative, spoken or tacit, correct or incorrect—exists in organizational cognition. As such, it is a driving force in the development of knowledge and action in organizations. Cultivating a learning culture may, indeed, become one of the primary means to attain and maintain competitive advantage.

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APPENDIX

Items Used to Operationalize Constructs

Commitment to Learning (COMMIT)

- CO1: Managers basically agree that our organization's ability to learn is the key to our competitive advantage.
- CO2: The basic values of this organization include learning as key to improvement.
- CO3: The sense around here is that employee learning is an investment, not an expense.
- CO4: Learning in my organization is seen as a key commodity necessary to guarantee organizational survival.

Shared Vision/Purpose (VSHARE)

- VS1: There is a commonality of purpose in my organization.
- VS2: There is total agreement on our organizational vision across all levels, functions, and divisions.
- VS3: All employees are committed to the goals of this organization.
- VS4: Employees view themselves as partners in charting the direction of the organization.

Open-Mindedness (OMIND)

- OM1: We are not afraid to reflect critically on the shared assumptions we have made about our customers.
- OM2: Personnel in this enterprise realize that the very way they perceive the marketplace must be continually questioned.

- OM3: We rarely collectively question our own biases about the way we interpret customer information.^a

Market Information Generation (IGEN)

- AC1: We do a lot of in-house market research.
- AC2: We often talk with or survey those who can influence our end users' purchases (e.g., retailers, distributors).
- AC3: We periodically review the likely effect of changes in our business environment (e.g., regulation) on customers.

Market Information Dissemination (IDISS)

- DI1: Marketing personnel spend time discussing customers' future needs with other functional departments.
- DI2: There is minimal communication between marketing and other departments concerning market developments.^a
- DI3: When one department finds out something important about customers, it is slow to alert other departments.^a

Marketing Program Dynamism (DYNAMISM)

- DY1: Changes in your (organization's) mix of products/brands
- DY2: Changes in your (organization's) sales strategies
- DY3: Changes in your (organization's) sales promotion/advertising strategies

NOTE: Items in COMMIT, VSHARE, OMIND, IGEN, and IDISS were measured using 5-point scales (1 = *strongly disagree*, 5 = *strongly agree*). Items constituting DYNAMISM were answers to "Please respond to the degree of change as it relates to your organization with respect to the following items," measured on a 7-point scale (1 = *no change*, 7 = *very frequent change*).

a. Reverse-coded item.

NOTES

1. One exception lies in recent work done by Moorman and Miner (1997), who empirically tested the effect of organizational memory level and dispersion on new product development processes.

2. Although COMMIT, VSHARE, and OMIND are endogenous first-order constructs, we discuss them as one would variable indicators (i.e., measures). This is appropriate given our research focus on (and hypotheses involving) the structural paths connecting learning orientation to marketing program dynamism. See Bentler (1989) for the rationale behind this approach. Alternatively, we could have formally stated a hypothesis about the second-order structure of LO, alongside the other hypotheses, and reported the loadings of the first-order factors on the second-order LO construct in the Structural Paths subsection of the article.

3. All of the models tested and described in this article are based on covariance, not correlation, matrices. As reported by Cudek (1989), "The analysis of correlation matrices is often associated with several kinds of errors, one or more of which may be present in any particular context" (p. 319). These include (a) changing the form of the structure under consideration, (b) producing different test statistics, and (c) producing incorrect estimated standard errors. All analyses were conducted using SAS's CALIS procedure.

4. Specifically, OMIND: $\chi^2(1) = 0.0337, p = .85$; IGEN: $\chi^2(1) = 0.0867, p = .77$; IDISS: $\chi^2(1) = 0.006, p = .94$; DYNAMISM: $\chi^2(1) = 0.1996, p = .66$. The p values exceed .05 in all cases, and all of the loadings on the constructs are large in magnitude and statistically significant.

5. Specifically, COMMIT: $\chi^2(2) = 4.65, p = .10$; VSHARE: $\chi^2(2) = 4.31, p = .12$. All of the loadings are large and statistically significant, so again single-factor representations of the constructs are supported.

6. As discussed in Anderson (1987) and Bentler (1989), an assessment of discriminant validity based on the inspection of confidence intervals is entirely complementary to an approach that first constrains the correlation between each factor pair to unity and then performs chi-square difference tests comparing the unconstrained and constrained models.

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