

THE RELATIONSHIP BETWEEN MARKET-BASED ORGANIZATIONAL LEARNING ORIENTATION AND ORGANIZATIONAL STRUCTURE ACROSS VARIOUS CONTINGENCY VARIABLES

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The present research investigates the relationship between a market-based learning orientation and organizational structure across various levels of contingency variables. Organizational structure influences the development of a market-based learning orientation. In addition, positive and direct relationships were found between a learning orientation and the degree of firm innovativeness and environmental scanning. Further investigation of selected contingency variables confirmed organizations' levels of environmental uncertainty, industry concentration, innovativeness, and scanning influence the learning-structure relationships. Firms, therefore, must determine their specific firms' and industries' characteristics to develop the organizational structures that will best support the development of market-based learning orientations.

INTRODUCTION

With the emerging realization of organizational learning's relevance to firm competitiveness, recently there has been managerial and scholarly interest on the subject of learning in a market-based context (e.g., Day 1994; Sinkula 1994; Moorman 1995; Slater and Narver 1995; Sinkula, Baker, and Noordewier 1997). Although conceptual contributions to the organizational learning literature over the past four decades have been extensive (e.g., Simon 1953; Cangelosi and Dill 1965; Argyris and Schön 1978; Hedberg 1981; Fiol and Lyles 1985; Huber 1991), the market-based view of learning is presently under employed. It has been asserted that empirical research into specific management practices is needed to provide solid guidance for managers in their quest to build market-based learning organizations (Slater and Narver 1995).

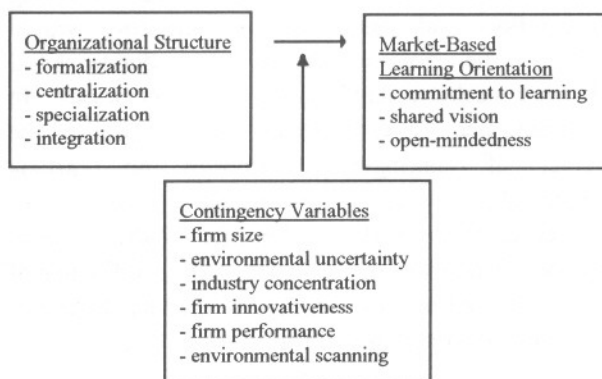
A key component of organizational learning is learning-related organizational values, that is, a learning orientation comprised of factors that breed a desire to learn (Sinkula, Baker, and Noordewier 1997). A key organizational characteristic that may facilitate (or hinder) an organization's learning orientation is organizational structure (Slater and Narver 1995). This suggests that examination of the relationship between a market-based learning orientation and organizational structure would advance the efforts of managers to understand and develop market-oriented learning organizations. In addition, because researchers have investigated the effect of contingency variables on various relationships among organizational variables (e.g., Slater and Narver 1994; Moorman 1995), it seems reasonable that we should control for the influence of selected contingency variables on the learning-structure relationships of this study.

No attempt has been made to empirically test a framework that interrelates organizational learning values, organizational structure, and contingency variables. The purpose of our study, therefore, is to determine the relationship between organizational

values (i.e., learning orientation) and organizational structure. As shown in Figure 1, the central premise is that structural characteristics are related to a market-based learning orientation, and that these relationships are subject to various influences from contingency variables (i.e., firm size, environmental uncertainty, industry concentration, firm innovativeness, firm performance, and environmental scanning). The following research questions provide a framework for our investigation: (a) Does the structure of an organization (i.e., formalization, centralization, specialization, and integration) influence its learning orientation? and (b) Does the relationship between organizational structure and learning orientation vary across levels of selected contingency variables?

To address these research questions, we describe three organizational values that comprise a market-based learning orientation, four classic dimensions of organizational structure, and the contingency variables of the study. Then we develop a set of corresponding hypotheses. The details of an empirical test of the hypotheses are then presented. The study concludes with a discussion of the implications of the analysis for managers and researchers.

FIGURE 1
A Model of Factors Associated with a Market-Based Learning Orientation



MARKET-BASED LEARNING ORIENTATION

In marketing, it is generally accepted that superior business performance is the result of a market

orientation. This proposition has been validated by a growing body of research that is investigating the influence of market orientation on business performance (e.g., Narver and Slater 1990; Deshpandé, Farley, and Webster 1993; Jaworski and Kohli 1993; Slater and Narver 1994). The overall objective in building a market-driven organization is to display an absolute commitment to a set of beliefs and values that reflect the philosophy that all decisions begin with the customer and are guided by a deep and shared understanding of the customer's needs, while realizing superior performance by satisfying customers better than competitors (Day 1994). Organizations that are market-driven (i.e., responsive to customers' needs) engage in market-based organizational learning (Day 1991). This learning is valuable to a firm's customers because it concentrates on understanding and effectively satisfying their expressed and hidden needs through new goods, services, and business practices (Slater and Narver 1995). Insights from the organizational learning perspective can lead companies to be better able to respond to market demands and anticipate changing conditions, which ultimately results in better market performance.

A market-based learning organization is characterized by identifiable organizational values necessary to effectively learn about customers. From this perspective, Sinkula, Baker, and Noordewier (1997) defined a learning orientation as the values of an organization that influence the tendency of an organization to create and utilize knowledge. They identified three organizational values that are commonly associated with the predisposition of an organization to create and use knowledge. Adapting these values to a market-based perspective, they are described as: (a) *Commitment to Learning*: a belief in the fundamental premise that learning about customers is valued by the organization; (b) *Shared Vision*: a belief in a clear and comprehensive vision that places customers' interests first; and (c) *Open-mindedness*: a belief in the value of questioning deeply held assumptions about customers and markets.

Commitment to Learning

The first organizational value associated with a market-based learning orientation is an axiomatic belief in the premise that learning about customers is of worth to the organization. For this value to be present, an organization must have a culture that is amenable to learning (Galer and van der Heijden 1992). Learning about customers must be seen as the key to an organization's improvement, competitive advantage, and ultimate survival. This is based on Senge's (1990) notion of learning principles, which are the guiding ideas and insights that underlie an organization's practice of learning. For effective organizational learning to take place, researchers argue that an organization's learning principles must involve the creation of continuous learning opportunities and the development of thinking literacy (i.e., the collective ability of organizational members to think and reason) (Tobin 1993; Watkins and Marsick 1993). For example, Tobin (1993) introduces five principles for the learning organization that reinforce this value: everyone is a learner; people learn from each other; learning enables change; learning is continuous; and learning is an investment, not an expense. When these five principles are regularly practiced (not merely espoused), the fundamental belief in a commitment to learning about customers is exemplified in the organization's values. In contrast, when organizations place little focus on these five principles, little learning will occur.

Shared Vision

Most researchers who write about organizational learning agree that a shared vision within an organization is a crucial foundation for learning (e.g., Senge 1990; Day 1991; Nonaka 1994; Slater and Narver 1995). This concept is represented by a clear, coherent, and comprehensive vision, shared by all organizational members, that places customers' interests first (Day 1994). For the vision to be motivating it must be grounded in a sound understanding of the firm's customers, guide the firm's competitive advantage efforts, and be communicated continuously throughout the organization (Slater and Narver 1995). Senge (1990) described a shared vision as deeply shared goals and missions that join people together in pursuing a

common identity and that provide them with a sense of destiny. Nonaka's (1994) discussion of the knowledge-creating organization recognizes the critical importance of a shared vision to unite the organization. Tobin's (1993) and Slater and Narver's (1995) discussions of visible and facilitative leadership focus on the clarity and constancy of a vision throughout the organization as being vital to organizational learning. Watkins and Marsick (1993) believe that organizational learning depends on the participation of all organizational members in a collective vision. A truly shared vision results in commitment to goals rather than compliance. People learn because they want to, not because they are told to learn (Senge 1990; Tobin 1993; Watkins and Marsick 1993).

Open-mindedness

As organizations learn, they evolve more efficient control techniques. The paradox is that the very control techniques that have evolved from organizational learning create conditions that inhibit the firm's capacity to learn (Argyris and Schön 1978). Open-mindedness prevents these control mechanisms from hindering organizational learning. First, an organization needs to develop the ability to "hear the voice" of the customer in new ways (Barabba and Zaltman 1991). It must anticipate and respond to constantly changing customers' needs and desires. Second, the firm needs to develop the capacity to overcome collective myopia. Myopia occurs when subgroups within organizations become focused on subgroups' goals and values, and lose sight of the overall goals and values (Day 1991; Tobin 1993). Third, the organization needs to develop the ability to unlearn. Unlearning is the process of discarding existing information to make way for new information, and the resultant new interpretations of the information and potential modifications of behaviors based on the new information (Hedberg 1981). Open-mindedness implies that the organization must have the willingness and capacity to rigorously scrutinize shared assumptions and mental models that organizational members hold regarding customers, and abandon information that is obsolete (Argyris and Schön 1978; Senge 1990; Nonaka 1994).

HYPOTHESES

Organizational Structure

Organizational structure defines a system of authority and communication that links people within the organization (Mintzberg 1979). The capabilities of market-based organizations cannot be nurtured and productively utilized without complementary structures (Day 1994; Slater and Narver 1995). Likewise, to develop a learning orientation, an organization must have a structural design that encourages and supports the desire to learn (Nevis, DiBella, and Gould 1995; Mitki, Shani, and Meiri 1997; Schwandt 1997; Sinkula, Baker, and Noordewier 1997). Organizational structures may either promote or disable an organization's learning orientation. Therefore, it is necessary to investigate how structural dimensions influence a market-based learning orientation. Toward this end, the effects of four structural variables are investigated: formalization, centralization, specialization, and integration.

Formalization is the degree to which the work processes of the organization are standardized and the amount of deviation that is allowed from those standards (Aiken and Hage 1966; Mintzberg 1979). Centralization taps the delegation of decision-making authority within an organization and the participation of members in decision making (Aiken and Hage 1966). Specialization refers to the division of labor within the organization (Pugh and Hickson 1976). Integration is the level of collaboration achieved among differentiated subsystems or departments in an organization (Mintzberg 1979; Miller and Dröge 1986).

Open, organic structures are necessary for organizational learning to occur (Slater 1995), and hence, for a learning orientation to develop. This means that, first, organizations using less formal mechanisms of control (e.g., normative control versus rules and procedures) tend to be more learning oriented (Hurley 1997). The openness and flexibility associated with low formalization is a precondition for learning. Second, decentralization and relative freedom in decision making at lower levels in the

organization are precursors to a learning orientation (Edwards 1997). In other words, hierarchical and centralized structures are antagonistic to a market-based learning orientation. Third, a learning orientation requires coordination through the use of specialized experts (Slater 1995). For learning to occur, functional experts need to be developed, and then deployed into project teams to perform specialized tasks. Finally, a market-based learning orientation requires a highly integrated structure (Slater and Narver 1995; Edwards 1997; Mitki, Shani, and Meiri 1997). In fact, learning results from interaction within and between cross-functional work groups (Nevis, DiBella, and Gould 1995). Integrated structures make use of liaison devices such as integrative personnel, temporary task forces, and committees to ensure information exchange (Mintzberg 1979). Consequently, we hypothesize that organizational structure will influence an organization's market-based learning orientation as follows:

- H₁: A market-based learning orientation will be positively associated with: (a) less formalization, (b) less centralization, (c) more specialization, and (d) more integration of an organization's structure.

Contingency Variables

Organizational researchers have studied the effects of contingency variables on the relationships between organizational learning-related variables and various other organizational-level variables. For example, Slater and Narver (1994) studied the moderating effects of (1) market turbulence, technological turbulence, competitive hostility, and market growth on the relationships between market orientation and performance and (2) market growth, buyer power, firm concentration, and competitive hostility on the relationships between external emphasis and performance. Moorman (1995) used competitive intensity as a contingency variable when examining the cultural antecedents of organizational information processing. Jaworski and Kohli (1993) studied the moderating effects of market turbulence, competitive intensity, and technological turbulence on the

relationships between market orientation and performance.

Based on this contingency perspective, it has been posited that not merely the organizational structure, but rather the organizational context coupled with its structural design, is likely to shape the learning orientation of an organization (Dunn, Norburn, and Birley 1994; Mitki, Shani, and Meiri 1997). Mahler (1997) suggests that while organizational structures must be in place to support a learning orientation, when other organizations attempt to duplicate the formal structural characteristics of promising programs, in other settings with other staff, the result is not always successful because of moderating factors.

Consequently, as shown in Figure 1, our research framework suggests controlling for the effects of six contingency variables: firm size, environmental uncertainty, industry concentration, firm innovativeness, firm performance, and environmental scanning. We included size as a contingency variable because of its importance in organizational research (Kimberly 1976; Mintzberg 1979). For instance, larger firms tend to be more formalized, decentralized, specialized, and integrated (Lawrence and Lorsch 1967; Mintzberg 1979). As firms get larger, they tend to subdivide tasks which results in greater specialization. The more specialized the organization becomes the more emphasis it places on coordination, or integration. As specialized expertise develops within the firm, decentralization increases to relieve senior managers of some of the decision-making burdens. Finally, formal rules, procedures, and control systems replace informal devices and complement decentralized decision-making as size increases. In addition, learning orientation is believed to be contingent on size, with speculation that a learning orientation may be more easily seen when size is small (Cook and Yanow 1996; Tsang 1997).

The second contingency variable, environmental uncertainty, relates to the level and unpredictability of change in consumer tastes, competitive actions, technology, product obsolescence, and the like (Miller and Dröge 1986). Environmental uncertainty makes it difficult for organizations to learn (Greenley and

Oktemgil 1996; Tsang 1997). Paradoxically, this makes organizational learning critical in uncertain environments (Day 1994; Bharadwaj 1996). The development of a learning orientation creates an exceptional ability to anticipate and act in response to uncertain and turbulent external environments (Slater and Narver 1995). Therefore, the development of a market-based learning orientation must be examined in the context of environmental uncertainty. Beyond its influence on a learning orientation, environmental uncertainty is also believed to influence organizational structure. An uncertain environment typically requires an organic structure—one that allows for effective dissemination and diffusion of new information (Slater and Narver 1995; Schwandt 1997).

Industry concentration, the third contingency variable, is the proportion of market share in the firm's primary industry that is accounted for by the four largest firms (Narver and Slater 1990; Slater and Narver 1994). The emphasis of a firm (i.e., customer versus competitor) is influenced by the industry concentration faced by a firm. In highly concentrated markets, where the number of powerful competitors is relatively small, researchers have discovered that a customer emphasis is more important than in less concentrated markets (Slater and Narver 1994). This suggests that high concentration of market share in an industry could influence the learning orientation emphasis of firms in that industry (e.g., market-based versus internally focused). Therefore, industry concentration should be investigated as a contingency variable in any study of relationships concerning learning orientation.

The fourth contingency variable, firm innovativeness, is the degree to which the organization intentionally implements and emphasizes products, processes, business methods, and policies that are departures from its own traditions (Mohr 1969; Price and Mueller 1986). Many researchers believe that learning oriented firms are innovative (Slater and Narver 1995; Hurley 1997), that a firm's innovativeness will determine whether that firm's learning orientation will lead to achievement of superior performance and competitive advantage (Hurley and Hult 1998), and that a lack of

innovativeness is a barrier to learning (Greenley and Oktemgil 1996). Furthermore, it is believed that organizational structure, innovativeness, and learning orientation must be linked for an organization to thrive (Brown and Duguid 1991). Specifically, less formalization, more decentralization, and high levels of integration in organizational structure have been found to increase a firm's innovativeness (Burns and Stalker 1966; Hurley 1997; Mahler 1997).

The fifth contingency variable, firm performance, is included because of its role of providing feedback for a learning orientation to develop or be revised. The cause and effect relationship between organizational learning and performance is yet to be demonstrated scientifically. The relationship is probably time lagged (Tsang 1997), that is, when learning occurs the influence on performance does not become evident in cross-sectional research because the improvement happens at a later time. We, however, contend that there is a feedback loop where performance results influence learning. In other words, knowledge that the organization is succeeding or failing can influence the learning orientation of the organization. Learning is concerned with monitoring results (Mahler 1997; Schwandt 1997). Argyris and Schön (1978) viewed organizational learning as linked to error detection and correction geared to a change in course or improved performance. Lant and Mezias (1992) suggested that organizational change is triggered by performance below aspiration. In fact, speculation is that when things go right or wrong, a firm's learning orientation is influenced in some manner (Cook and Yanow 1996) -- either through change or reinforcement.

The final contingency variable of this study is environmental scanning. It is the process by which organizations acquire information about changes in events, trends, or constituents' expectations happening outside the firm's boundaries (Hambrick 1981; Farh, Hoffman, Hegarty 1984). Environmental scanning is included as a contingency variable because of its implicit relationship with a market orientation. Day (1994) argues that every discussion of market orientation emphasizes the ability of the firm to continuously gather information about customers, competitors, and channel members and to act on events and trends in present and prospective markets.

In market-based firms the processes for gathering market information are more systematic, thoughtful, and anticipatory than in other firms. They readily surpass the ad hoc, reactive, confined, and sporadic efforts of their internally focused competitors. Furthermore, organizational learning is believed to be spurred by information acquisition processes (Garvin 1993; Moorman 1995; Slater and Narver 1995). This would suggest that firms that are good environmental scanners of market information would have stronger market-based learning orientations, and hence, environmental scanning should be controlled for when investigating the relationship between organizational structure and learning orientation.

The potential relationships between the contingency, predictor, and criterion variables justify controlling for firm size, environmental uncertainty, industry concentration, firm innovativeness, firm performance, and environmental scanning in the present study. Findings regarding the relationships between a market-based learning orientation and organizational structure would be suspect if control for these variables was lacking. Therefore, we hypothesize that:

- H₂: The relationship between an organization's market-based learning orientation and its structural dimensions will be moderated by: (a) firm size, (b) environmental uncertainty, (c) industry concentration, (d) firm innovativeness, (e) firm performance, and (f) environmental scanning.

METHOD

Sample and Data Collection

The initial sample consisted of 1000 potential respondents from strategic business units, randomly selected from Cahners Publishing Company's database. This database contains over 5,000,000 names of individuals whose companies (1) are engaged in business-to-business marketing and (2) subscribe to trade publications, advertise in these publications, or attend or exhibit at various international trade shows. Representative organizations were manufacturers engaged in

business-to-business marketing. In terms of organizational attributes, selected companies (1) had 100 or more employees; (2) were U.S.-based; and (3) excluded government agencies. To ensure that personnel engaged in marketing activities at the level of manager or above were sought as respondents, individuals were chosen from Cahners' standardized list of "marketing-related" titles.

A three-step data collection process was used. First, each of the 1000 possible respondents was mailed a cover letter, questionnaire, and postage-paid return form. The cover letter explained the purpose of the research and promised a summary of the results if they returned their business cards with the completed questionnaire. One week later, all potential respondents were mailed a reminder/thank-you postcard. Four weeks after the reminder postcard, all nonrespondents were telephoned in an attempt to maximize the response rate. If they agreed to complete a questionnaire, another cover letter, questionnaire, and postage-paid return form were mailed. A total of 233 questionnaires were completed and returned, while 223 were identified as non-deliverable because of wrong address or telephone information or because the person had left the company. This resulted in an effective base of 777, and an effective response rate of 30 percent.

Those informants that responded to the initial mailing were compared with those responding after the telephone stimulus. There were no differences on the primary research variables in the study at the .001 level of significance. On the basis that persons who respond after increased stimulus are similar to nonrespondents, nonresponse bias does not appear to be a major problem (Armstrong and Overton 1977).

Measurement

The present study employed a survey methodology to tap managers' perceptions of how the organization operates. Existing scales (with the adaptations noted below) were used to measure all variables of the analysis. The following approach was used to refine each of the scales described below. Each scale was separately subjected to a principal components factor analysis with varimax rotation. Support for the *a*

priori scales was found. Reliabilities of the scales were estimated by computing their coefficient alphas and item-to-total correlations. The items and their item-to-total correlations for the refined scales can be obtained from the lead author. The refined scales generally met or exceeded recommended levels of reliability (Nunnally 1978).

To improve internal consistency, two items from the original formalization scale and three items from the original environmental scanning scale were eliminated from further analysis because they exhibited low item-to-total correlations. Also, to reflect the results of the factor analysis, the integration items were separated into two dimensions—integration mechanisms and integration decisions—and the environmental scanning items were separated into two dimensions—industry news scanning and customer information scanning. Table 1 displays the correlation matrix and summary statistics for all the variables in the study.

Criterion Variables. Learning orientation was measured using an adapted version of Sinkula, Baker, and Noordewier's (1997) scale. Adaptation consisted of changing statements to reflect a "market-based" learning orientation. The measure consisted of eleven items designed to measure organizational values in terms of a learning orientation. Of these items, four pertain to commitment to learning, four to shared vision, and three to open-mindedness. Respondents were asked to rate the extent to which each of the statements about organizational values (associated with a market-based learning orientation) applied to their business unit. All items were scored on a five-point scale, ranging from "strongly disagree" to "strongly agree."

Predictor Variables. Formalization and centralization were measured using the widely used scales developed by Aiken and Hage (1966). These scales have been successfully used in other marketing studies to assess organizational structure dimensions (e.g., see Jaworski and Kohli 1993). The formalization scale consisted of three items designed to assess the extent to which jobs in the organization are codified. The five-item centralization scale assessed the degree of hierarchical authority within

TABLE 1
Correlation Matrix and Summary Statistics

	1	2	3	4	5	6	7	8	9	10	11	12	13	mean	s.d.	alpha
1 Commitment to Learning														3.96	.71	.85
2 Shared Vision	.62													3.47	.82	.86
3 Openmindedness	.62	.66												3.41	.76	.78
4 Formalization	.04	-.01	-.07											3.58	.83	.82
5 Centralization	-.15	-.13	-.17	.20										2.28	.78	.86
6 Specialization	.03	-.01	-.02	.08	.06									.60	.30	.86 a
7 Integration Mechanisms	.20	.22	.30	-.01	-.12	.14								3.06	1.02	.79
8 Integration Decisions	.39	.22	.39	.03	-.19	.23	.41							3.23	1.12	.84
9 Environmental Uncertainty	.15	.17	.26	-.02	-.07	.03	.30	.15						3.03	.82	.78
10 Industry Concentration	.07	-.02	.00	-.09	.13	.06	.01	.01	.04					67.32	26.69	-
11 Innovativeness	.44	.53	.59	.02	-.31	-.05	.39	.44	.29	.01				3.71	.70	.90
12 Performance	.14	.19	.15	-.07	-.17	.06	.14	.25	.15	.04	.32			3.70	.98	.84 b
13 Industry Scanning	.39	.37	.41	.04	-.17	.17	.32	.39	.16	-.03	.44	.32		3.47	.67	.72
14 Customer Scanning	.38	.31	.41	-.02	-.17	.21	.34	.43	.16	-.00	.47	.18	.46	3.47	.88	.68

All correlations with absolute value greater than or equal to .14 are significant at the .05 level; correlations with absolute value greater than or equal to .16 are significant at the .01 level; all are 2-tailed tests.

a=Kuder-Richardson 20 reliability estimate

b=simple correlation

an organization. All formalization and centralization items were scored on a five-point scale, ranging from "strongly disagree" to "strongly agree."

Specialization was measured using the scales of the Aston study (Pugh and Hickson 1976). The original scale consisted of sixteen items that determine the number of activities in an organization that are performed exclusively by at least one full-time person in the organization. Twelve of the sixteen items were chosen to suit the present study. The original questions were slightly altered to improve the understandability of the specialization items for the respondents. Respondents were asked to answer "yes" or "no" if the activities are dealt with exclusively by at least one full-time person in the organization.

Integration was measured by a six-item scale developed by Miller (Miller and Dröge 1986). The

scale is designed to measure the level of coordination among work groups in an organization. It assesses the degree to which integrative mechanisms are used and integrative decisions are made. The items were scored on a five-point scale, ranging from "used rarely" to "used frequently."

Contingency Variables. Firm size was measured by the number of employees at the surveyed business unit's location. This was a categorical variable identified as one of the following ranges: (a) 100 to 249 employees; (b) 250 to 499 employees; (c) 500 to 999 employees; or (d) 1000 employees or more.

Environmental uncertainty was assessed using a scale developed and employed by Miller and Friesen (1980) and successfully used in other studies (e.g., Miller and Dröge 1986). Using a rating scale of "1" to "5," respondents were asked to evaluate the rapidity of change in their environments.

Industry concentration was measured as the proportion of market share in the organization's primary industry that was accounted for by the four largest firms, including the subject business unit if appropriate (Slater and Narver 1994). Respondents were asked to report this number on a scale from zero to one hundred percent.

Firm innovativeness was measured using an abbreviated version of Russell and Russell's (1992) innovation-related norm scale. This scale was designed to measure the extent to which innovativeness is valued, accepted, and expected of organizational members. Innovativeness was measured using six items chosen from the original scale based on their high factor loadings in the Russell and Russell (1992) study. The innovativeness items were scored on a five-point scale, ranging from "strongly disagree" to "strongly agree."

Firm performance was measured using a self-report assessment of general profitability and return on investment relative to the organization's competitors (Conant, Mokwa, and Varadarajan 1990). The items were scored on five-point scales ranging from "much worse" to "much better."

Environmental scanning was measured using Jaworski and Kohli's (1993) measure of market intelligence generation. The items specifically assess scanning activities associated with the external marketing environment (e.g., customers and competitors) rather than scanning activities in general (e.g., political and legal elements). The intent is to measure the degree to which a firm engages in scanning activities related to their customers and to their specific industry. The items were scored on a five-point scale, ranging from "strongly disagree" to "strongly agree."

RESULTS AND DATA ANALYSIS

Multiple linear regression analysis was used to test Hypotheses 1. The proposed moderator variables were incorporated into the regression models as control variables because of their recognized influence on organizational variables. The moderator

effect of firm size (H2_a) was tested with a comparison of regression equations for categorical variables (Pedhazur 1982). The tests used for Hypotheses 2_{b-f} to examine the moderator effects of the continuous variables (i.e., environmental uncertainty, industry concentration, firm innovativeness, firm performance, and environmental scanning) were moderated regression analysis (Baron and Kenny 1986) and subgroup analysis (Sharma, Durand, and Gur-Arie 1981).

TABLE 2
Tests for Main Effects
Results of Regression Analysis
Regression Coefficients (Standard Errors)

	Commitment to Learning	Shared Vision	Open- mindedness
<u>Predictor Variables</u>			
Formalization	.11 (.07)	.01 (.08)	-.04 (.07)
Centralization	-.08 (.07)	-.01 (.08)	-.04 (.07)
Specialization	-.04 (.18)	.17 (.21)	-.25 (.18)
Integration	-.04	.03	.00
Mechanisms	(.06)	(.07)	(.06)
Integration	.12 ^b	-.04	.12 ^b
Decisions	(.05)	(.06)	(.05)
<u>Moderator Variables</u>			
Environmental	.05	.00	.11
Uncertainty	(.06)	(.07)	(.06)
Industry	.00	-.00	-.00
Concentration	(.00)	(.00)	(.00)
Innovativeness	.20 ^b (.09)	.52 ^a (.10)	.36 ^a (.09)
Performance	-.06 (.05)	-.03 (.06)	-.12 ^b (.05)
Industry	.15	.21 ^b	.21 ^a
Scanning	(.09)	(.10)	(.09)
Customer	.13	.02	.09
Scanning	(.07)	(.08)	(.07)
F	5.183 ^a	6.015 ^a	9.687 ^a
Adjusted R ²	.21	.25	.36
N	171	171	170

^a, $p \leq .01$

^b, $p \leq .05$

Main Effects: Hypotheses 1

Table 2 displays the results for the relationships between the proposed predictor variables (organizational structure) and the learning orientation dimensions.

Hypotheses 1 was partially supported, as signified by the statistically significant relationships of the regression analyses. As a cluster, the structural dimensions were related to each of the individual learning dimensions at the .01 level of significance, with adjusted R^2 s ranging from .21 to .36. The integration decisions variable was significantly related to the commitment to learning ($b = .12, p \leq .05$) and open-mindedness ($b = .12, p \leq .05$). The main effects of the selected contingency variables on the learning orientation dimensions are displayed in Table 2. The results show statistically significant relationships between (a) innovativeness and commitment to learning ($b = .20, p \leq .05$), shared vision ($b = .52, p \leq .01$), and open-mindedness ($b = .36, p \leq .01$); (b) performance and open-mindedness ($b = -.12, p \leq .05$); and (c) industry scanning and shared vision ($b = .21, p \leq .05$) and open-mindedness ($b = .21, p \leq .01$).

Moderator Effects: Hypotheses 2

Hypothesis 2_a, hypothesizing the moderator effects of firm size on the learning-structure relationships, was not supported. A comparison of regression equations for categorical variables indicated that size was not a moderator variable. Proportions of variance accounted for by the main effects and interactions of the predictor variables and size (coded as a dummy variable) were meaningful (i.e., R^2 s ranging from .14 to .26); however, the interactions between the predictor variables and size (with each of the learning orientation dimensions as criterion variables) were not statistically significant ($p > .05$). A statistically significant common regression coefficient for each regression model was found. This indicates that across the four levels of size, the regression lines are parallel. Consequently, the effect of the organizational structure variables is the same for all levels of size (Pedhazur 1982). A test of the intercepts for each level of size (for each criterion

variable) revealed no statistically significant differences. Equality of the intercepts means that a single regression line fits the data for all four groups of size. This indicates that one level of size is not superior to any other along the continuum of the predictor variables.

Table 3 reports the moderator effects (of the continuous contingency variables) on the relationships between learning orientation and organizational structure.

Evidence of pure or quasi moderator effects is found through moderated regression analysis when there is an interaction between the predictor and the moderator variable (Sharma, Durand, and Gur-Arie 1981).¹ Sharma, Durand, and Gur-Arie's (1981) framework for identification of moderator variables suggests that subgroup analysis should be performed after moderator regression analysis when the hypothesized moderator variable does not interact with the relevant predictor variable and is not correlated with either the predictor or criterion variables. The only possible moderator that fits this criterion was industry concentration. For the subgroup analyses, we formed high and low subgroups by performing a three-way split on the industry concentration variable and eliminating the middle third from the analysis to ensure separation between the high and low groups. A moderator (homologizer) effect is present when a significant difference is found between the partial correlation coefficients for the predictor and criterion variables in the subgroups (Sharma, Durand, and Gur-Arie 1981; Slater and Narver 1994).

Starting with environmental uncertainty, the moderated regression analyses provided partial support for Hypotheses 2_b. Two of the coefficients for the interaction terms were statistically significant

¹A pure moderator is not related to the predictor or criterion variables; rather, it interacts with the predictor variable to modify the form of the relationship. A quasi moderator, on the other hand, not only interacts with the predictor variable, but is also a significant predictor itself (Sharma, Durand, and Gur-Arie 1981). In the present analyses, the pure moderator is industry concentration; all other moderators are quasi because of their statistically significant relationships with the predictor or criterion variables of interest.

TABLE 3
Tests for Moderator Effects
Results of Regression Analysis and Subgroup Analysis
Regression Coefficients (Standard Errors)—Partial Correlation Coefficients

	Commitment to Learning			Shared Vision			Open-mindedness		
	Subgroup ^a			Subgroup			Subgroup		
	Interaction	Low	High	Interaction	Low	High	Interaction	Low	High
Formalization - Learning									
Environmental Uncertainty	.02 (.10)		C	.02 (.12)		C	.11 (.10)		C
Industry Concentration	-.00 (.00)	.14	.02	-.00 (.00)	.05	.01	-.00 (.00)	.04	-.19
Innovativeness	-.27 ^b (.13)		MRA	-.06 (.14)		C	-.28 ^b (.12)		MRA
Performance	.02 (.09)		C	-.06 (.10)		C	-.08 (.09)		C
Industry Scanning	.11 (.10)		C	-.02 (.12)		C	.17 (.10)		C
Customer Scanning	.10 (.09)		C	-.05 (.10)		C	.06 (.08)		C
Centralization - Learning									
Environmental Uncertainty	.12 (.10)		C	-.02 (.12)		C	-.06 (.10)		C
Industry Concentration	-.00 (.00)	-.07	-.19	-.00 (.00)	-.12	-.41 ^a	.00 (.00)	-.14	-.20
Innovativeness	.32 ^b (.13)		MRA	.08 (.16)		C	.25 ^b (.13)		MRA
Performance	-.02 (.08)		C	.01 (.10)		C	.09 (.08)		C
Industry Scanning	-.28 ^b (.12)		MRA	.02 (.14)		C	-.26 ^b (.12)		MRA
Customer Scanning	.21 ^b (.10)		MRA	.22 (.12)		C	.09 (.10)		C
Specialization - Learning									
Environmental Uncertainty	.09 (.26)		C	.02 (.30)		C	-.27 (.24)		C
Industry Concentration	.02 ^b (.01)		MRA	.01 (.01)	-.19	.47	.02 ^b (.01)		MRA
Innovativeness	-.14 (.37)		C	.56 (.43)		C	.54 (.36)		C
Performance	-.15 (.25)		C	.14 (.29)		C	.32 (.24)		C
Industry Scanning	.40 (.37)		C	-.66 (.43)		C	-.18 (.35)		C
Customer Scanning	-.29 (.28)		C	-.57 (.33)		C	-.33 (.27)		C
Integration Mechanisms Learning									
Environmental Uncertainty	-.08 (.08)		C	.18 ^b (.09)		MRA	-.16 ^b (.08)		MRA
Industry Concentration	-.00 (.00)	.04	-.02	-.00 (.00)	.31 ^b	.04 ^a	-.01 ^a (.00)		MRA
Innovativeness	-.05 (.11)		C	-.05 (.13)		C	.05 (.11)		C
Performance	.01 (.07)		C	-.15 (.09)		C	-.07 (.07)		C
Industry Scanning	.21 (.11)		C	.29 ^b (.13)		MRA	.15 (.11)		C
Customer Scanning	-.00 (.09)		C	-.04 (.11)		C	.07 (.09)		C
Integration Decisions - Learning									
Environmental Uncertainty	.11 (.07)		C	.15 (.09)		C	.07 (.07)		C
Industry Concentration	-.00 (.00)	.32 ^a	.17 ^a	.00 (.00)	.14	.04	.00 (.00)	.22	.24 ^a
Innovativeness	.07 (.11)		C	.03 (.12)		C	-.02 (.10)		C
Performance	-.03 (.06)		C	-.05 (.07)		C	.08 (.05)		C
Industry Scanning	.15 (.10)		C	-.09 (.11)		C	-.03 (.09)		C
Customer Scanning	-.15 (.09)		C	.07 (.11)		C	-.10 (.09)		C

^a, $p \leq .01$; ^b, $p \leq .05$

[#] Three-way split (with middle third eliminated) to create high and low Industry Concentration groups.

^{*} Difference between regression coefficients significant at $p \leq .05$ when converted to a partial correlation coefficient and employing Fisher's Z-test (Hambrick and Lei 1985; Slater and Narver 1994).

MRA = Significant moderator effect identified in moderated regression analysis (see Table 3).

C = No moderator effect because of correlation ($p \leq .05$) with either dependent or independent variables (see Table 1).

with environmental uncertainty as the moderator variable. First, the relationship between shared vision and integration mechanisms increases as environmental uncertainty increases ($b = .18$, $p \leq .05$). Second, the relationship between open-

mindedness and integration mechanisms decreases as environmental uncertainty increases ($b = -.16$, $p \leq .05$). None of the other learning-structure relationships were influenced by environmental uncertainty.

Four of the relationships between learning and structure were moderated by industry concentration which provided partial support for Hypothesis 2_c. Three of the coefficients for the interaction terms were statistically significant with industry concentration as the moderator variable: commitment to learning and specialization; open-mindedness and specialization; and open-mindedness and integration mechanisms. The relationships between (a) commitment to learning and specialization and (b) open-mindedness and specialization increase as industry concentration increases ($b = .02, p \leq .05$ for both relationships). The relationship between open-mindedness and integration mechanisms decreases as industry concentration increases ($b = -.01, p \leq .01$).

Following the moderated regression analysis, the partial correlation of each learning orientation dimension was estimated separately for each industry concentration subgroup (i.e., high and low) where a moderator effect was not previously found. The partial correlations were then compared using a Fisher z-test (Hambrick and Lei 1985; Slater and Narver 1994). For example, Table 3 shows the partial correlation between commitment to learning and formalization (after controlling for the possible moderators of the study) when industry concentration is low was .14 ($p > .05$). This compares to a partial correlation of .02 ($p > .05$) when industry concentration is high. Computation of the z-value ($z = .21, p > .05$) indicates that the two partial correlations are not significantly different. In other words, there is no significant difference in the effect of formalization on commitment to learning when industry concentration is low versus high. Looking across the industry concentration rows of Table 3, there is only one relationship with a statistically significant z-value—that is, the comparison of the partial correlation between shared vision and integration mechanisms. This relationship increases as industry concentration increases; however, the positive relationship holds only when industry concentration is low ($b = .31, p \leq .05$).²

²Low industry concentration is defined as the top four firms in the industry controlling less than 56 percent of the market share in the primary served market.

The moderated regression analyses for firm innovativeness provided partial support for Hypotheses 2_d. Four of the relationships between the learning orientation and the structure variables were moderated by innovativeness. The relationships between (a) commitment to learning and formalization and (b) open-mindedness and formalization decrease as innovativeness increases ($b = -.27, p \leq .05$; $b = -.28, p \leq .05$, respectively). In contrast, the relationships between (a) commitment to learning and centralization and (b) open-mindedness and centralization increase as innovativeness increases ($b = .32, p \leq .05$; $b = .25, p \leq .05$, respectively).

The moderated regression analyses for the effect of firm performance did not support Hypotheses 2_e. None of the relationships between the learning orientation dimensions and the structure variables were moderated by firm performance.

For environmental scanning, the moderated regression analyses provided partial support for Hypotheses 2_f as four of the coefficients for the interaction terms were statistically significant for either industry or customer scanning as the moderator variable. The relationship between commitment to learning and centralization decreases as industry scanning increases ($b = -.28, p \leq .05$), but increases as customer scanning increases ($b = .21, p \leq .05$). Similarly, the relationship between open-mindedness and centralization decreases as industry scanning increases ($b = -.26, p \leq .05$). Finally, the relationship between shared vision and integration mechanisms increases as industry scanning increases ($b = .29, p \leq .05$).

DISCUSSION OF RESEARCH FINDINGS

Organizational structure was significantly related to a market-based learning orientation. The relationships between the criterion (i.e., commitment to learning, shared vision, and open-mindedness), the predictor (i.e., formalization, centralization, specialization, and integration), and the contingency (i.e., firm size, environmental uncertainty, industry concentration, firm innovativeness, firm performance, and environmental scanning) variables were

statistically significant ($p \leq .01$) and meaningful (R^2 s of .21, .25, .36). The dimension of organizational structure that appeared most influential in the development of a market-based learning orientation was the extent to which decision making at the top levels in the firm is characterized by participative, cross-functional discussions, committees, and teams. If the analysis would have stopped here (with the main effects), the research would be suspect as it was found that the selected contingency variables further define the learning-structure relationships.

Based on the marketing literature, six contingency variables were selected to investigate their moderating effects on the relationships between learning orientation and organizational structure. Two of the variables had no moderating effects on the learning-structure relationships. The relationships between learning orientation and organizational structure were robust across different levels of firm size and firm performance. The other four contingency variables, however, had some moderating effects on the learning-structure relationships.

First, when faced with increasing rates of unpredictability in the external environment, the use of interdepartmental committees, temporary task forces, and liaison personnel is required to develop a collective vision that places customers' interests first, but firms depend less on these integration mechanisms to ensure questioning of deeply held assumptions about customers.

Second, as the market share in a firm's primary industry is concentrated in fewer firms, the use of more specialized experts is needed to (1) develop a belief that learning about customers is valuable to the firm and (2) allow questioning of deeply held assumptions about customers to occur; however, reliance on interdepartmental committees, temporary task forces, and liaison personnel is not needed to promote this unlearning. Nonetheless, when industry concentration is low (i.e., market share is more evenly distributed), these integration mechanisms are needed to develop a collective vision that places customers' interests first.

Third, as a firm becomes more innovative and departs from its traditions in products or processes, the relationships between learning orientation and organizational structure are influenced. Less formalized control and more centralized decision making are needed to develop a belief in the value of learning about customers and to allow unlearning to occur.

Fourth, as a firm scans its external environment for industry news, it becomes more decentralized in its decision making to develop a commitment to learning about customers and to promote questioning of deeply held assumptions and unlearning. Furthermore, the use of integrative mechanisms is needed to develop a shared vision that places customers' interests first. In contrast, as a firm scans its environment for customer information, centralization of decision making becomes more important for attaining a strong commitment to learning about customers.

CONCLUSION AND IMPLICATIONS

This study specifically examined two research questions: (1) Does the structure of an organization influence its market-based learning orientation? and (2) Does the relationship between organizational structure and learning orientation vary across levels of selected contingency variables? Multiple linear regression was used to study the main effects of organizational structure dimensions while controlling for the linear effects of the selected contingency variables. Moderated regression analysis was used to test if the forms of the learning-structure relationships were modified by the selected contingency variables—firm size, environmental uncertainty, industry concentration, firm innovativeness, firm performance, and environmental scanning. Finally, the industry concentration variable was used to split the sample into "high" and "low" groups to test for a possible moderator (i.e., homologizer) effect on the strength of the learning-structure relationships (Sharma, Durand, and Gur-Arie 1981). This research extends the work of Sinkula, Baker, and Noordewier (1997) on market-based organizational learning orientation by (1) further developing the learning orientation scale and

(2) examining the interrelationships among organizational learning values, organizational structure, and the selected contingency variables (Morgan, Katsikeas, and Appiah-Adu 1998).

Researchers have thought that open and organic structures are necessary for organizational learning to occur. The present research does not fully support this proposition. Organizational structure was found to be related to the development of a market-based learning orientation; however, the use of participative, cross-functional discussions, committees, and teams to make decisions at top levels in the firm was the only organizational structure dimension to have a main effect on a market-based learning orientation. It appears that firm innovativeness, firm performance feedback, and scanning for industry news directly influence the formation of a market-based learning orientation. The other organizational structure dimensions (formalization, centralization, specialization, and integration mechanisms) were moderated by the effects of four contingency variables (environmental uncertainty, industry concentration, firm innovativeness, and environmental scanning).

In terms of formalization, organizations using less formal control mechanisms (e.g., normative control versus rules and procedures) tend to be more learning oriented when the firm has high levels of innovativeness. This finding supports the idea that learning-oriented firms are innovative, and further, that less formalization of structure supports that learning. Therefore, firms that attempt to discover new and creative ways of improving their products and processes and see opportunity in new ideas and change, need to have a less formal structure to encourage a market-based learning orientation. These findings were particularly true for creating a commitment to learning about customers and promoting unlearning, but not for developing a shared vision.

The results associated with centralization of decision making present some conflict in terms of the influence on a market-based learning orientation. Organizations that are highly centralized in their decision making tend to be more learning oriented

when the firm has high levels of innovativeness and when the firm engages in scanning for customer information in the external environment. These findings contradict the idea that hierarchical and centralized structures are detrimental to a market-based learning orientation. Rather, a centralized decision making structure appears to support a market-based learning orientation in highly innovative firms that spend considerable time exploring the external environment for customer information. The conflict in findings occurs for firms that are extensive in their environmental scanning for industry news. Here, the present research found that decentralized structures are more conducive to development of a market-based learning orientation. These contradictory findings imply that firms should examine the characteristics of each function, department, and team before determining the freedom of decision making needed for a learning orientation to develop. For example, if a team within the firm is highly innovative, decision making should be centralized to promote a learning orientation. On the other hand, if a specific department is charged with gathering industry news, a market-based learning orientation will be encouraged through decentralization and relative freedom of decision making at lower levels. These findings regarding centralization suggest that an entire firm should not be designed for *all* decisions to be made at high levels or *all* decisions to be decentralized; rather, it depends on the characteristics surrounding the particular situation. Similar to the findings associated with formalization of structure, the findings regarding centralization of decision making were particularly true for creating a commitment to learning and promoting unlearning, but not found for developing a shared vision.

Specialization appears to influence a market-based learning orientation only when a firm is faced with high levels of industry concentration. Organizations that develop functionalized experts tend to be more learning oriented when the market share of the industry is concentrated in a few firms. This finding supports the idea that specialized experts need to be developed for a market-based learning orientation to develop; however, this tends to be necessary only when there is high industry concentration. Again, as

found with formalization and centralization these findings apply to the development of a commitment to learning about customers and encouragement of unlearning, but are unrelated to generation of a shared vision.

Finally, the use of interdepartmental committees, temporary task forces, and liaison personnel within a firm tends to promote a market-based learning orientation, particularly the development of a collective vision, when firms (1) face high rates of change and unpredictability in their environments, (2) experience low levels of industry market share concentration, and (3) are extensive environmental scanners for industry news. These were the only moderating effects found to influence the development of a shared vision. The findings regarding a shared vision suggest that to develop a shared vision that places customers' interests first, a firm must be highly innovative (main effect) and an effective environmental scanner for industry news (main effect). In addition, integration mechanisms are required to develop this shared vision when environmental uncertainty is high and industry concentration is low (moderating effects). Integration mechanisms, however, do not appear to promote all dimensions of a learning orientation. They are inversely related to open-mindedness when faced with high levels of environmental uncertainty and industry concentration. These findings suggest that firms may need to make some trade-offs in the development of market-based learning orientation elements, especially when faced with high rates of change and unpredictability in the external environment.

In summary, the findings concerning organizational structure and a market-based learning orientation have several implications that marketing managers should understand. Organizational structure does influence the development of a market-based learning orientation. Specifically, the utilization of participative, cross-functional discussions, committees, and teams are required to develop a commitment to learning and open-mindedness throughout a firm. The degree of firm innovativeness and environmental scanning for industry news also directly influence a market-based learning orientation, with high levels of innovativeness and

scanning being positively related to the development of a learning orientation. If the present study ended with this analysis, it would contribute to our knowledge about what facilitates a market-based learning orientation, however, it would not tell us under what conditions this facilitation takes place. A firm that has made a commitment to develop a market-based learning orientation needs to determine the firm's and the industry's characteristics in terms of environmental uncertainty, industry concentration, firm innovativeness, and environmental scanning. Then, they must determine for their firm's status the organizational structure that will best support the development of a market-based learning orientation. If firms can leverage their structures to generate a commitment to learning about customers, a shared vision that places customers' interests first, and an open-mindedness to questioning deeply held assumptions and the associated unlearning, then a long term competitive advantage should ensue.

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