



# Learning orientation, firm innovation capability, and firm performance

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## Abstract

Contemporary organizations require a strong learning orientation to gain competitive advantage. Based on in-depth interviews with senior executives and a review of the literature, the present investigation delineates four components of learning orientation: commitment to learning, shared vision, open-mindedness, and intraorganizational knowledge sharing. A framework is tested using data from a broad spectrum of US industries. Learning orientation is conceptualized as a second-order construct. Its effect on firm innovativeness, which in turn affects firm performance, is examined. The results generally support theoretical predictions, and some interesting findings emerge. © 2002 Elsevier Science Inc. All rights reserved.

**Keywords:** Learning orientation; Innovation; Firm performance

## 1. Introduction

Innovation is closely related to organizational learning. Thompson [1] defines innovation as the generation, acceptance, and implementation of new ideas, processes, products, or services. According to Zaltman et al. [2] and Rogers [3,4], it is an idea, practice, or material artifact perceived as new by the relevant unit of adoption. Amabile et al. [5] define innovation as the successful implementation of creative ideas within an organization (see also Ref. [6]). The innovation process involves the acquisition, dissemination, and use of new knowledge [7–10]. There seems to be wide agreement that learning climate and firm innovation are highly correlated, and many authors have called for an examination of how they are linked [6,7,11,12].

A systematic study of the relationship between learning orientation and firm innovation has not been carried out for two reasons. First, there is no general consensus on how to define and operationalize the learning orientation construct. Most researchers have viewed it as a single dimension, and different scales have been used to measure it. Few empirical studies have systematically examined the measurement

properties of this construct. Second, the role of learning orientation in firm innovativeness remains unclear [13]. Hurley and Hult [6] propose an antecedent role, but empirical evidence on the relationship is imperative.

The present study investigates the relationships among learning orientation, firm innovativeness, and firm performance, through a model drawn from organizational learning theory and the new product literature. A construct of learning orientation is developed based on the literature. Learning orientation is proposed to be an important antecedent of firm innovativeness, which in turn influences firm performance. Four components of learning orientation are identified: commitment to learning, shared vision, open-mindedness, and intraorganizational knowledge sharing. Data were collected from 187 US firms to test the model.

In the next section, the conceptual framework is presented, and a set of testable hypotheses is proposed. Methods of the study are then introduced, which include information about the sample, study measures, data analysis, and test results. Following a discussion of the results, implications and limitations are offered.

## 2. The framework and hypotheses

The framework in Fig. 1 was derived from the literature on organizational learning and innovation [3,4,6,14–16].

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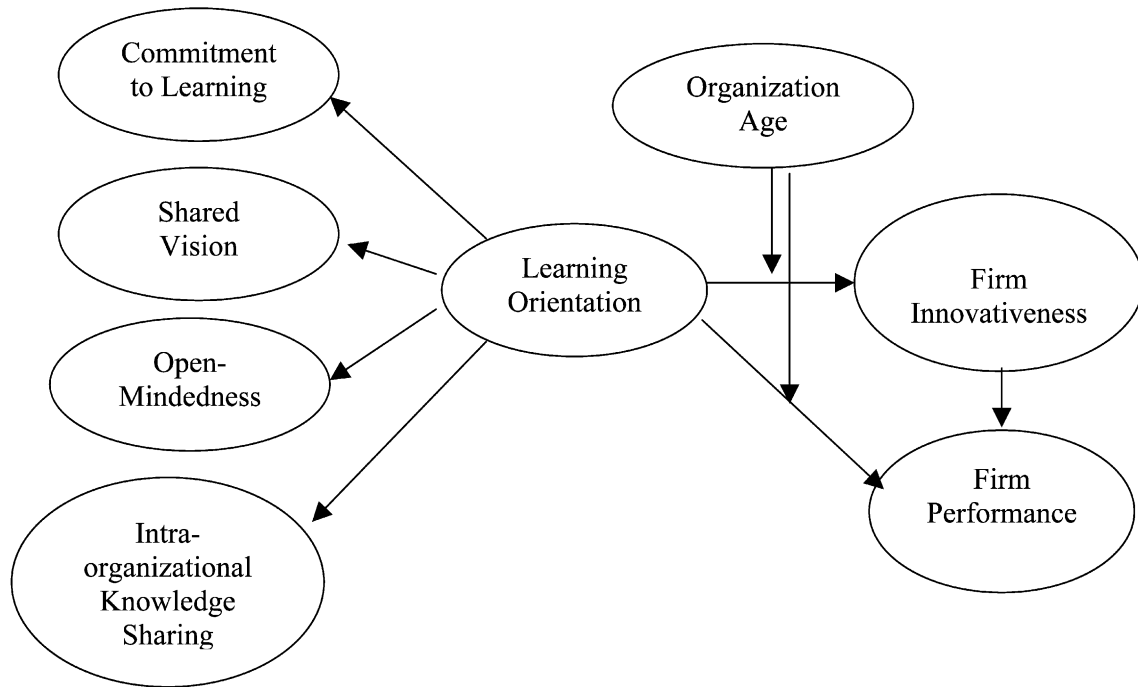


Fig. 1. A framework linking learning orientation to firm innovation and performance.

Researchers have concluded that organizational learning is associated with the development of new knowledge, which is crucial for firm innovation capability and firm performance [6]. An organization committed to learning is likely to possess state-of-the-art technology [17], which leads to greater innovation capability in both products and processes. Furthermore, innovation capability is positively related to firm performance [15].

Based on the literature, learning orientation is conceived as composed of four factors: commitment to learning, shared vision, open-mindedness, and intraorganizational knowledge sharing [6,18–20]. The latter is included because learning cannot occur unless an organization has an effective and efficient system of information sharing, which allows a reexamination of past decision strategies and implementation activities [9]. In addition, the relationship between learning orientation and firm innovativeness is contingent on organization age [21]. The older the organization, the stronger is the relationship between learning orientation and firm innovativeness.

### 2.1. Learning orientation

Learning orientation refers to organization-wide activity of creating and using knowledge to enhance competitive advantage. This includes obtaining and sharing information about customer needs, market changes, and competitor actions, as well as development of new technologies to create new products that are superior to those of competitors [6,9,15]. Learning orientation influences what kind of

information is gathered [22] and how it is interpreted [23], evaluated [12], and shared [9]. As shown in Fig. 1, the four components of learning orientation are commitment to learning, shared vision, open-mindedness [12], and intra-organizational knowledge sharing [9].

#### 2.1.1. Commitment to learning

Commitment to learning, or the degree to which an organization values and promotes learning [12], is likely to foster a learning climate [24]. The committed organization considers learning as an important investment that is crucial for survival. The more an organization values learning, the more likely it is that learning will occur [12]. Most importantly, commitment to learning is associated with a long-term strategic orientation. Short-term investments will yield long-term gains. For example, managers in committed organizations expect employees to use company time to pursue knowledge outside the immediate scope of their work [25]. If an organization does not encourage the development of knowledge, employees will not be motivated to pursue learning activities.

#### 2.1.2. Shared vision

Shared vision refers to an organization-wide focus on learning [12]. Verona [10] stresses that without a shared vision, learning by members of an organization is less likely to be meaningful. In other words, even if they are motivated to learn, it is difficult to know what to learn. A widespread problem in organizations is that many creative ideas are never implemented [20] for lack of a common

direction. Great ideas fail to be translated into action because of diverse interests in the organization. Thus, a positive learning climate requires an organizational focus when new knowledge is implemented. A clear direction for learning is likely to form an organizational strength or even a core competence.

Brown and Eisenhardt [14] note that various departments differ in their ways of obtaining and interpreting knowledge. Therefore, individuals from different functional areas perceive innovation in varied ways. For example, a marketer is more concerned about market information, whereas someone in R&D may focus on the technical aspects of innovation. This may lead to varying interpretations, even of the same information. A shared vision coordinates the focus of various departments and enhances the quality of learning. The concept of shared vision in learning theory is analogous to internal communication and integration in the R&D literature; various divisions are encouraged to overcome cross-functional communication barriers to increase information flow, coordinate actions with other departments, and form a common sense of innovation [14].

#### 2.1.3. *Open-mindedness*

Open-mindedness is the willingness to critically evaluate the organization's operational routine and to accept new ideas [12]. Firms must cope with rapidly changing technology and turbulent markets. The rate of knowledge obsolescence is high in most sectors. Even so, lessons learned in the past may still be instructive if the organization has the open-mindedness to question them [10,26–28]. It may be just as important to unlearn old ways as it is to renew or update the knowledge base.

#### 2.1.4. *Intraorganizational knowledge sharing*

Intraorganizational knowledge sharing refers to collective beliefs or behavioral routines related to the spread of learning among different units within an organization [2,9]. It keeps alive the knowledge and information gathered from various sources and serves as a reference for future action [21]. For example, the marketing department's experience with customer may be valuable to the R&D unit in developing products or services to fit customer needs [9].

Learning in an organization results from an accumulation of individual learning. Because of employee turnover and transfer, intraorganizational knowledge sharing is necessary to prevent the loss of information [21]. Even if an organization is committed to learning and has a shared vision, learning will be limited without the accumulation of knowledge [9].

Some scholars argue that learning does not really occur unless an organization has an effective and efficient system for sharing and reexamining information [9]. Intraorganizational knowledge sharing does not simply refer to obtaining information from various sources. It includes systematic reexamination and structuring of information. Experience

and lessons must be shared across departments and stored in organizational memory.

#### 2.2. *Firm innovativeness*

Drucker [29] was one of the first to address the importance of innovativeness and stressed its neglect in organizational research. Much of the work on firm innovation capability is found in the literature on innovation diffusion [4]. According to these scholars, a firm must be innovative to survive in a volatile environment [8]. Innovativeness is conceived by some [30–32] as the degree to which an individual, compared to others in the social system, is relatively early in adopting something new. That definition, however, focuses on the individual, not the organization. Hurley and Hult [6] define firm innovativeness from a collective perspective, that is, openness to new ideas as an aspect of a firm's culture.

Firm innovativeness is conceptualized from two perspectives. The first views it as a behavioral variable, that is, the rate of adoption of innovations by the firm. The second views it as an organization's willingness to change [30].

#### 2.3. *Learning orientation and firm innovativeness*

Innovation implies the generation, acceptance, and implementation of new ideas, processes, products, or services. It is obvious that a learning orientation is closely related to organizational innovation. Many scholars stress the importance of such an orientation to enhancing innovation capability [7,10,33,34].

Learning occurs largely through organizational interaction with and observation of the environment. With regard to innovation, customer demand uncertainty, technological turbulence, and competitive uncertainty are crucial environmental factors [33]. Therefore, an organization committed to learning can enhance its innovation capability in three ways. First, it is more likely to be committed to innovation, have state-of-the-art technology, and use that technology in innovations. It is more likely to have the capacity to build and market a technological breakthrough.

Second, the organization is not likely to miss the opportunities created by emerging market demand because it has the knowledge and ability to understand and anticipate customer needs [7,33]. To stress the importance of understanding those needs, Urban and Hauser [35] use the term "core benefits proposition," which states that a firm must build on its full understanding of expressed and latent customer needs (gained through interactions with customers). It must be clear and concise, and it must directly connect to the product strategy (to form a shared vision in the organization). New products must reflect customer values [35] if the risk of failure is to be minimized.

Third, an organization committed to learning is likely to have greater innovation capability than competitors [7]. One characteristic of such an organization is that it closely

monitors competitors' actions in the market [17]. It understands the strengths and weaknesses of rivals, and learns not only from their successes but also from their failures [25,36]. All of this contributes to a high innovation capability. Therefore:

*Hypothesis 1:* The higher the level of learning orientation, the greater the degree of firm innovativeness.

#### 2.4. Learning orientation and firm performance

Various scholars have long acknowledged the importance of learning orientation to overall firm performance [25]. A firm with a strong learning orientation is not simply a collector or storehouse of knowledge but a processor of it. Feedback from customers, channels, and competitors must be used to develop core competence. A learning orientation influences the degree to which firms are likely to promote generative learning as a long-lasting core competency [12,37].

The strategic literature suggests that no one strategy will allow businesses to earn long-run supernormal profits [38]. One of the most important characteristics of learning-oriented firms is that they foresee environmental and market changes and make adjustments. For example, many leading automotive companies have already developed designs for their 2010 models. Learning-oriented firms are even willing to question their well-operated organizational systems, and update fundamental operating philosophies [15,39]. Such firms drive the market rather than be driven by it. Such attitudes, behaviors, and strategies should lead to superior long-term performance. Therefore:

*Hypothesis 2:* The higher the level of learning orientation, the greater the firm's performance.

#### 2.5. Firm innovativeness and firm performance

Innovation capability is the most important determinant of firm performance [15], a finding supported by many empirical studies [40,41]. The diffusion of innovations literature also confirms this view [3,4] and suggests that firms must be innovative to gain a competitive edge in order to survive [42]. Nevertheless, the link between firm innovativeness and performance has not been tested sufficiently [13]. It can be hypothesized:

*Hypothesis 3:* The higher the firm's innovativeness, the greater the firm's performance.

#### 2.6. Organization age

The effect of a learning orientation is moderated by organization's age [22,28]. According to Sinkula [28], the influence of age is explained by the effective and efficient supply of market information in older organizations. Innovative ideas may come from within the organization or from customers, suppliers, and other firms in the relationships. It

takes time to establish these relationships; so younger firms are at a disadvantage. Furthermore, older organizations are more experienced at selecting and employing information [21]. Therefore, the relationship between learning orientation and firm innovativeness, and between learning orientation and firm performance grows stronger as organizations age because they can use the information more efficiently.

*Hypothesis 4:* The older the organization, the stronger the relationship between learning orientation and firm innovativeness.

*Hypothesis 5:* The older the organization, the stronger the relationship between learning orientation and firm performance.

### 3. Methods

#### 3.1. Data

The data used to test the hypotheses are drawn from a survey of senior executives from a broad spectrum of US industries. A sample of 400 R&D vice presidents was randomly drawn from the *CorpTech Directory of Technology Companies*. The sample frame covered a range of manufacturing and services industries, including chemicals, machinery, electronic, instruments, computer and data processing, engineering, and management services. Each informant was asked to evaluate the operation of a single strategic business unit.

Data were obtained through a key informant technique, which is consistent with prior studies [43]. The informants had control over all activities concerning innovation and knew the overall strategies in their organization. Nevertheless, their familiarity with the questions was assessed through the data collection instrument.

The survey was conducted in two waves. Three weeks after the first mailing of questionnaires and introductory letters, reminder letters and questionnaires were sent out to nonrespondents. As a result, 187 usable questionnaires were received, for a response rate of 46.75%.

Nonresponse bias was assessed by a comparison of: (1) sample statistics to known values of the population, such as annual sales volume and number of employees, and (2) first-wave and second-wave data. Neither procedure revealed significant differences between sampled and target populations.

#### 3.2. Questionnaire development and pilot study

To create the survey items, 25 in-depth field interviews were held with R&D vice presidents. All interviews were tape-recorded, transcribed, and analyzed. The managers were probed regarding important issues in the areas of strategic orientation and innovation capability, the face validity of the proposed model, and preliminary operation-

alization of the constructs. These interviews, along with an extensive review of the literature, were used to develop the initial questionnaire.

A pretest was conducted with several R&D vice presidents. Based on their responses, a number of items were reworded. That version was sent to another sample ( $n=30$ ) to assess the terminology. At this point, no particular problems with wording emerged and no significant problems with the validity of the scale or response format were revealed.

### 3.3. Measures

Overall, all constructs in the model with the exception of organization age were measured with multiple-item scales. In general, well-validated measures reported in previous research were used. When an item had to be modified or developed, Churchill's [44] multiple-step and multivaldation methods were followed.

In the framework, learning orientation is a second-order construct. Its first-order indicators are commitment to learning, shared vision, open-mindedness, and intraorganizational knowledge sharing. Each of these variables was measured by a seven-point Likert-type scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Most items were derived from the literature. Commitment to learning was measured using four items ( $\alpha=.80$ ) from Galer and van der Heijden [45] and Sinkula et al. [12]. Shared vision was measured by a four-item scale ( $\alpha=.79$ ) from Sinkula et al. [12]. Open-mindedness was measured by four items ( $\alpha=0.72$ ) from that source and from Hult and Ferrell [18]. Intraorganizational knowledge sharing was measured with a five-item scale ( $\alpha=.75$ ), four of them from Hult and Ferrell [19] and one generated from field research.

A six-item scale was used to measure firm innovativeness ( $\alpha=.89$ ). It was drawn from Hurt et al. [30], Hollenstein [46], and Hurt and Teigen [31], and it was well validated by many subsequent studies. Firm performance was measured by four items ( $\alpha=.85$ ). Three were objective measures (ROI, ROA, and ROS), and one was subjective (overall profitability). As for organization age, each informant was asked to indicate the year the firm was founded. Thus, the organizational age could be calculated [21].

## 4. Analysis and results

### 4.1. Measure validation

Fig. 1 illustrates the proposed latent variable model, showing all structural paths. Before testing this model, a series of tests was performed to establish the unidimensionality of the measures.

#### 4.1.1. First-order factors

The first-order constructs are firm innovativeness, firm performance, organization age, commitment to learning,

shared vision, open-mindedness, and intraorganizational knowledge sharing. The validity of the measures was initially assessed by examining the reliability of the constructs and item-to-total correlation. Items with low item-to-total correlation were deleted. Next, the entire set of items was subjected to confirmatory factor analysis (CFA), using structural equation model, to verify unidimensionality.

The purpose of CFA was to test the unidimensionality of the multi-item constructs and to eliminate unreliable items. Items that loaded on multiple constructs and had too low item-to-construct loadings were deleted. To ensure discriminant validity, a series of CFA was conducted with covariance matrix as inputs. First, CFA was performed on the original model with six constructs being distinct. This test produced  $\chi^2=513.99$  and  $df=330$ . A series of chi-square difference tests was then conducted to ensure discriminant validity following Durvasula et al. [47]. For example, combining commitment to learning and shared vision into one factor generated  $\chi^2=591.19$  and  $df=336$ . The difference in chi-square between this and the original model is significant (chi-square difference=77.2,  $df=6$ ,  $P<.01$ ), which suggests that these measures are distinct. All these tests supported discriminant validity. Phi values ranged from .02 to .54, and none of the confidence intervals had a value of one ( $P<.01$ ), which further confirms discriminant validity. Table 1 presents the factor intercorrelation matrix.

The results of CFA are presented in Table 2. Factor loadings of items to corresponding constructs range from .63 to .92, and all loadings are significant ( $P<.01$ ), which further supports convergent validity. The dimensionality is also supported by examining several measures of fit. Although the  $P$  value is quite small, the ratio of chi-square to degrees of freedom is 1.56; the goodness-of-fit index (GFI) is .89; and Bentler's comparative fit index (CFI) is .99, and all of which suggest the model represents a good fit to the data.

#### 4.1.2. Second-order factor (learning orientation)

In the framework, learning orientation is a higher-order construct composed of commitment to learning, shared vision, open-mindedness, and intraorganizational know-

Table 1  
Construct correlations (Phi values)

Construct	F1	F2	F3	F4	F5	F6	F7
F1 Firm innovativeness	1.00						
F2 Firm performance	.40*	1.00					
F3 Commitment to learning	.40*	.19**	1.00				
F4 Shared vision	.35*	.18*	.40*	1.00			
F5 Open-mindedness	.31*	.34*	.39*	.36*	1.00		
F6 Intraorganizational knowledge sharing	.36*	.45*	.54*	.50*	.40*	1.00	
F7 Organization age	.06	.07	.04	.05	.07	.02	1.00

\* Significant at  $P<.01$ .

\*\* Significant at  $P<.05$ .

Table 2  
Parameter estimates for measurement relations

Constructs	Standardized loading <sup>a</sup>
<i>Firm innovativeness (.89)<sup>b</sup></i>	
1. Our company frequently tries out new ideas.	.78 <sup>c</sup>
2. Our company seeks out new ways to do things.	.82 (14.34)
3. Our company is creative in its methods of operation.	.92 (15.77)
4. Our company is often the first to market with new products and services.	.76 (17.67)
5. Innovation in our company is perceived as too risky and is resisted.	.67 (13.75)
6. Our new product introduction has increased over the last 5 years.	.76 (14.33)
<i>Firm performance (.85)</i>	
1. Return on investment	.83 <sup>c</sup>
2. Return on asset	.78 (13.76)
3. Return on sales	.86 (15.70)
4. Overall profitability	.86 (16.34)
<i>Commitment to learning (.80)</i>	
1. Managers basically agree that our organization's ability to learn is the key to our competitive advantage.	.82 <sup>c</sup>
2. The basic values of this organization include learning as key to improvement.	.69 (10.08)
3. The sense around here is that employee learning is an investment, not an expense.	.71 (9.87)
4. Learning in my organization is seen as a key commodity necessary to guarantee organizational survival.	.75 (9.51)
<i>Shared vision (.79)</i>	
1. There is a commonality of purpose in my organization.	.85 <sup>c</sup>
2. There is total agreement on our organizational vision across all levels, functions, and divisions.	.73 (10.43)
3. All employees are committed to the goals of this organization.	.70 (10.10)
4. Employees view themselves as partners in charting the direction of the organization.	.75 (10.86)
<i>Open-mindedness (.72)</i>	
1. We are not afraid to reflect critically on the shared assumptions we have made about our customers.	.65 <sup>c</sup>
2. Personnel in this enterprise realize that the very way they perceive the marketplace must be continually questioned.	.73 (9.85)
3. We rarely collectively question our own bias about the way we interpret customer information.	.88 (8.78)
4. We continually judge the quality of our decisions and activities taken over time.	.63 (10.62)
<i>Intraorganizational knowledge sharing (.75)</i>	
1. There is a good deal of organizational conversation that keeps alive the lessons learned from history.	.75 <sup>c</sup>
2. We always analyze unsuccessful organizational endeavors and communicate the lessons learned widely.	.81 (113.20)
3. We have specific mechanisms for sharing lessons learned in organizational activities from department to department (unit to unit, team to team).	.92 (14.70)
4. Top management repeatedly emphasizes the importance of knowledge sharing in our company.	.75 (12.80)
5. We put little effort in sharing lessons and experiences.	.67 (7.69)
<i>Organization age</i>	
The length of time in business.	.81 <sup>c</sup>
$\chi^2 = 513.99$ , $df = 330$ ; GFI = .89; CFI = .99; IFI = .99.	

ledge sharing. To establish that learning orientation is a single second-order factor, the null hypothesis that the first-order factors converge to a single higher-order construct was tested [12]. Table 3 presents the loadings,  $t$  values, and fit indices from fitting this model to the data. As can be seen, the model fits the data quite well. Factor loadings from the measurement item to respecting first-order constructs range from .59 to .93 and are significant at  $P < .01$ . Factor loadings from first-order factors to the second-order factor range from .58 to .82 and are significant at  $P < .01$ . Measures of goodness of fit support the null hypothesis that the first-order factors converge to a single higher-order construct. The ratio of chi-square to degrees of freedom is 2.12, GFI is .90, and CFI is .98. The second-order construct explains 48%, 43%, 67%, and 33% in variation of the first-order factors (commitment to learning, shared vision, open-mindedness, and intraorganizational knowledge sharing, respectively). Thus, the second-order factor model was employed to represent a composite learning orientation.

#### 4.2. The results of path analysis

Having satisfied the requirement arising from measurement issues, the structural model in Fig. 1 was subsequently tested. The results are presented in Table 4 and indicate a good fit of the model: the ratio of chi-square to degrees of freedom is 1.63, GFI = .89, CFI = .99. All proposed paths are significant. The coefficient on the path from learning orientation to firm innovativeness is .49 ( $t = 5.28$ ,  $P < .01$ ). Thus, this positive relationship suggests that Hypothesis 1 is supported. The path coefficient from learning orientation to firm performance is .37 ( $t = 3.79$ ,  $P < .01$ ), which supports Hypothesis 2. The path coefficient from firm innovativeness to firm performance is .24 ( $t = 2.72$ ,  $P < .01$ ), so Hypothesis 3 is supported. Firm innovativeness significantly affects firm performance.

The structural model explains 34% and 32%, respectively, of the variance in the two endogenous theoretical constructs, firm innovativeness and firm performance.

#### 4.3. The moderating effect of organization age

The two-group comparison of structural equation modeling was used to test the moderating effect of organization age on the relationship between learning orientation and firm innovativeness. The sample was split into two groups based on the mean of organization age. Organizations above the mean were defined as old, and those below the mean were defined as young. Two-group comparison

#### Notes to Table 2:

<sup>a</sup>  $t$  values from unstandardized solution are shown in parentheses.

<sup>b</sup> Construct reliabilities are shown in the parentheses.

<sup>c</sup> Fixed parameter.

Table 3

Learning orientation (LO) second-order measurement model

## A. Standardized first-order loadings

Construct	Indicator (parameter)	Standardized loadings
Commitment to learning	Managers basically agree that our organization's ability to learn is the key to our competitive advantage.	.79 <sup>a</sup>
	The basic values of this organization include learning as key to improvement.	.71 (9.98) <sup>b</sup>
	The sense around here is that employee learning is an investment, not an expense.	.74 (9.63)
	Learning in my organization is seen as a key commodity necessary to guarantee organizational survival.	.75 (9.85)
Shared vision	There is a commonality of purpose in my organization.	.72 <sup>a</sup>
	There is total agreement on our organizational vision across all levels, functions, and divisions.	.68 (10.55)
	All employees are committed to the goals of this organization.	.73 (10.05)
Open-mindedness	Employees view themselves as partners in charting the direction of this organization.	.77 (11.01)
	We are not afraid to reflect critically on the shared assumptions we have made about our customers.	.59 <sup>a</sup>
	Personnel in this enterprise realize that the very way they perceive the marketplace must be continually questioned.	.74 (13.29)
	We rarely collectively question our own bias about the way we interpret customer information.	.91 (14.74)
Intraorganizational knowledge sharing	We continually judge the quality of our decisions and activities taken over time.	.59 (12.67)
	There is a good deal of organizational conversation that keeps alive the lessons learned from history.	.74 <sup>a</sup>
	We always analyze unsuccessful organizational endeavors and communicate the lessons learned widely.	.79 (5.67)
	We have specific mechanisms for sharing lessons learned in organizational activities from department to department (unit to unit, team to team).	.93 (10.23)
	Top management repeatedly emphasizes the importance of knowledge sharing in our company.	.77 (6.78)
	We put little effort in sharing lessons and experiences.	.69 (8.97)

## B. Standardized second-order loadings

First-order construct	LO
Commitment to learning	.70 (5.00)
Shared vision	.65 (4.99)
Open-mindedness	.82 (6.98)
Intraorganizational knowledge sharing	.58 (5.71)
Goodness of fit: $\chi^2 = 244.02$ , $df = 115$ ; GFI = .90; CFI = .98; IFI = .98	

<sup>a</sup> Fixed parameter.<sup>b</sup> *t* values from unstandardized solutions are shown in parentheses.

was then performed to examine whether there were any differences in structural parameters between old and young organizations. In the first step, the parameter from learning orientation to firm innovativeness was constrained to be equal. In the second step, the parameter was not constrained (allowing it to be free). The difference in the two tests was significant (chi-square difference = 22.21,  $df = 1$ ,

$P < .01$ ), which supports the proposition that old and young organizations differ. The test of the moderating effect of organization age on the relationship between learning orientation and performance followed the same procedure. The difference in the two tests was not significant (chi-square difference = 1.27,  $df = 1$ , not significant). The results are summarized in Table 5.

Examining the coefficients of the two groups, it is found that the coefficient for young organizations is .17 ( $t = 2.38$ ,  $P < .05$ ) and for old organizations is .43 ( $t = 3.95$ ,  $P < .01$ ). That is, organizations with a long history show a strong relationship between learning orientation and firm innovativeness, whereas organizations with a short history present a weak relationship. This supports Hypothesis 4. As for the relationship between learning orientation and performance, the coefficient for young organizations is .31 ( $t = 2.32$ ,  $P < .05$ ) as compared to .41 ( $t = 2.69$ ,  $P < .01$ ) for old organizations. That result does not support Hypothesis 5.

Table 4

Results of path analysis

Paths	Standardized parameter estimate <sup>a</sup>
Learning orientation → Firm innovativeness	.49 (5.28)
Firm innovativeness → Firm performance	.24 (2.72)
Learning orientation → Performance	.37 (3.79)
Goodness of fit: $\chi^2 = 518.02$ , $df = 317$ ; GFI = .89; CFI = .99; IFI = .99	

<sup>a</sup> *t* values from unstandardized solution are shown in parentheses.

Table 5

Moderating effect of organization age on the relationship of learning orientation to innovativeness and performance

Path	Moderator		Standardized coefficient	$\chi^2$ Difference
Learning orientation $\rightarrow$ Firm innovativeness	Organization age	Young organization	.17 ( $t=2.38$ ) **	$\chi^2(1)=22.21$ *
		Old organization	.43 ( $t=3.95$ ) *	
Learning orientation $\rightarrow$ Performance	Organization age	Young organization	.30 ( $t=2.32$ ) **	$\chi^2(1)=1.27^{n.s.}$
		Old organization	.41 ( $t=2.69$ ) *	

n.s. = not significant.

\* Significant at  $P < .01$ .\*\* Significant at  $P < .05$ .

There is no significant difference between the young and old organizations.

## 5. Discussion and implications

In this study, a framework for studying learning orientation, innovation capability, and firm performance was developed. The model was tested using data collected from large US firms. The results support all but one of the hypotheses and reveal that learning orientation is critical for innovation and performance. Based on the findings, a number of guidelines can be offered to both scholars and practitioners regarding the role of learning orientation in firm innovation.

Clearly, learning orientation influences firm innovativeness (coefficient = .49,  $t=5.28$ ,  $P < .01$ ). An organization committed to learning seeks a full understanding of its environment, including customers, competitors, and emerging technology. The results of this study suggest that innovation itself is a broad process of learning that enables the implementation of new ideas, products, or processes. Innovation also reflects an appreciation for and desire to assimilate new ideas [6]. Therefore, a positive learning climate is beneficial for firms that aspire to stand out through product development. It is important to point out that managers should encourage employees to use company time to pursue knowledge that may lie outside the immediate scope of their work. Through cross-functional integration, employees learn and develop new skills as well as share existing knowledge, both of which are crucial for product development [48]. For effective innovation, well-established norms, practices, and beliefs may have to be challenged. It is understandable that new product development requires continuous organizational renewal.

The finding about the main effect of learning orientation on firm performance replicates and extends research by Baker and Sinkula [49], who found a positive relationship between learning orientation and firm performance (market share, new product success, and overall performance). The finding that learning orientation has a direct influence on firm performance is not surprising (coefficient = .37,  $t=3.79$ ,  $P < .01$ ). The literature has long acknowledged the importance of that relationship. This study suggests that learning orientation enhances an organizational performance directly

and indirectly through its influence on competitive advantage. This offers critical insights to management. Learning orientation facilitates the generation of resources and skills essential for firm performance. The findings also suggest that learning orientation is central not only for innovation but also for the organization's other activities. Future studies should explore the effect of learning orientation on such areas as channel relationships [21], integration of suppliers into innovation, and strategic alliances.

Firm innovativeness is positively related to firm performance (coefficient = .24,  $t=2.72$ ,  $P < .01$ ), which confirms the findings of research on new products [16] and diffusion of innovations [3,4]. The results also suggest that this competitive advantage is built on a full understanding of customer needs, competitors' actions, and technological development, an understanding made possible by organizational commitment to learning. Firms without these attributes are less likely to stand out in terms of innovation capability, although they may look elsewhere to find ways to survive.

The moderating effect of organization age on the relationship between learning orientation and firm innovativeness is supported by the study. The findings suggest that the effect of learning orientation on firm innovativeness is affected by the length of time the organization has been in business. Older firms are more likely to employ knowledge learned and turn it into innovation activities. Younger firms need to establish an efficient mechanism for rapidly internalizing knowledge.

The empirical tests do not reveal a moderating effect of organization age on the relationship between learning orientation and performance. One explanation may be that learning, in terms of organizational resources and skills [37], is of equal importance to young and old organizations.

This study finds that learning orientation is a higher-order construct. Following the scale development and testing procedures of Sinkula et al. [12], this study strongly supports the original conceptualization of the construct. Future research should explore other dimensions, however.

The results also suggest that learning orientation and innovation are distinct constructs. Learning orientation emphasizes the organizational value of obtaining knowledge, whereas innovativeness focuses on the organization's willingness to change. If learning orientation is considered as the input, then firm innovativeness can be viewed as the



output of learning efforts. Future work should explore other consequences of learning orientation.

## 6. Limitations and future research directions

This study emphasizes the importance of learning orientation and links it with innovation and performance, but it does not address the issue of how organizational learning should be carried out. Future research could identify the antecedents of learning orientation and construct a comprehensive framework of both antecedents and consequences. For example, many studies have explored learning from other firms through strategic alliance and other intraorganizational forms [50]. Future research can be conducted to link intraorganizational relationships with learning orientation and firm performance.

This study is limited to the effect of learning orientation on firm innovativeness, but the general outline can be applied to other types of activities, such as marketing, and their linkage with organizational learning.

As the world economies become increasingly interdependent, an urgent issue is to test the applicability of the learning and innovation constructs in other cultures. Cross-national studies should be conducted to compare the strength of the framework and assess its generalizability across varying business systems and organizational forms. This is essential for continuous advancement of the body of knowledge on organizational learning and innovation.

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