

Organizational Learning

Antecedents and Impact on the Organizational Performance.

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Abstract

Organizational learning (OL) has been proposed as a dynamic capability with influence on firms' performance; however, researchers have often ignored implications of that proposal and multiple antecedents of OL. This study proposes that OL is not directly available to all firms; other organizational capabilities (such as shared vision, absorptive capacity, transformational leadership, and teamwork capability) simultaneously and positively affect OL and are keys to its implementation in large firms. The analysis on hypotheses tested by a structural equation model and using data from 408 large firms support the importance of internal capabilities for OL and show a positive, significant influence of this capability on innovation and performance.

Keywords: organizational learning; dynamic capability; organizational innovation; organizational performance.

Introduction

The resource-based view (1) is one of the most successful approaches to studying organizational learning (2). Organizational learning (OL) is defined as a capability based on experiential and cognitive processes and involving knowledge acquisition, knowledge sharing, and knowledge utilization (e.g., 3). Additionally, many scholars have stated that OL has a positive influence on firm performance (e.g. 4). Although OL is widely prescribed as a means to improve firms' performance, it is easy to see many firms that do not or cannot properly develop OL. What leads to successful implementation of OL? Our view is that certain internal features allow firms to develop the OL capability and that identifying to them will complement the general prescription that firms develop OL. We want to contribute to filling all these gaps using a dynamic capabilities lens (5).

A dynamic capability is an ability to integrate, build and reconfigure competencies to address changing environments, and this ability requires integrating a series of path-dependent capabilities (5). OL is proposed as an important dynamic capability (5). This proposal implies that OL simultaneously integrates a series of capabilities. Given the implications of considering OL to be a dynamic capability, the multiple influences of other capabilities on OL should be analyzed simultaneously and systematically (4). Additionally, the ultimate purpose of OL is generation of new knowledge and applications, especially those connected to continuous innovation and improvement (e.g., 6; 7), and many researchers have claimed a positive relationship between OL and performance. A few empirical studies have begun recently to show positive effects of learning on performance (8) and on innovation (9).

We want to reinforce this work by contributing to the simultaneous analysis of direct and indirect relationships between OL, innovation, and performance.

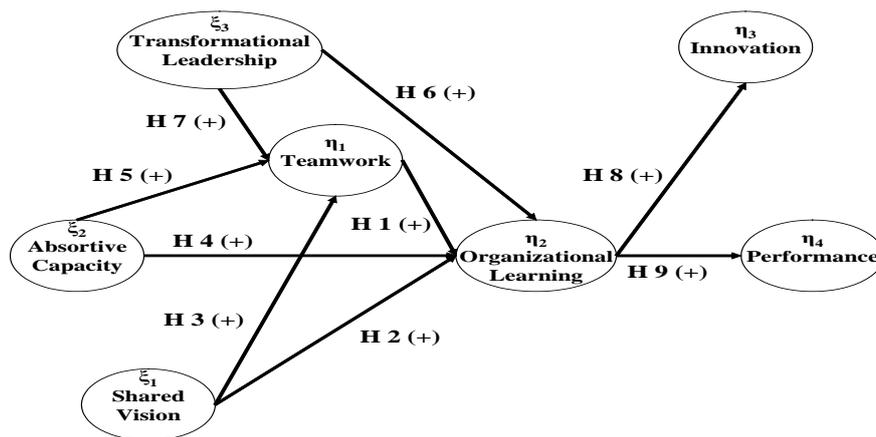
To summarize, our research applies a resource-based view and proposes a model to avoid the previous fragmented approaches, thus offering empirical evidence about how multiple organizational capabilities allow the generation of a dynamic capability and about its direct and indirect implications for innovation and performance.

Discussion and hypotheses

Dynamic capabilities are complicated processes emerging from path-dependent capabilities (5). Like any other dynamic capability, OL depends on specific and identifiable capabilities by which firms synthesize and acquire knowledge resources and generate new applications from those resources (7; 4).

In the following sections, we present a systematic model consisting of seven hypotheses about how four organizational capabilities—shared vision, absorptive capacity, transformational leadership and teamwork capability—simultaneously condition OL. Because teamwork capability has been posited to be at the centre of the OL process (7; 4), we also propose three indirect relationships between the capabilities and OL through relationships with teamwork capability. The four analyzed capabilities are among those most frequently analyzed in the relevant literature (e.g. 4) and our results will show that they explain a significant amount of variance of OL for sampled firms. We recognize that some other capabilities might be considered; however, it was necessary to limit our model to be able to offer empirical evidence for our arguments. Our main interest was simultaneous and global consideration of relevant antecedents of OL. Additionally, we include two hypotheses about learning's effects on innovation and performance. Figure 1 illustrates the proposed model in advance.

Figure 1 Hypothesized model.



*Control variable and their paths are not shown for the sake of clarity

Antecedents: The influence of organizational capabilities on OL.

Teamwork capability. This term refers to a firm's ability to ensure that the people working together in it have complementary skills and interactions that ease the obtaining of planned objectives (3). Teamwork capability is proposed as key to competitive advantage

because of its influence on socialization inside firms and the difficulty of imitating the complex interactions comprising teamwork (e.g. 7). Teamwork capability plays a central role in the development of learning inside firms, bridging organizational and individual learning (3) and enhancing knowledge flows between teams or individuals in a team (7).

Researchers have also identified various barriers to an effective relationship between teamwork capability and OL (7; 4). It is especially important for our objectives to highlight that the lack of other capabilities in an organization may make it difficult for teams to work effectively to generate competitive learning. For instance, the lack of shared vision in an organization prevents members from having a common sense about the way to learn (4). The central role of teamwork capability and the described relationships with other analyzed capabilities suggest the necessity of considering teamwork capability as a mediator between the rest of the capabilities analyzed in this paper and OL. As noted above, three of our hypotheses will concern these indirect relationships.

Although the positive relationship between OL and teamwork has not received definitive past empirical support, the above arguments imply:

Hypothesis 1: Teamwork capability will be positively associated with OL.

Shared vision capability. For firms, this capability includes a guiding philosophy and coherent collective aspirations (10), and it results in a creative orientation and a 'generative conversation' within an organization (11). Shared vision implies a common commitment to a desired future and a common sense of the purpose of the organization (4). Shared vision is highly important for OL (11; 4) especially because it pushes organizational members to work the same way to obtain common objectives (4). Many works have stated a positive relationship between shared vision and organization learning (e.g. 4). On the other hand, the absence of shared vision has been analyzed as one of the most important causes of failure for the processes of OL (11). Such rationales and evidence imply the following:

Hypothesis 2: Shared vision capability will be positively associated with OL.

Shared vision and teamwork are highly related. Team members have to be committed to a common purpose, set of performance goals, and shared vision is needed to avoid individualistic behaviours (11). A successful team is totally committed to the vision of a project and clearly understands its mission and objectives (4). Its members must feel a strong interest, even a passion, for the objectives and mission, which must, in turn, build on the personal visions of its member (11). Given a positive relationship between OL and teamwork capability, a positive relationship between shared vision and teamwork capability would determine an indirect and positive association between shared vision and OL. Our hypothesis is now:

Hypothesis 3: Shared vision capability will be positively associated with the teamwork capability.

Absorptive capability. This term describes "the ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends" (6, p. 128). Absorptive capability comprises evaluation, acquisition, integration, and the commercial utilization of new outside knowledge (7) and depends on previous knowledge and on individual abilities of organization members, although it is more than the aggregation of individual abilities.

Different factors affecting absorptive capability have shown effects on OL (e.g. 6), and the capability of OL increases with absorptive capacity (e.g., 12). The above arguments imply:

Hypothesis 4: Absorptive capability will be positively associated with OL.

The general relationships between absorptive capability and OL are also influenced by the relationship between absorptive capacity and teamwork capability. Specifically, Cohen and Levinthal (6) showed that absorptive capability includes transfer and exploitation of knowledge inside internal subunits. Cohen and Levinthal (6) also analyzed the importance of absorptive capability at the intraorganizational level. Absorptive capacity eases the development of the capability to work in teams, allowing members to understand other members' mental models and ways of doing and improving the chance of effective teamwork (4). Given a relationship between OL and teamwork capability, a positive relationship between absorptive capability and teamwork capability would determine an indirect and positive association between absorptive capability and OL. Our hypothesis is now:

Hypothesis 5: Absorptive capability will be positively associated with teamwork capability.

Transformational leadership capability. Transformational leadership, which has been contrasted with 'traditional' or 'transactional' leadership, includes a wide strategic vision about environmental changes and adaptation (13), significant interest in strengthening a communicative culture (14), attention to the development of people (15), and acceptance of mistakes and limitations (16). It is important to highlight that we not concerned here with characteristics of individual leaders, but with the capability to promote this kind of leadership in an organization.

Many authors have asserted relationships between leadership and OL (e.g. 4; 17). Transformational leadership fuels OL by promoting intellectual stimulation, inspirational motivation, and self-confidence among organization members (18). The existence of transformational leadership capability has been even described as one of the most important means to develop learning organizations (11; 16). Thus, we predict:

Hypothesis 6: Transformational leadership capability will be positively associated with OL.

Traditional leadership has been characterized as highly individualistic and a systematic and as making the work and the learning of organizational teams difficult (19). However, transformational leadership is focused on active promotion of employees' participation in collective decisions and activities (4). Transformational leadership capability should be able to build teams and provide them with direction, energy, and support for processes of change and OL (20; 17).

Beech and Crane explained successful teamwork as proceeding from a climate of community and a new kind of leadership (transformational) supporting the teamwork (21). Given the relationship between OL and teamwork capability, a positive relationship between transformational leadership and teamwork capability would determine an indirect and positive association between absorptive capability and OL.

Hypothesis 7: Transformational leadership capability will be positively associated with teamwork capability.

Consequences: The influence of organizational learning on innovation and performance

Effects on innovation. Many contributions from works on OL have noted a positive relationship between OL and innovation (e.g., 17). OL supports creativity (e.g. 22), inspires new knowledge and ideas (e.g. 22), and increases the potential to understand and apply them (e.g., 22).

Generative learning is the most advanced form of OL and occurs when an organization is willing to question long-held assumptions about its mission, customers, capabilities, or strategy and generate changes in its practices, strategies, and values (e.g. 4). This kind of learning is a necessary underpinning for radical innovations in products and processes (4).

These ideas have recently begun to receive some empirical attention. Hurley and Hult (23) focused on a large agency of the U.S. federal government to show that organizational innovativeness was positively associated with a culture that emphasizes adaptation, innovation, and learning. Our hypothesis is now:

Hypothesis 8: OL capability will be positively associated with innovation.

Effects on performance. The importance of OL for a company's survival and effective performance is highly emphasized in the literature (e.g. 4). However, empirical analysis of this relationship is limited.

Some recent works begin to verify this positive relationship. Schroeder et al., (2002) develop resource-based hypotheses and showed a positive relationship between internal and external learning and organizational performance. Bontis et al., (24) use respondents to show that 'stocks of learning' at all organizational levels had a positive relationship with business performance. Finally, Schroeder et al., (8) show a strong relationship between international diversity and mode of market entry and the breadth, depth, and speed of a new venture firm's technological learning, especially when the firm undertakes formal knowledge integration. Thus:

Hypothesis 9: OL will be positively associated with performance.

Figure 1 shows the whole proposed model including all the hypotheses.

Procedures for collecting data.

Sample and procedures

The sample of firms was randomly selected from the Duns & Bradstreet 2001 database, which includes the 50,000 biggest companies operating in Spain. The final sample contained 900 firms in four wide categories: agriculture, industry, building, and services. We limited these classifications to control for confounding effects. The Spanish market is relatively well developed, wholly integrated in the European Union, and has had a slightly better rate of growth in recent years than the European market overall. However, Spain is in a geographical area that has received relatively little attention from organizational researchers.

Drawing on previous contacts and our knowledge about OL, new interviews with five managers and six academics interested in the topic and familiar with Spanish market, we developed a structured questionnaire to investigate how organizations face learning issues. These developmental interviewees did not provide data for the empirical investigation.

We decided to use CEOs as our key informants since they are the most knowledgeable about their organizations. Surveys were mailed to the CEOs of the 900 selected firms along with a cover letter by June 2001. To reduce possible desirability bias, we

promised that we would keep all individual responses completely confidential and confirmed that our analyses would be restricted to an aggregated level that would prevent the identification of any organization. We mailed each CEO who had not yet responded three reminders. Four hundred twenty-three CEOs finally answered the questionnaire but, because of missing values, only 411 questionnaires were included in the research. The response rate was 45.66 percent. We did not find significant differences in type of business or number of employees between the respondents and the sample or between early and late responders.

Measures.

Organizational learning. There are wide differences among the assumptions, procedures, and objectives of previous measures. We used the first two items from Kale and colleagues' (26) scale. Answers were based on a seven-point format (1 = "completely disagree," and 7 = "completely agree"). The proposed scale was similar to other recently proposed measures of external and internal learning by Schroeder et al., (2002) and Bontis et al., (24). We conducted a confirmatory factor analysis to validate our scales ($\chi^2_2 = 2.4$, goodness-of-fit index [GFI] = 1.00, comparative fit index [CFI] = 1.00, root-mean-square error of approximation [RMSEA] = .022). Item loadings were as proposed and were significant ($p < .01$), showing evidence of convergent validity. Results showed that final scale was unidimensional and had high reliability ($\alpha = .919$).

Teamwork capability. Wagner's work (27) has been especially inspiring. We drew on Wagner's research to develop a seven-item scale (1 = "completely disagree," and 7 = "completely agree") to measure the existence of developed teamwork capacity in an organization. A confirmatory factor analysis for five items ($\chi^2_5 = 32.63$, GFI = .99, CFI = .98, RMSEA = .12) indicated deletion of items 1 and 3 (28). After these deletions, item loadings were as proposed and significant ($p < .01$), showing evidence for convergent validity and high reliability ($\alpha = .88$).

Shared vision capability. Previous scales for shared vision have related to the clarity and cohesiveness of organizational objectives (e.g. 29). We drew on these scales and on the concept of goal similarity (30) to develop a six- item scale rated on the same response scale noted above. One item was deleted after confirmatory factor analysis. A second confirmatory analysis yielded significant ($p < .01$) loadings. Fit indexes and coefficient alpha values were appropriate ($\chi^2_5 = 21.32$, GFI = .99, CFI = .99, RMSEA = .09; $\alpha = .91$).

Absorptive capability. Szulanski (31) analyzed recipients' absorptive capacity as one of the factors influencing the transfer of "best practices" inside organizations. We used his seven-point scale (rated on the same response scale noted above) to analyze the ability of organizations to identify, value, and apply new knowledge. A confirmatory factor analysis for five items ($\chi^2_5 = 20.44$, GFI = .99, CFI = .99, RMSEA = .08) indicated deletion of items 1 and 7 (28). After these deletions, item loadings were as proposed and significant ($p < .01$), showing evidence for convergent validity and high reliability ($\alpha = .80$).

Transformational leadership capability. Some previous research has compared transformational leadership with transactional leadership (e.g. 18), and other works have analyzed specific features of transformational leadership (e.g. 32). The three items we used to measure organizational capability to motivate and guide were derived from more global scale of Podsakoff et al., (33) analyzing connections between transformational leadership capability and personal mastery. The three-item scale was unidimensional and showed high reliability ($\alpha = .81$).

Innovation. Previously measured aspects of innovation often concern those new lines of product or services effectively developed by the organization in the last years (e.g. 34). We based our scale on Miller and Friesen's work (34) and defined innovation for respondents, noting that organizational innovation, not industry or market innovation, should be their focus and asking them both to evaluate innovation on products, services, and production processes (22) and to compare their firms with competitors. The three-item scale was unidimensional and showed high reliability ($\alpha = .78$).

Performance. Conceptualization and measurement of organizational performance is a thorny topic in strategy research. We classify these into two wide categories: objective measures (such as return on assets) and perceptual measures (comparisons of self with competitors). We included questions tapping both types of assessment in our interviews, but the managers were more open to offering their general views than to offering precise quantitative data. Therefore, we tested the model using a perceptual measure of financial performance (two items; seven-point scale) in which each respondent rated his or her organization's performance relative to that of other firms in the sector (35). When possible, we calculated the correlations between the objective and subjective data, and these were high and significant. Previous researches have also shown that perceived performance can be a reasonable substitute for objective measures of performance (e.g. 36). The Cronbach alpha for our measure indicated high reliability ($\alpha = .79$).

Control variables. Size may affect an organization's ability to learn (3). The size indicators initially used for this research were firm income and number of employees. Information for these variables was gathered through the survey and validated using Duns & Bradstreet; correlations between these sources were strong and significant. In addition, because of size and income were highly correlated, we used number of employees only in our model.

Major industry type was measured at the two-digit SIC code level and then aggregated to four wide categories, as described under "Sample," above. This variable controls the potential influence of industry on learning (37) and profitability. The survey asked managers to name the industry from which the company generated most of its sales.

Results, figures and tables with legends.

Table 1 displays the means, standard deviations, and correlation coefficients for the variables. We tested our proposals via structural equation modelling (38) using LISREL 8.30 with the correlation matrix and asymptotic covariance matrix as inputs. This type of analysis has the advantage of correcting for unreliability of measures and also gives information on the direct and indirect paths between multiple constructs after potentially confounding variables are controlled for.

Table 1 *Means, standard deviations and correlations*

Variable	Mean	s.d.	1	2	3	4	5	6	7
1. Transformational Leadership.	5.14	0.99							
2. Shared Vision	5.36	1.14	.63***						
3. Absorptive	5.16	1.00	.57***	.60***					
4. Teamwork	4.97	1.14	.35***	.32***	.36***				
5. O. Learning	5.37	1.14	.45***	.46***	.44***	.39***			
6. Innovation	4.67	1.19	.37***	.35***	.30***	.23***	.58***		
7. Performance	4.94	1.39	.21***	.28***	.22***	.09 [†]	.26***	.33***	

8. Size 3.43 1.68 .03 .01 02 09[†] -.01 .07 .07

[†] $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$. n = 408.

The modification indexes were calculated for each non estimated relationship. These indexes show the possibility of improving the explanation of a model via adding paths with theoretical consistence (28). Results suggested the possibility of considering relationships between transformational leadership and innovation (17), innovation and performance (39), and teamwork and innovation (20). We therefore integrated the three additional paths to improve the goodness-of-fit of the final model.

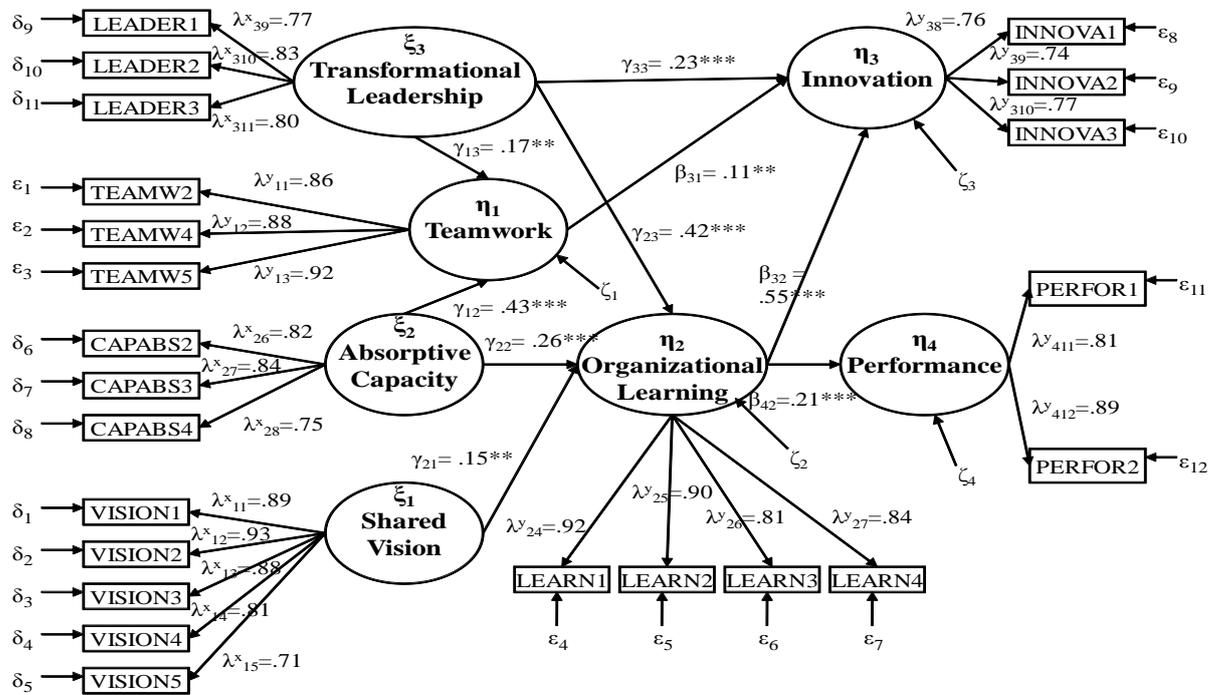
It is also necessary to delete non significant paths (28). This step led to deletion of the relationship between shared vision capability and teamwork ($\gamma_{11} = .00, t = -.03$). Afterwards, the model had to be reestimated and a second relationship had to be deleted: the relationship between teamwork capability and OL ($\gamma_{21} = -.07, t = -1.61$). All the paths were significant after the new re-estimation. Table 2 shows the final model and reports standardized factor loadings. Loadings indicate that each item significantly loads on its respective construct, suggesting that the measurement scale for each construct demonstrates high convergent validity.

Table 2 *Measurement model*

<i>Variable</i>	Item	Parameter	Estimates Factors loading	<i>t</i>
Shared vision	Vision1	λ^x_{11}	1.00 [†]	
	Vision2	λ^x_{12}	1.05	64.48***
	Vision3	λ^x_{13}	0.99	59.05***
	Vision4	λ^x_{14}	0.92	57.66***
	Vision5	λ^x_{15}	0.80	39.56***
Absorptive capacity	Capabs2	λ^x_{26}	1.00 [†]	
	Capabs3	λ^x_{27}	1.02	37.15***
	Capabs4	λ^x_{28}	0.92	34.11***
Transformational leadership	Leader1	λ^x_{39}	1.00 [†]	
	Leader2	λ^x_{310}	1.08	33.73***
	Leader3	λ^x_{311}	1.05	35.63***
Teamwork	Teamw2	λ^y_{11}	1.00 [†]	
	Teamw4	λ^y_{12}	1.02	60.37***
	Teamw5	λ^y_{13}	1.07	51.89***
Organizational learning	Learn1	λ^y_{24}	1.00 [†]	
	Learn2	λ^y_{25}	0.98	64.76***
	Learn3	λ^y_{26}	0.89	60.08***
	Learn4	λ^y_{27}	0.91	55.14***
Innovation	Innova1	λ^y_{38}	1.00 [†]	
	Innova2	λ^y_{39}	0.97	25.81***
	Innova3	λ^y_{310}	1.01	29.18***
Performance	Perfor1	λ^y_{411}	1.00 [†]	
	Perfor2	λ^y_{412}	1.11	15.42***

* $p < .05$ ** $p < .01$ *** $p < .001$; [†] Fixed Parameter

Figure 2 shows standardized regression coefficients. Only paths that are significant at the .05 level are shown in this diagram. The overall fit measures, the multiple squared correlation coefficients of the variables, and the signs and significance levels of the path coefficients all indicate that the model fits the data well ($\chi^2_{217} = 630, p < .001$; $\chi^2_{ratio} = 2.90$; NFI = .96; NNFI = .97; CFI = .98; RMSEA = .072). The hypothesized model was a significantly better fit than the null model ($\chi^2_{253} = 17190, p < .001$; $\Delta \chi^2_{36} = 16560, p < .001$). All of the modification indexes for the beta pathways between variables were small, suggesting that adding additional paths would not significantly improve the fit. The residuals of the covariance were also small and centered around zero.



Completely standardized solution. * $p < .05$, ** $p < .01$, *** $p < .001$

The findings show that OL is well explained by the model ($R^2 = .60$), as shared vision, absorptive capacity, and transformational leadership all affect it ($\gamma_{21} = .15$, $p < .01$; $\gamma_{22} = .26$, $p < .001$; and $\gamma_{23} = .42$, $p < .001$, respectively), supporting Hypotheses 2, 4, and 6. Comparing the magnitudes of these effects indicates that the effect of transformational leadership on OL is significantly larger than the effects of absorptive capacity and shared vision. The elimination of the path between teamwork capability and OL prevented examination of Hypothesis 1. Hypotheses 3, 5, and 7 relate the capabilities of shared vision, absorptive capacity, and transformational leadership to teamwork. Regarding Hypotheses 5 and 7, the parameter estimates were both significant and supportive ($\gamma_{12} = .43$ and $\gamma_{13} = .17$, respectively; $p < .001$ and $.01$). The methodological elimination of path between teamwork and shared vision prevented us to verify Hypothesis 3. Hypothesis 8, stating an influence of OL on innovation ($\gamma_{32} = .55$, $p < .001$), and Hypothesis 9, stating influence of OL on performance ($\gamma_{42} = .21$, $p < .001$), were both supported. The path between innovation and performance also had a significant parameter estimate ($\gamma_{43} = .32$, $p < .001$). Therefore, we have shown an indirect effect (.18, $p < .001$) of OL on performance through innovation (.55 x .32; see, for instance, Bollen [38] for calculation rules). Then, the global influence of OL on performance is .39, giving additional support to Hypothesis 9. The methodological integration of paths theoretically supported also shows that innovation is strongly affected by transformational leadership ($\gamma_{33} = .23$, $p < .001$), and teamwork ($\gamma_{31} = .11$, $p < .01$).

In addition to these direct effects, various indirect relationships manifest themselves. We observed indirect effects of transformational leadership on organizational innovation (.25, $p < .001$) through OL and also through teamwork; of transformational leadership on performance (.24, $p < .001$); of shared vision on innovation (.08, $p < .01$) and on performance (.06, $p < .05$); of absorptive capacity on innovation (.19, $p < .001$) and on performance (.12, $p < .001$); finally, of teamwork on performance (.04, $p < .01$). The control variables do not show significant influence for sampled firms. In testing the theoretical framework, we fit several nested models, each incorporating different assumptions about parameters. Comparison with reasonable alternative models is considered to be an important part of assessing model fit (28). Length restrictions prevent a detailed discussion of each model (a whole report is available from the authors). The assessments included comparing the hypothesized model with models with only a direct link between shared vision and performance, with only a direct link between absorptive capacity and performance, with only a direct link between transformational leadership and performance, and with a model without teamwork. The values on these also supported our final model shown in Figure 2.

Conclusions and international and managerial implications.

Firms need dynamic capabilities to improve their performance in real-life changing business environments. These dynamic capabilities are based on multiple and simultaneous influences of previous capabilities and provide a competitive advantage (5). OL has often been proposed as one of the dynamic capabilities available for firms (5) and the current study supports the idea of OL as a dynamic capability. Results have showed that OL is simultaneously influenced by a firm's possessing capabilities for shared vision, absorptive capacity, and transformational leadership. A major implication of this work is that OL is not directly available to all firms at all times, but only to firms with the appropriate internal capabilities. Wide prescriptions for implementation of OL have often generated serious problems for practitioners. This outcome is not a limitation of OL in itself, but the consequence of limited understanding of complex conditions. Shared vision, transformational leadership, and absorptive capacity are a relevant sample of the internal conditions that firms need to have in order to develop this dynamic capability. Huge resources may not be enough (or may not be needed) to bring organizational capabilities about. However, the existence and development of basic capabilities are often hidden factors in generating complex capabilities and sustaining competitive advantage.

Our research supports the theoretical arguments offered in previous literature about the existence of a positive relationship between shared vision and OL (e.g., 11; 4). A common perspective, which integrates efforts and strengths, is a prerequisite for OL. Capability to absorb information and knowledge is also needed (e.g., 12). Continuous monitoring of new ways to work and the willingness to accept them is probably one of the first steps of the process of OL. We want to highlight the difficult (and relevant) balance between these two capabilities. An excess of self-confidence about internal visions may prevent the development of absorption, but internal aims have to guide the process of absorption to make it useful.

Our results also support the importance of the relationship between the capability of promoting transformational leadership and OL (16). This relationship is the strongest of all the analyzed influences of capabilities on OL for our sampled firms. The result is especially

appealing because it supports that organizations need leadership, but the leadership required for OL is more concerned with collective decisions, collective goals, and the generation of capabilities than is traditional leadership, which focuses more on top-down decisions, standardized procedures and the generation of products and services. We have also shown significant relationships between the teamwork capability and absorptive capacity (e.g. 6) and transformational leadership (e.g. 4; 16). It is again important to pay special attention to understanding the importance of these simultaneous relationships. Transformational leadership contributes to the generation of a good internal environment for collaboration and work among team members. Although many theoretical arguments justify the relationship between teamwork capability and OL (e.g., 3), our methodological process prevented complete analysis of the hypothesis on the relationship between teamwork capability and OL. A measurement of teamwork capability more focused on collective views than on CEO perceptions might help to clarify this relationship in future works.

The results of this study also shed additional light on competitive implications of OL, showing positive relationships between learning, innovation, and firm's performance. Our results show some additional and appealing aspects of the relationships among these three constructs. First, OL not only directly influences both performance and innovation, but also influences performance *through* innovation. Second, in our sample the relationship between OL and innovation was even stronger than that between OL and performance. This comment has to be viewed in light of our use of cross-sectional data. OL may have a stronger influence on innovation than on performance in the short term, but the relationship with performance may be stronger in the long term. Third, OL generates competitive advantage and the ability to improve innovation and firm performance; however, performance and innovation might also supply resources to ease the process of OL. As discussed below, future longitudinal works will help to complete these findings.

Our results must be only cautiously generalized. Firstly, as noted, the study is limited by its cross-sectional design. Although we tested the most plausible directions for the pathways in our model, longitudinal research is needed to assess the direction of causality of the relationships and to detect possible reciprocal processes. We have tried to temper this limitation through attention to theoretical arguments rationalizing the analyzed relationships (28) and through the integration of temporal considerations into measurement of the variables. Secondly, additional capabilities influencing in OL could be included; however, it should be noted that the four capabilities we analyzed explain a significant amount of variance of OL. Thirdly, the use of a single respondent could have influenced the accuracy of some measurements (especially the measurement of teamwork capability). Difficulties in obtaining sponsorship for research based on a multiple views for each firm, lack of an alternative database of organizational characteristics for Spanish firms, the value of CEOs' knowledge of their firms, and common practice in organizational research all supported the use of CEOs as respondents. Fourthly, our results must be cautiously analyzed in view of the geographical peculiarities of our sample.

More research attention to the influence of specific organizational capabilities on OL is necessary in the future. Empirical papers supporting (or rejecting) our results in different contexts would be welcome (especially longitudinal studies). The homogeneous geographical context examined here limits the influence of external conditions, but future research might well explicitly integrate the influences of external factors (40).

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