

Learning Orientation of SMEs and Its Impact on Firm Performance

Hermann Frank

WU Vienna University of Economics and Business

Alexander Kessler

University of Applied Sciences of WKW, Vienna

Gerald Mitterer

Consulting Group Neuwaldegg

Daniela Weismeier-Sammer

WU Vienna University of Economics and Business

In this paper, we investigate the extent to which an organizational learning orientation (LO) impacts performance using a sample of 228 Austrian SMEs. After elaborating the theoretical background, we examine the impact of LO on performance in the context of environmental dynamism and hostility and finally explore implications of the interaction between LO and the environmental dynamism and hostility for SME performance. Results of multiple regression analysis suggest that a high level of LO results in higher performance levels. However, both highly dynamic environments as well as hostile environments absorb possible performance effects of a high LO in SMEs.

INTRODUCTION

Any organization acting in a dynamic environment and trying to achieve and sustain competitive advantages needs to advance its organizational knowledge base and therefore requires an organizational learning orientation (LO). There is a lot of research available on the LO of SMEs which nearly exclusively focuses on individual or at best group level learning, but not on organizational learning processes (Wyer and Mason, 1998; Wyer, Mason, and Theodorakopoulos, 2000). Our study tries to overcome this deficit by applying an organization-level approach to the learning of small- and medium-sized businesses (SMEs) and by analyzing its impact on firm performance.

Individual learning and organizational learning are two categorically different levels of learning (processes) because (a) individual (and group level) learning processes do not automatically lead to an increase of the organizational knowledge base, they even often do not, and (b) organizational learning processes have different outcomes compared to individual learning (e.g. changes of organizational values).

Learning orientation (LO) as an organizational phenomenon was strongly addressed in the late nineties and later on. Within this paper, we define the learning orientation of an organization as its basic attitude towards learning, resulting in more or less organizational learning processes (Sinkula, Baker, and

Noordewier, 1997; Baker and Sinkula, 1999). Baker and Sinkula (1999) and Baker, Sinkula and Noordewier (1997) developed a scale for measuring the LO of organizations. Their construct consists of three dimensions: commitment to learning, shared vision, and open mindedness and has a clear organizational level focus.

Successful learning processes are strongly connected with improved firm performance, innovation (Mitra, 2000), sustainable customer relations, and an overall entrepreneurial orientation (Rhee, Park, and Lee, 2010). Still, a huge number of SMEs do not devote any resources for improving their organizational learning orientation (Dalley and Hamilton, 2000). Furthermore, SMEs often even fail to use publicly subsidized offerings for their employees for individual lifelong learning programs effectively (Morrison and Bergin-Seers, 2002), since effective learning strongly depends on the organizational culture, communication modes and learning styles (Dalley and Hamilton, 2000). SMEs might be viewed as a unique “problem-type” with regard to organizational learning, which has to be differentiated from large companies (Wyer and Mason, 1998; Scheff, 2001). On the one hand, SMEs are generally considered as flexible and adaptable organizations, whereas on the other hand, flexibility and adaptability require resources, which are usually scarce in this type of organization (Mugler, 1998). Therefore, the empirical analysis of the effect of LO on SME-performance is of special interest.

Additionally, environmental factors affect the relationship between organizational learning and firm performance. Especially in the European context, a lot of SMEs compete internationally and are more and more forced to cope with environmental dynamism and environmental hostility (Spicer and Sadler-Smith, 2006). A distinct LO therefore enables SMEs to rapidly adapt to changing environmental conditions. Against this backdrop, the research question addressed in this paper is: *Does an organizational LO in the context of environmental dynamism and environmental hostility improve SME performance?*

This paper is structured as follows: First, we elaborate the theoretical background on organizational LO with a special focus on SMEs, which then leads us to the formulation of the underlying hypotheses. Afterwards, we introduce the research method and present our measures. Subsequently, we present the results of regression analyses, and discuss them with regard to the existing literature. Finally, we draw conclusions of our study and discuss several limitations as well as suggestions for further research.

ORGANIZATIONAL LEARNING AND LEARNING ORIENTATION IN SMEs

The capability of organizations to learn is viewed as a source of sustainable competitive advantage (Levinthal and March, 1993), as “organizations of all kinds will not survive, let alone thrive, if they do not acquire an ability to adapt continuously to an increasingly unpredictable future” (Pearn, Roderick, and Mulrooney, 1995, p. 15). In general, organizational learning (OL) is defined as a process of knowledge creation through “acquiring information about the state of the world and [...] improving what the organization can do” (Cohen, 1991, p. 135). It consists of four dimensions: (1) Knowledge acquisition, (2) information distribution, (3) information interpretation, and (4) organizational memory (Huber, 1991). From an outcome-perspective, the importance of establishing a balance between exploration and exploitation has to be taken into consideration: Exploitation focuses on the application of knowledge already available within the organization, whereas exploration is directly related to organizational learning by focusing on the generation of new knowledge and competitive advantage (March, 1991; Levinthal and March, 1993). Hence, innovation is viewed being an outcome of learning processes, creating new knowledge within the organization (Brown and Duguid, 1991; Ayas, 1999; Scheff, 2001).

For our paper, it is – in line with Baker and Sinkula (1999) – of utmost importance to distinguish between “organizational learning” and a distinct “learning orientation” of an organization. Organizational learning is a dynamic process which occurs when there is a “mismatch of outcomes to expectations” (Baker and Sinkula, 1999, p. 412). In general, OL can be divided into two basic forms of learning: (1) adaptive or single-loop learning, as a kind of incremental learning, where organizations react on changes in the environment and initiate “corrections” through learning processes (Lumpkin and Lichtenstein, 2005; Easterby-Smith and Araujo, 1999), and (2) generative or double-loop learning, which is defined as higher-order learning and therefore might lead to a change of “viewing the world” by questioning and

changing organizational processes (Lumpkin and Lichtenstein, 2005; Easterby-Smith and Araujo, 1999). Therefore, double-loop learning might of course change the way single-loop learning is processed, too.

The learning orientation (LO) of an organization is associated with double-loop or proactive learning (Celuch, Kasouf, and Peruvemba, 2002) and might be conceptualized as a “set of organizational values that influence the propensity of the firm to create and use knowledge” (Sinkula, Baker, and Noordewier, 1997, p.309). Hence, whereas organizational learning is the dynamic *process* of knowledge accumulation, the LO of an organization is its basic *attitude* towards learning itself. Organizations with high LO value learning in two areas: (1) response to changes in the environment, *and* (2) ability to constantly question its relationship with the environment (Baker and Sinkula, 1999). LO is closely connected to the market orientation of an organization, which defines the ability of businesses to process market information. Organizations which show a high LO recognize the importance of learning from their environment (Santos-Vijande et al., 2005; Weerawardena, O’Cass, and Julian, 2006) and consider that (radical) innovation does not solely come from reaction to environmental changes (Baker and Sinkula, 1999). In doing so, the LO of an organization positively influences its performance at least indirectly (Santos-Vijande et al., 2005) and has a positive impact on firm innovativeness (Calantone, Cavusgil, and Zhao, 2002).

Sinkula, Baker, and Noordewier (1997) define three core components of an organizational LO, which are applied for our study: (1) Commitment to learning, (2) open-mindedness, and (3) shared vision. Organizations with a high commitment to learning explicitly promote a learning culture, as they consider learning to be of utmost importance for the organization’s future development. Open-mindedness is directly connected with an organization’s ability to *unlearn* (Scheff, 2001). Open-minded organizations regularly and proactively question their routines, assumptions, and beliefs, which is seen as an important prerequisite for the acquisition of new knowledge and change through organizational learning. Whereas commitment to learning and open-mindedness directly influence the organization’s learning intensity, shared vision “influences the direction of learning” (Sinkula, Baker, and Noordewier, 1997, p.309). A commonly shared vision within the organization therefore serves as the basement for proactive learning (Scheff, 2001), providing a learning focus for all members of the organization, as “without a shared vision, individuals are less likely to know what organizational expectations exist, what outcomes to measure, or what theories in use are in operation” (Sinkula, Baker, and Noordewier, 1997, p.309).

Even though organizational learning and the LO of small- and medium-sized businesses is viewed as being different to that of large organizations (e.g. Wyer, Mason, and Theodorakopoulos, 2000; Keskin, 2006), little attention has been drawn to the LO of this special type of organizations by now, although organizational learning processes significantly differ with regard to organizational size (Spicer and Sadler-Smith, 2006; Michna, 2009). Nonetheless, empirical evidence shows that the learning attitude of SMEs differs in terms of formalization and structure (Keskin, 2006), complexity and management (Wyer, Mason, and Theodorakopoulos, 2000), the predictability of learning outcomes (Wyer and Mason, 1998), and communication modes and learning styles (Dalley and Hamilton, 2000; Scheff, 2001). Furthermore, the LO of SMEs seems to be rooted in the organization’s culture (Hult, Hurley, and Knight, 2004), particularly in the extent to which the organization inclines to engage in and support new ideas (Rhee, Park, and Lee, 2010) and values a certain market orientation (Santos-Vijande et al., 2005).

A great deal of SMEs is facing turbulent and challenging environments, which require effective organizational learning (Spicer and Sadler-Smith, 2006), as the general LO is central to innovativeness and performance not only in large firms, but especially in SMEs (Weerawardena, O’Cass, and Julian, 2006; Rhee, Park, and Lee, 2010). LO requires a pronounced focus on the market and customers, which enables SMEs to respond to market developments and customer needs. Hence, LO has the potential to enhance revenues, market share, and in the long run, growth in number of employees. Similarly, the response to customer needs leads to customer retention and might provide substantial input for new product ideas, too. However, it has to be noted that in this regard, research seems to be ambiguous as Nasution et al. (2011) recently found no significant empirical evidence for a positive relation between LO and innovation.

HYPOTHESES

A distinct LO enables organizations to effectively acquire and use new knowledge and “is a source of flexibility, adaptability and competitive advantage” (Spicer and Sadler-Smith, 2006, p.141). Empirical evidence shows that organizational learning (as well as innovation) contributes in a positive way to firm performance (Jiménez-Jiménez and Sanz-Valle, 2011). Hence, we selected performance as the dependent variable for our study and conclude that the LO of an organization potentially influences performance in SMEs positively (Baker and Sinkula, 1999; Mitra, 2000; Spicer and Sadler-Smith, 2006; Michna, 2009; Zahra, 2010). Therefore, we hypothesize:

H1: The learning orientation of SMEs is positively related to performance.

Furthermore, we draw special attention to the influence of environmental conditions the organization is embedded in. Examining the influence of environmental characteristics on the performance of SMEs enables us to draw a more integrated picture of the influences on SME behavior as such (Mugler 1998). Regarding the environmental conditions a SME is embedded in, we concentrate on two distinct characteristics: environmental dynamism and environmental hostility. Regarding the environment SMEs are operating in, volatile markets, both on customer and supplier side, as well as increased competition on globalized markets can be seen as major impact factors. Dynamic environments are highly unpredictable regarding the behavior of competitors and the expectations of customers, and therefore comprise numerous business opportunities which may lead to competitive advantage (Miller, 1987; Frank and Keßler, 2008). Recognizing and exploiting those business opportunities in dynamic environments forces organizations to keep their alertness towards environmental changes and their performance on a highly competitive level. Furthermore, the hostility of the environment is reflected by several characteristics, such as price, competition, regulatory restrictions, unfavorable trends and so forth (Miller, 1987). Environmental hostility thus has a large potential to negatively impact SME performance. Summarizing, we pose the following two hypotheses:

H2: High environmental dynamism leads to an increase in SME performance.

H3: High environmental hostility leads to a decrease in SME performance.

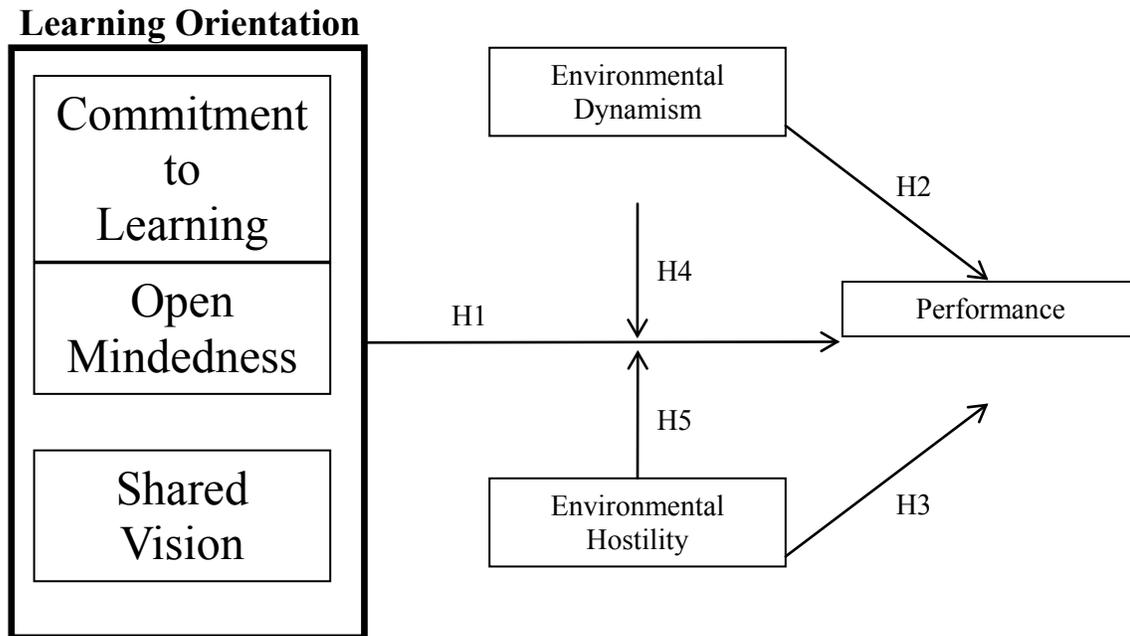
Organizational learning is often seen as a means to achieve the organization’s fit with its environment (Levinthal, 1991). Therefore, it is necessary to include the environment – as an important stimulus for initiating learning processes (Huysman, 1999) – into our research approach. Scheff (2001) notes that stable, non-hostile environments do not provide sufficient stimulation for organizations to learn. Hence, we conclude that the relation between the LO and performance in SMEs stipulated in hypothesis 1 may be moderated by the organization’s environment and hypothesize as follows:

H4: The LO-performance relation in SMEs is moderated by environmental dynamism.

H5: The LO-performance relation in SMEs is moderated by environmental hostility.

Graph 1 finally presents the research model for our study.

**FIGURE 1
RESEARCH MODEL**



RESEARCH METHOD

Sample

The sample for this study was derived from a survey of 2,878 Austrian businesses classified as small and medium-sized enterprises (SME) with an employee number of 20 up to 249. We decided to exclude micro-businesses and assessed a minimum number of 20 employees for our sample, as empirical results show that especially micro-businesses show little to no LO due to their restricted firm size (Birdthistle, 2008). Furthermore, we selected industries demonstrating increased innovation potential in manufacturing and service sectors¹, which are assumed to enhance more adaptive, higher-order learning styles due to higher industry dynamics (Chaston, Badger, and Sadler-Smith, 2001).

The mail survey was conducted in 2006; address informations were drawn from “Aurelia” business database, which contains nearly 50 % of all Austrian businesses. A total of 358 businesses returned the questionnaire, which equals a response rate of 12.4 %. After rejection of not entirely completed questionnaires, the final data set used for statistical analysis consisted of 228 businesses, with an average number of 77 employees. No response bias concerning the firm’s industry, number of employees and amount of revenues could be identified.

Measures

Independent Variables

Our research model (figure 1) includes three independent variables:

- *Learning orientation*: The construct of LO was measured using a 15-item scale based on the scales proposed by Sinkula, Baker and Noordewier (1997) and Baker and Sinkula (1999). A full list of the items used is presented in appendix A. LO was treated as a single construct (Sinkula, Baker, and Noordewier, 1997) consisting of the three dimensions (1) commitment to learning, (2) shared vision, and (3) open-mindedness. Each dimension was represented by five items

employing Likert-scales, ranging from 1 (totally disagree) to 7 (totally agree). In order to control for the reliability of the scales, the Cronbach's alpha was calculated, showing a value of 0.88.

- *Environmental dynamism* was measured applying a 4-item scale from Miller (1987); single items are listed in the appendix. The reliability of the scale is reflected by a Cronbach's alpha of 0.79.
- *Environmental hostility*: For the measurement of the degree of environmental hostility a 3-item scale, again based on Miller (1987) was employed. The scale shows a sufficient alpha-level of 0.68.

Dependent Variable

Performance can be measured in a number of different ways; for our study, we decided to apply a multi-faceted measure, which combines financial and non-financial items in order to address the multidimensionality of success (Spicer and Sadler-Smith, 2006). *Firm performance* as the dependent variable in our model consists of five dimensions: (1) revenues, (2) number of employees, (3) market share, (4) share of regular customers, and (5) success with new products/processes. To put short-term, fleeting success into perspective, respondents were asked to rate the development of the five dimensions over the last (full) three years preceding the survey. Furthermore, in line with central findings in the literature measuring success (e.g. Chandler and Hanks, 1993), the indicators of success were put into relation with major competitors. Therefore, respondents rated the development of the five dimensions mentioned above for the past three years compared to their major competitors in their industry using 7-point scales (1 – far lower than competitors; 7 – far higher than competitors). The reliability of the scale was sufficient with an alpha of 0.79.

Control Variables

As controls, three single items were employed: (1) business size, measured in number of employees (part-time employees were converted into fulltime equivalents), (2) business age in years (divided into 10 different age groups), and (3) industry, distinguishing in manufacturing or service industry.

RESULTS

Our proposed research model (figure 1) was tested via multiple regression analysis. Beforehand, zero-order correlations were calculated. These are, together with means and standard deviations, portrayed in table 1.

TABLE 1
CORRELATION MATRIX, MEANS AND STANDARD DEVIATIONS (n = 228)

	mean	SD	1	2	3	4	5	6	7
Performance	4.70	0.80							
Size	76.98	112.98	.162**						
dummy manufacturing	0.72	0.44	-.170**	.019					
dummy services	0.25	0.43	.170**	.004	-.945***				
business age	6.19	3.30	-.292***	.156**	.325***	-.310***			
learning orientation	5.28	0.89	.389***	.000	-.011	.025	-.052		
environmental dynamism	4.64	1.02	.481***	.044	-.053	.076	-.258***	.296***	
environmental hostility	4.54	0.97	-.048	.095	.037	-.020	.162**	.052	-.108

SD = standard deviation

*** p < 0.001, ** p < 0.01

In order to test for multicollinearity, the variance inflation factors (VIF) were calculated. The VIF for all independent variables and interaction terms were just slightly over 1, the highest VIF equaled 1.254. Hence, this criterion for multicollinearity concerns was far below critical values (Urban and Mayerl, 2006). Similarly, bi-variate correlations among the independent variables or moderators (LO,

environmental dynamism, and environmental hostility) are lower than 0.3 and therefore as well below critical values (Hair et al., 2010).

To test our hypotheses, three regression models were calculated; results are presented in table 2. In model 1, only the control variables were entered: (1) Business size, measured in number of employees, (2) business age, (3) a dummy variable (service industry – yes/no), and (4) another dummy variable (manufacturing – yes/no). As can be seen in table 2, business size shows a significant positive relation with the dependent variable performance ($\beta = 0.209$, $p < 0.01$), whereas business age shows a significant negative relation ($\beta = -0.300$, $p < 0.001$).

Two approaches were used to analyze the relation between the independent variables and the performance dimensions: The main effects approach and the contingency approach. The main effects approach describes the relation between the independent variables and SME performance as a function in which the independent variables do not interact with one another. Therefore, in model 2 the independent variable (LO) and the two potential moderators – environmental dynamism and environmental hostility – were added. In doing so, a significant change in R^2 could be observed ($\Delta R^2 = 0.236$, $p < 0.001$). Our independent variable LO shows a significant positive impact on performance ($\beta = 0.280$, $p < 0.001$). Furthermore, environmental dynamism, one of the potential moderators, shows a highly significant relation with performance ($\beta = 0.338$, $p < 0.001$). Therefore, hypotheses 1 and 2 found support. Hypothesis 3, assuming a negative impact of environmental hostility on performance, found no support ($\beta = -0.009$, not significant).

TABLE 2
RESULTS OF REGRESSION ANALYSIS ($n = 228$)^a

Variables	Performance		
	Model 1	Model 2	Model 3
Controls			
Business size	.209**	.180**	.177**
Business age	-.300***	-.187*	-.188*
Industry : services	.036	-.076	-.083
Industry : manufacturing	-.043	-.163	-.166
Independent Variables			
Learning Orientation		.280***	.284***
Environmental Dynamism		.338***	.346***
Environmental Hostility		-.009	-.011
Interaction effects			
LO * Environmental Dynamism			.069
LO * Environmental Hostility			-.043
ΔR^2	.135***	.236***	.006
R^2	.135	.371	.377
adjusted R^2	.119	.351	.351
F	8.674***	18.518***	14.664***

^a standardized regression weights

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

The contingency approach goes one step further and accounts for interactions between two variables in the form of two-way interactions. Accordingly, two interaction terms (Baron and Kenny, 1986) were entered into regression analysis in model 3. Again, the relations between LO and environmental

dynamism and performance were highly significant, but the interaction terms did not show any significant impact on the dependent variable. Furthermore, no significant change in R^2 could be observed. Therefore, hypothesis 4 and 5 (moderating effect of environmental dynamism and environmental hostility on the LO-performance relation) could not be supported.

DISCUSSION

Concerning the main effect of our study – the positive relation between LO and performance – our results confirm those of Baker and Sinkula (1999), as we found empirical evidence that a high level of LO results in higher performance levels. Our results even extend previous findings concerning the LO-performance relationship, as we were able to show that a certain LO is important for the success of small- and medium-sized businesses, too (similarly: Pett and Wolff, 2010). Additionally, our findings extend the generalizability of the LO-performance relation, as we show that LO even impacts non-financial performance indicators as share of regular customers and success with new products and services.

With regard to specific environmental factors SMEs are operating in our study shows that environmental dynamism acts as a significant predictor for firm performance. Accordingly, SMEs in industries with dynamic environments develop the capability of adapting more effectively and efficiently to new environmental conditions and therefore might be more successful than their large counterparts. Our results show, that a hostile environment impacts SME performance negatively, although to a very small extent and without statistical significance. Although, environments in our sample were perceived as relatively hostile, SMEs seem to be able to commit their customers to the business and to develop new products through their flexibility and closeness to customers (Mitra, 2000; Rhee, Park, and Lee, 2010). Thus, the stable relations between SMEs and their customers enable SMEs to foil the hostile activities of their competitors.

Concerning the assumed moderating effects of environmental dynamism and hostility, our findings did not support the research model. A low positive effect of dynamism on the LO-performance could be observed although without statistical significance. LO and environmental dynamism do have a positive relation with performance, as results of our main effects assumed show, but it seems as SMEs cannot manage to link this positive influence of the two predictors effectively. Therefore, we found empirical evidence for two parallel, independent processes (LO, environmental dynamism), which do not result in an increased performance outcome if combined together. Hence, it seems as if the rapidness of environmental changes constricts the performance-effect of LO and furthermore the adaptation of structures and processes to dynamic environments. Our results are therefore in line with Scheff (2001), who notes that successful businesses seem to be less interconnected with their environment. Adaptation to changing environments therefore seems to be closer connected to flexibility than a long-term LO (Wyer and Mason, 1998). Furthermore, SMEs face a lack of resources (Scheff, 2001) to efficiently make use of possible synergetic effects between LO and environmental dynamism. Summarizing, we can conclude that a highly dynamic environment absorbs possible performance effects of a high LO in SMEs. This in turn supports the assumption that the capability to continuously adapt to an increasingly unpredictable future is more a fundamental prerequisite for firms to survive in highly dynamic environments (Pearn, Roderick, and Mulrooney, 1995) than a performance driver.

Another environmental aspect with an assumed moderating effect on the LO-performance relation – environmental hostility – did not show any influence as well. SMEs do perceive the degree of hostility in their environment, but this perception has no negative influence on performance. Accordingly, a tight LO does not show the assumed performance effect in hostile environments. A lack of predictability in hostile environments by definition therefore makes organizational learning almost impossible and vain.

CONCLUSION, LIMITATIONS, AND IMPLICATIONS FOR FURTHER RESEARCH

Our results extend past research about LO and organizational performance. Research up to this point focused on individual or group level learning processes. This study addresses organizational LO in SMEs.

Although organizational learning processes significantly differ with regard to organizational size (Spicer and Sadler-Smith, 2006; Michna, 2009), little attention has been drawn on the specifics of LO in SMEs so far. We were able to show that a certain LO is important for the performance of small- and medium-sized businesses. Furthermore, our findings extend the generalizability of the LO-performance relation, as we show that LO impacts non-financial performance indicators, too. However, we found out that a high LO does not bring about the assumed performance effect in highly dynamic and/or hostile environments. Accordingly, further research is challenged to examine the interconnectedness of SMEs with their environment to reveal the impact of environmental characteristics on performance and LO more deeply.

In this study we defined LO as the basic attitude towards learning. Especially for SMEs, it can be assumed that the owner-managers' values and attitude have a high influence on the organizational culture and thus the organizational LO rooted in the culture (Hult, Hurley, and Knight, 2004; Santos-Vijande et al., 2005), too. For this reason, we suggest additional research on the influence of owner-managers on the organizational LO of SMEs (Morrison and Bergin-Seers, 2002; Dalley and Hamilton, 2000). This can be seen as one aspect of the internal context of SMEs, which "is central to what will and what will not be learnt" (Dalley and Hamilton, 2000, p.52). Additional studies in this regard will enable researchers to uncover, operationalize, and evaluate in more detail the internal (e.g. cultural, Scheff, 2001) context of SMEs and its implications for the LO-performance relationship.

Of course our study has to face some limitations. It would have been superior for the underlying research model to apply a longitudinal research design. However, we have tried to mitigate this shortfall by employing a retrospective collection of performance data over a period of three years.

The results of this study are also valuable and applicable for the practical domain. Owner-managers have been found to show little interest for programs aiming at stimulating their LO (Morrison and Bergin-Seers, 2002). Our results underline the importance of owner-managers engaging in learning in order to enhance business performance. Furthermore, looking at prior research, SMEs do not devote sufficient resources for improving their organizational LO (Dalley and Hamilton, 2000; Scheff, 2001). In general, older generations tend to exhibit higher levels of inertia, and therefore their LO decreases (Levinthal, 1991). Hence, organizational LO in owner-managed SMEs is likely to decrease with business age as well. Results of our study indicate the importance of applying resources to enhance organizational LO, especially for older businesses to stay competitive. Therefore, SMEs might as well consider cooperation with other businesses to overcome resource deficits by acquiring external resources (Scheff, 2001).

ENDNOTE

¹According to ÖNACE classification, our sample contained the following industries: food industry; wood industry; paper industry; chemical production; metal production and processing; steel and light metal construction, manufacturing of metal products; mechanical engineering; production of office machines as well as data processing machines and facilities; production of devices for electrical power generation and distribution; communications technology and production of broadcasting and television devices as well as electronic components; production of medical, measurement and control systems and optics; production of moto vehicles and motor vehicle parts; other vehicle construction; recycling; data processing and databases; technical, physical and chemical inspection; advertising; waste water and waste management, other waste disposal.

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ABOUT THE AUTHORS

Hermann Frank, Dr., is associate professor at WU Vienna University of Economics and Business, Institute for Small Business Management and Entrepreneurship and Head of the Research Institute for Family Business. Research interests: Family Business, Corporate Entrepreneurship, SME-Management

Alexander Kessler, Dr., is professor at the Institute for Management and Entrepreneurship, University of Applied Sciences of WKW, Vienna, and head of the competence center for entrepreneurship. Research interests: entrepreneurship, crisis management, family business, SME-Management

Gerald Mitterer, Dr., is senior consultant at Consulting Group Neuwaldegg. He is an expert in strategy and change management. Research interests: entrepreneurship with a special focus on opportunity recognition

Daniela Weismeier-Sammer, Mag., is a doctoral student at WU Vienna University of Economics and Business and a researcher at the Research Institute for Family Business. Research Interest: Family business with a special focus on familiness, corporate entrepreneurship

APPENDIX A: FULL LIST OF ITEMS

Commitment to Learning

<p>Managers basically agree that our organization's ability to learn is the key to our competitive advantage.</p> <p>The basic values of this organization include learning as key to improvement.</p> <p>The sense around here is that employee learning is an investment, not an expense.</p> <p>Learning in my organization is seen as a key commodity necessary to guarantee organizational survival.</p>	<p>Sinkula, Baker, and Noordewier 1997</p>
<p>Our culture is one that does not make employee learning a top priority. (reversed scored)</p>	<p>Baker and Sinkula 1999</p>

Shared Vision

<p>There is a commonality of purpose in my organization.</p> <p>There is total agreement on our organizational vision across all levels, functions, and divisions.</p> <p>All employees are committed to the goals of this organization.</p> <p>Employees view themselves as partners in charting the direction of the organization.</p>	<p>Sinkula, Baker, and Noordewier 1997</p>
<p>We do not have a well-defined vision for the entire organization. (reversed scored)</p>	<p>Baker and Sinkula 1999</p>

Open-Mindedness

<p>We are not afraid to reflect critically on the shared assumptions we have made about our customers.</p> <p>Personnel in this enterprise realize that the very way they perceive the marketplace must be continually questioned.</p> <p>We rarely collectively question our own biases about the way we interpret customer information. (reversed scored)</p>	<p>Sinkula, Baker, and Noordewier 1997</p>
<p>Managers encourage employees to "think outside the box".</p> <p>Original ideas are highly valued in this organization.</p>	<p>Baker and Sinkula 1999</p>

Environmental Dynamism (Miller 1987)

<p>Growth opportunities in the environment have decreased dramatically.</p>	<p>1 2 3 4 5 6 7</p>	<p>Growth opportunities in the environment have increased dramatically.</p>
<p>Production/service technology has remained the same.</p>	<p>1 2 3 4 5 6 7</p>	<p>Production/service technology has changed very much.</p>
<p>Rate of innovation of new operating processes and new products or services has fallen dramatically.</p>	<p>1 2 3 4 5 6 7</p>	<p>Rate of innovation of new operating processes and new products or services has dramatically increased.</p>
<p>Research and development activity has fallen off greatly.</p>	<p>1 2 3 4 5 6 7</p>	<p>Research and development activity has substantially increased.</p>

Environmental hostility (Miller 1987, reversed)

<p>Market activities of our key competitors... ... have become far less predictable.</p>	<p>1 2 3 4 5 6 7</p>	<p>... have become far more predictable.</p>
<p>... have become far more hostile.</p>	<p>1 2 3 4 5 6 7</p>	<p>... have become far less hostile.</p>
<p>... now affect the firm in many more areas (pricing, marketing, production, etc.)</p>	<p>1 2 3 4 5 6 7</p>	<p>... now affect the firm in far fewer areas (pricing, marketing, production, etc.)</p>
