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SMEs and Sustainable Competitiveness in the Worldwide Market: How to Overcome the Learning Challenge?

By

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*This study identifies organizational learning practices that globally oriented small and medium-sized firms could carry out. Suggestions from managers were analyzed using Nud*ist and HOMALS programs. The results indicate that formal as well as informal learning practices could be used following a pollination model in order to obtain explicit and tacit knowledge. However, the content and the learning practices to be adopted are dependent, among other things, on the position, tasks, and career needs of the beneficiary.*

INTRODUCTION

The survival of small and medium-sized enterprises in the current hyper-competitive environment requires the exploitation of current knowledge by human resources as well as the discovery of new ways and practices of doing business (Liu, 1998; Levinthal et March, 1993). But mastering knowledge is the culmination of a continuous process of organizational learning requiring important financial resources, human resources, and other infrastructures. To

face this challenge, an increasing number of large firms have started their own internal corporate universities. Their number grew from 400 in 1988 to 1600 in 1998, with an annual average budget estimated at \$12.8 millions per year (Meister, 1998; Twomey et al. 1999). Motorola University, for example, is staffed with 600 professionals and manages seven major learning facilities around the world (Rucker, 1999). Such resources are not always available to small and medium-sized firms (Gibb, 1997). The challenge to master knowledge is much greater for small and medium-sized enterprises (SMEs) that are globally oriented, as they face competition from more widespread sources. It might therefore be interesting to know how globally oriented small and medium-sized enterprises (GOSMEs) that are already successful improve, or intend to improve, the competencies of their human resources and prepare them to face increasing challenges of globalization.

The term “globally oriented small and medium-sized enterprise” (GOSME) here refers to an independent (not subsidiary) company with fewer than 500 employees, that is managed by owner(s), and is doing business in at least two foreign countries, preferably located in two (or more) of the three primary and distinct regional markets, including North America, Europe, and Asia (Ohmae, 1985; Porter, 1986; Bartlett and Ghoshal, 1989). Firms with characteristics similar to those of GOSMEs have been qualified as “world class SMEs” (Paradas and Torrès, 1996) or “hidden champions” (Simon, 1990). The fact that they face fierce competition from other SMEs, as well as large multinational firms, implies that they adopt particular behaviors to improve their competitiveness or, at least, set them apart from competition (Julien, 2001). Understanding this behavior can help to improve the competitiveness of other SMEs, particularly in the area of organizational learning. How may companies, lacking sufficient funds and a broad range of human resource specialists like those in large multinationals, carry out continuous organizational learning?

To answer this question, first I will review the literature on organizational learning so as to build a conceptual framework. Second, a summary of the methodology and results will follow. Third, I will discuss these results in the light of previous studies and will state some related propositions. Finally, I will present a brief conclusion.

LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

In recent years, organizational learning has caught the attention of researchers and practitioners of organizations facing uncertainty due to the rapid change and the large scope of their global activities. Some authors have reviewed studies published on organizational learning. Three of those studies, especially by Huber (1991), Dodgson (1993), and Easterby-Smith, Crossan and Nicolini (2000) give a good overview of the issues and debates pertaining to this theme.

Huber (1991) observed that many of the studies devoted an unequal amount of attention to research on different parts of the organizational learning process. He also found a lack of integration of multiple aspects of learning. Finally, he felt that there was a need for more empirical work. In his review, Dodgson (1993) focused on organizational learning definitions, goals, processes, and facilitating factors identified in studies from different disciplines such as economics, psychology, and organizational theory. In general, he identified multiple similarities and synergies across disciplines in their approaches to learning, but he also noted disparities in the assumptions underlying one discipline or another. Unfortunately, an attempt to integrate and reduce these disparities was lacking. Easterby-Smith, Crossan, and Nicolini (2000) identified some of the key parts and emerging debates on organizational learning. They observed that long-standing debates focused on levels of learning (individual, group, organization), the cognitive or behavioral nature of the learning change, the respective value of single- and double-loop learning, the relationship between learning and unlearning, and the distinction between organizational learning and the learning organization. This research demonstrates that these debates have not been abandoned, but they have been taken for granted in conversations on new topics, such as the social and interactive nature of organizational learning, the methods of studying it, and the tension between the ideas of organizational learning and knowledge management.

According to Spender (1996: 46), more recent publications on learning have moved from a resource-based view to a knowledge-based view, where the focus is placed on “the amplifying effect of the intangible knowledge that firm’s members apply in the firm’s value adding processes”. In these studies, scholars adopt a more evolutionary perspective of knowledge considered as a strategic factor to be added to traditional factors of production (Spender, 1996; SubbaNarasimha, 2001; Kakihara and Sorensen, 2002). Some scholars have examined concepts related to this new perspective of knowledge management.

Eisenhardt and Martin (2000), for example, explored the concept of dynamic capability and considered it as equivalent to the concept of combinative capability advanced by Kogut and Zander (1992) a few years ago. For Eisenhardt and Martin, dynamic capabilities are equifinal, and firms can therefore develop them from many starting points and along different paths. The choice of any developmental path is dependent on the market dynamism, even if its evolution is shaped by well-known learning mechanisms.

In the same vein, Nahapiet and Ghoshal (1998) examined the concept of social capital and concluded that it facilitates the creation of new intellectual capital and provides a competitive advantage. Furthermore, Yli-Renko, Autio, and Sapienza (2001) confirmed the link between social capital and knowledge acquisition in an empirical study on entrepreneurial high-technology ventures. Nonetheless, given the fact that social capital has structural, relational, and

social dimensions and that some knowledge may not be easily codified so that it can be shared by organizational members, one can understand the desire of scholars to examine mechanisms of knowledge transfer.

Meanwhile, Zander and Kogut (1995) contended that the speed of knowledge transfer, and consequently its likelihood of being imitated, is dependent on the degree of its codification and the way it is taught. This position is supported by Teece (1998: 77), who observed that among factors that facilitate wealth creation at the dawn of the new millennium is “an apparent need to focus on developing a deeper understanding of imitability and replicability issues with respect to intangibles and the role of markets in undermining traditional forms of competitive advantage”.

Knowledge transfer has been extensively studied between firms or between dispersed units of the same firm (Jacob and Ebrahimpur, 2001; Spencer, 2003). However, only a few scholars have examined the transfer of knowledge within the firm. Szulanski (1996), for example, observed that the major barriers to internal knowledge transfer were factors such as the recipient’s lack of absorptive capacity, the causal ambiguity, and an arduous relationship between the source and the recipient. O’Dell and Crayson (1998) supported these findings, pointing out the best knowledge acquisition process and the environmental characteristics of a successful internal transfer. To transfer knowledge successfully within the firm, these authors suggested that companies put in place benchmarking teams, best practices teams, knowledge networks, and internal audits. However, they asserted that these practices work only if the company creates a supportive climate for transfer, including technology, culture, leadership, and measurement. Jacob and Ebrahimpur (2001) observed a difference in the conception of knowledge and its mode of internal transfer between a medium-sized global company and a branch of a multinational. On the one hand, individuals in the former company see knowledge as experience and its transfer as a process, which occurs in the context of social interaction. On the other hand, individuals in branches of multinationals see knowledge as expertise and prefer its transfer through projects where there is a clear understanding of the purpose to which the knowledge is to be put.

Tannenbaum (1997) observed that each organization has a unique learning profile and relies on different sources of learning to develop individual competencies. Meanwhile, in a study of the Japanese automobile industry, Bartol and Srivastava (2002) explored the role of rewards on knowledge sharing. They proposed four mechanisms through which rewards can be used to increase knowledge sharing. These are: individual contributions to the firm’s knowledge database, formal interactions during the appraisal of individual or group performance, sharing in informal interactions for behaviors that are not measurable, and the community of practice for more intrinsic motivation. Aoshima (2002) observed the knowledge transfer across generations in Toyota. His study concluded that although human-based mechanisms more effectively convey knowl-

edge required to higher levels of product systems, standardized mechanisms are more appropriate for the retention of lower-component knowledge.

In the particular context of SME, with Jacob and Ebrahimpur (2001) as an exception, studies of organizational learning seem primarily concerned with the importance and impact of training on the firm's activities and performance. Thus, most studies call attention to the low frequency of use of available training programs by SMEs and the weak relationships between training and performance (Westhead and Storey, 1996; Carrier, 1999). Reasons advanced to justify this situation include: insufficiency of time, cost and financial constraints; relatively higher levels of uncertainty in the external environment compared to the uncertainty in the internal environment; more limited likelihood of promotion; few economies of scale in SME's training activities; and, finally, the inappropriateness of materials and approaches used in the context of SMEs (Minguzzi and Passaro, 1997; Gibb, 1997; Westhead and Storey, 1996). To overcome these pitfalls, these studies suggest tailoring training activities to the practical problems experienced by employees and managers in their workplace. In addition, SMEs are invited to support training with follow-ups, individual diagnostics, and the improvement of competencies of partners (Gibb, 1997).

Still, few studies examined participants and conditions of training. Sexton et al. (1997), however, identified the training needs of American entrepreneurs in firms that were growing rapidly. Their study indicated that entrepreneurs prefer learning experiences that are short, to the point, and content oriented. They prefer training delivered through discussion methods by practicing professionals in a context similar to that of their workplace. In the same way, Carrier (1999) identified training needs and observed that the training methods that were frequently suggested were: discussion in small groups on issues related to practical skills in the export process, a combination of conferences and workshops with experienced exporters, coaching, and videos. Paradas and Torrès (1996) examined the relationship between the globalization strategy of 29 French world class SMEs and their training practices. They observed that the training propensity in this category of SMEs was higher and more formalized than in other SMEs. Although employees combined different sources of training, it was the owner-manager who generally provided the training. Moreover, in the majority of firms, the content of training was related to technical, computer, and language issues. With respect to the priority to access to training programs, the following categories of employees were targeted: technicians (45%), researchers (24%), office staff (17%), and salespersons (14%). A study carried out by Anderson and Boocock (2002) suggested that the large firm model of learning was inappropriate to small organizations where the tacit knowledge and informal processes prevail.

In all these studies, it has been observed that there is a need for in-depth studies of the topic of learning in SMEs. Considering the complex nature of the learning process—the number of persons it involves, and the necessity of

addressing as many areas as possible—the current study sought to broaden the concept of learning organization beyond training only, to cover the learning of many organization members (instead of being limited only to managers), and, finally, to consider the social context of learning (Paradas and Torres, 1996). To understand better the scope of the study, it is important to circumscribe a theoretical framework to be used.

As one can see throughout previous studies mentioned above, organizational learning has numerous aspects including knowledge acquisition, information interpretation, knowledge sharing, information memory, and knowledge usage in decision-making. The current study will be limited to knowledge acquisition and its sharing.

Many studies suggest that the use of a given form of knowledge acquisition by a firm is not neutral. It depends on the firm's environment (Ingham, 1994; Dodgson, 1993; Fiol and Lyles, 1985; Ulrich, Jick and Von Glinow, 1993) and on the organization's characteristics considered in their broad sense including structures and people (Guilhon, 1994; Dodgson, 1993; Ingham, 1994; Guedj and Picard, 1994; Ulrich, Jick and Von Glinow, 1993). Considering factors that affect organizational learning and different issues that successful learning implies, the current study assumes that organizational learning in GOSMEs will depend on the industry environment, the organization's characteristics, and the manager's profiles.

Organizational learning will be approached in this study through learning activities dedicated to individuals and the level of interactions among them in order to diffuse new knowledge (Ingham, 1994; Brooks, 1992; Kim, 1993; Ulrich, Jick and Von Glinow, 1993). Therefore, the key hypothesis may be stated as follows: knowledge acquisition and its transfer within successful GOSMEs depend on the industry environment, the organization's characteristics, and the manager's profiles.

METHODOLOGY

This study is intended to discover how learning works and how it ought to work in GOSMEs. It uses a design orientation dedicated to build theory-based on the insights of practitioners (Daft and Lewin, 1990). The main objective is not the examination of relationships between traditional variables, but rather eventually discovering new logic among them in an environment where the “the personality and experience of the owner-manager or the senior managers” exerts a major influence (Anderson and Boocock, 2002: 10). The study adopts a data analytical approach that “does not start with a model, but looks for transformations and combinations of variables with the explicit purpose of representing the data in a simple and comprehensive...graphical way” (Gifi, 1990: 19-20). Therefore, to answer the research question raised above, the study will start with the analysis of data gathered from managers and postpone

the propositions to the end (Gifi, 1990: 34). This process seems convenient for an exploratory multivariate study (Bygrave and Hofer, 1991; Bygrave, 1993). It is also consistent with Bygrave's (1989: 18-19) belief that: "the emphasis in an emerging paradigm should be on empirical observations with exploratory or preferably, grounded research, rather than on testing hypotheses deduced from flimsy theories."

To identify better practices of organizational learning for GOSMEs, I consulted people who lead SMEs that are successfully involved in global activities. Owner-managers of international SMEs (independents, with less than 500 employees, no subsidiaries, managed by owners) from the Province of Quebec (Canada) were chosen according to their recognized reputation in specialized magazines dealing with business, the number of countries where they were doing business (at least two foreign countries), and the relative success of their organizations in the last three years (above the average of the industry).

Two consultations utilized an adapted form of the Delphi decision-making technique (Dalkey, 1972; Nadeau, 1982) took place from June 1996 to February 1997. In the first consultation, I faxed a questionnaire to 86 owner-managers previously contacted by phone. Respondents were invited to give information about their industry, their organization, and their profile.

I used thirteen explanatory variables derived from previous studies related to the industry, the organization, and the owner-manager's characteristics. The industry was described by five variables: the nature of the demand (standardized or customized), the scope of the product use (specialized or general use), the target market (industrial/institutional or end-user consumers), the development stage (emerging or mature), and the level of technology intensity (lower or higher). The organization was described by four variables, namely, its age ("young" if five years old or less, and "old" if more than five years old), its size (small if less than 100 employees, or medium if 100 or more employees), its required core competencies for success (technologically-based or human resource-based), and its organizational structure (organic or mechanistic). Finally, four explanatory variables described the owner-manager. These were: age (young if 45 years old or less, and old if more than 45 years old), experience (low if less than one year since first contact with the industry and the moment of taking charge of current position, and higher if more than one year had elapsed since first contact with the industry and the moment of becoming in-charge of current position), educational level achieved (university graduate or not), and specialization (low if no prior training in the area of the main product or service, and high if prior training had been received in the area of the main product or service).

The acquisition of knowledge may be carried out through more or less structured practices (Minguzzi and Passaro, 1997) oriented to the external or the internal environment of the firm (Le Bas, 1993; Truran and Stevens, 1998). In this study, knowledge acquisition has been examined according to learning

objectives, the level of formalization, and the beneficiary within the firm.

Different structural and managerial arrangements that increase or impede internal knowledge transfer have been identified in various studies (Kim, 1993; Brooks, 1992; O'Dell and Grayson, 1998; Dyer and Nebeoka, 2000). Knowledge transfer has been examined in the current study through rites indicating managers' real concern about knowledge sharing within the firm (Beyer and Trice, 1987; Minguzzi et Passaro, 1997). With a view to covering practices related to tacit as well as explicit knowledge (Nonaka, 1994), I have combined managerial practices identified in studies by Thom (1990), Brooks (1992), Kim (1993), Garvin (1993), and Nevis et al. (1995). Seven practices considered in these studies as facilitators of knowledge sharing were submitted to managers who were invited to rate their importance (5 levels—from not important to very important) in knowledge sharing within firms like their own. The sum of scores received by each practice has been calculated. Total of scores by firm has also been calculated.

In the first consultation, the question about organizational learning was an open one, stated as follows: to achieve sustainable success in the global market, what might a firm like yours do to improve the competencies of its human resources and prepare them for the challenges of the future?

Forty-seven respondents returned their questionnaires after the first consultation. But two of these were discarded because their enterprise profiles did not match the criteria used in this study. Answers from the 45 remaining owner-managers were analyzed by the NUD*IST software to identify practices of organizational learning suggested as explanatory variables. Statistics on the practices identified were returned to each respondent in frequency table forms with his/her own answers for a second consultation. The questionnaire for this second consultation included closed questions about the details of training that had been identified as the most important means of learning. It also included questions on knowledge sharing.

Forty respondents returned the questionnaire following the second consultation. Four respondents out of five who did not return their questionnaire were away from their headquarters and the fifth declined to continue with the study. However, the sample had the same characteristics as the 86 firms who received the first questionnaire. Data from the second consultation were analyzed by HOMALS (homogeneity analysis by altering least squares), a kind of multiple correspondence analysis (Greenacre and Blasius, 1994). Homals was used to identify associations in a qualitative multivariate analysis. Indeed, in addition to its few requirements about the nature of data and the distribution structure, Homals allows users to analyze linear as well as non-linear associations on multiple qualitative variables (Strutton and Pelton, 1994; Heisser and Meulman, 1994). Also, it has many advantages over comparable packages (Gifi, 1990; Greenacre, 1994; 1993; 1991).

Because the principal inertia in HOMALS is judged on its own and not on the percentage with respect to the total inertia, results were interpreted in a different way than is done for a traditional multiple correspondence analysis (Greenacre, 1991). For each dimension of organizational learning, I examined the association between suggested means or learning practice on the one hand, and the explanatory variables using a maximum of two axes (Gifi, 1990; Greenacre, 1993) on the other. An axis was retained only if its eigenvalue was more than $1/Q$ (Q = number of variables). Furthermore, on each axis, a suggested learning practice was retained for interpretation only if its discrimination measure (squared correlations) was at least equal to the corresponding eigenvalue (Greenacre, 1991; Gifi, 1990). Care was taken to ensure that the discrimination measures on the two dimensions retained were unrelated to satisfy the usual orthogonality condition between the two principal axes (Bryant and Yarnold, 1995; Greenacre, 1993).

Associations identified were subjected to informal verification of stability (Gifi, 1990; Heiser and Meulman, 1994; Van de Geer, 1993). Indeed, associations were initially found between suggested learning activities and variables belonging to all three groups of explanatory variables (industry, organization, and owner-manager profile). Thereafter, associations were found between suggested learning activities and explanatory variables belonging to only one of the three groups. Associations were considered to be consistent only if they were found at the two levels of analysis¹.

RESULTS

Profile of GOSMEs studied

According to the industry environment, 69 percent of SMEs faced a standardized demand, 87 percent had a specialized product, and 80 percent targeted industrial customers. Fifty-six percent of SMEs studied were in a mature industry environment, while 60 percent faced a higher level of technology intensity.

Considering organizational characteristics, 89 percent of SMEs studied were old and 53 percent were medium-sized; the success of 71 percent was based upon human resources. Most of them (56 percent) had a mechanistic structure, although they were highly decentralized and employed participatory management techniques.

Most owner-managers of these SMEs (69 percent) were mature. Less than half (47 percent) had lengthy experience with the principal product/service. However, 53 percent of owner-managers had worked in the same industry sector for at least 20 years. Most of the owner-managers (71 percent) were university graduates, but only 42 percent had taken specialized training related to their principal product/service.

Knowledge acquisition

Managers suggested the means presented in Table 1 as their most preferred methods of improving their human resources competencies in order to face the challenge of globalization.

Table 1
Means suggested to improve human resources competencies

Means	% of respondents
1. Training	80
2. Empowerment and participation to decision-making	20
3. Statement of clear vision and objectives	16
4. Profit sharing	11
5. Hiring new employees	13
6. Travels	8
7. Presence in different markets	7
8. Purchasing of new technology	7
9. Language skills	7
10. Rewarding system	7
11. Readings	2

The majority of managers (80%) consider training to be the best means to obtain knowledge. However, among the means suggested, some are appropriate for acquiring tacit or explicit knowledge. Indeed, training, reading, and the purchase of new technology mainly provide explicit knowledge. Empowerment, clear vision statement, hiring new employees, travels and tours, and presence in different markets provide mainly tacit knowledge. Also mentioned were profit sharing and reward systems; which give an indication of the intentional nature of learning.

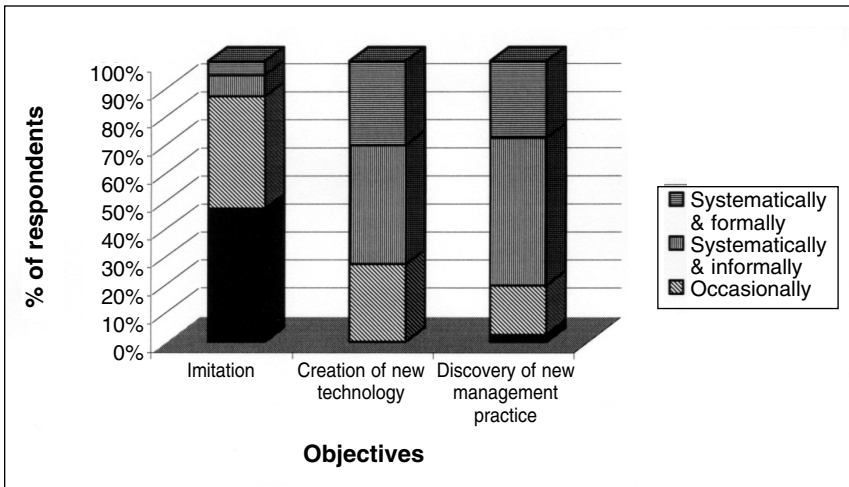
Because of their importance, suggestions for training activities have been explored further. The results in Table 2 indicate that the majority of managers (73%) prefer that the firm itself ensure training. The use of suppliers (40%) and consultants (35%) follows in importance. These training providers also received the lowest number of disagreement of respondents to providing training. It is amazing to observe that only a few managers (25% or less) prefer to entrust training to a client, university or college, or trade association. Finally, it is important to note that the majority of managers (53%) have mentioned more than one training provider.

Table 2
Agreements and disagreements on the training provider

Training provider	% of agreements	% of disagreements
Firm itself	73	13
Supplier	40	13
Consultant or professional	35	18
Trade association	25	20
University or college	23	20
Client	18	32

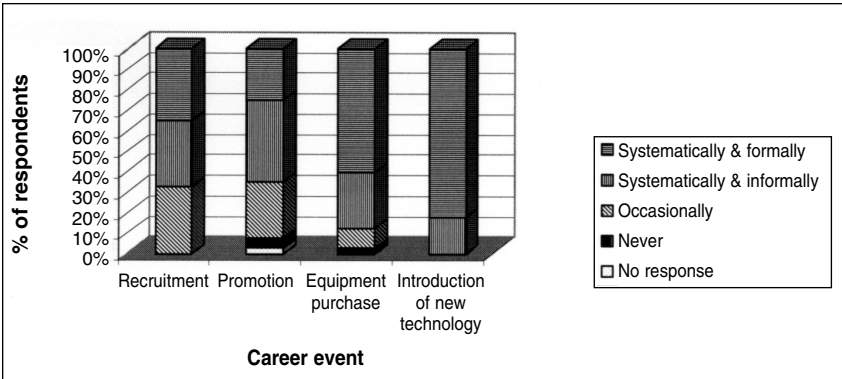
With respect to the objectives of training (Figure 1), managers suggest systematically organizing training through formal or informal structures in order to create new technology (80%), discover a new managerial practice (73%), and imitate other firms (13%).

Figure 1: Frequency and formalization of training by objectives



When considering some events in an employee’s career, the majority of managers suggest occasional training activities after recruitment and promotion (Figure 2). A systematic organization of training (formal or informal) was suggested by managers on the following basis: introduction of a new technology (100%), purchase of new equipment (88%), recruiting (68%), and finally, promotion (65%).

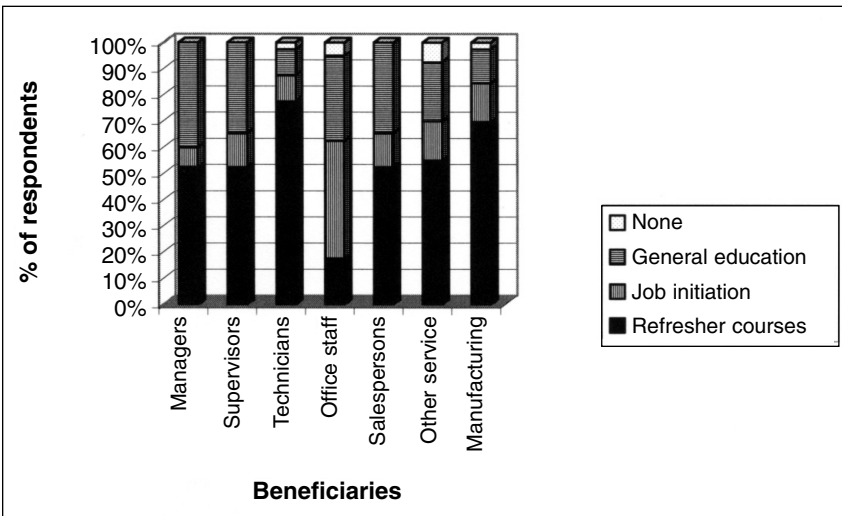
Figure 2: Frequency and formalization of training by career event



Who should be the direct beneficiary of the training in the firm and what should the content of that training be?

Figure 3 indicates that managers suggest refresher courses to update knowledge mainly for professionals and technicians (78%) and for manufacturing staff (70%). One may also notice that managers suggest refresher courses and general education in relatively equal proportions to other categories of human resources, except office staff. Training at the time of the employee’s initiation into the new job is more suggested by managers to office staff (45%) than to any other category of human resources.

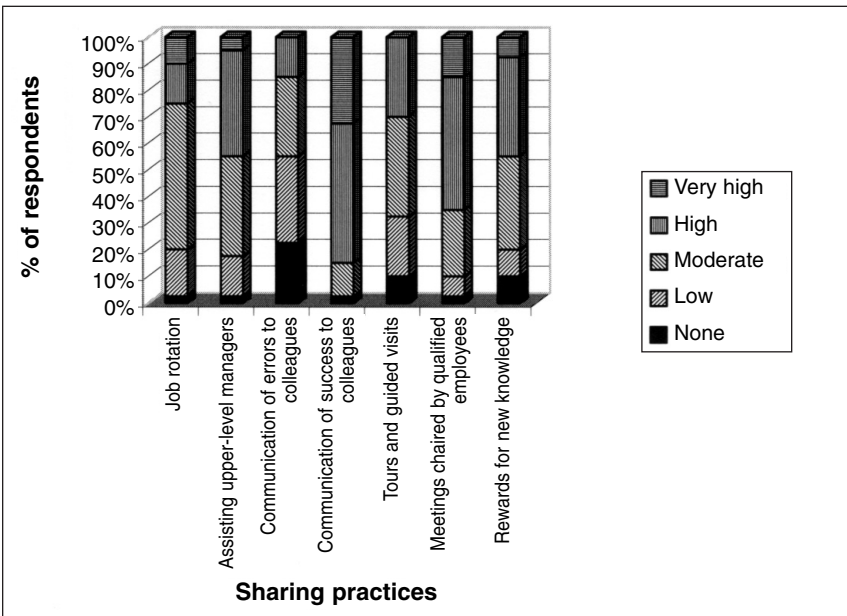
Figure 3: Content of training by category of human resources



Knowledge sharing

Figure 4 presents the results on knowledge sharing. It shows that managers mostly prefer the communication of success by an employee to colleagues and the discussion-meetings directed by the most qualified employees to be the two first means for sharing knowledge. Implementation of these two means is followed by rewards for new knowledge and employee involvement in the decision-making process of upper-level managers. By contrast, managers do not prefer to communicate an employee’s errors to colleagues as a method of distributing knowledge. Finally, job rotation and tours or visits have only moderate importance. The relative importance of sharing practices by a firm is determined by the sum of scores attributed by the manager to all sharing practices that have been presented. Eighteen percent of managers suggest a low level of knowledge sharing (0-13 scores), 77% suggest a moderate level of knowledge sharing (14-20 scores), and only five percent had suggested a high level of knowledge sharing (21-35 scores).

Figure 4: Importance of practices suggested for knowledge-sharing



Training activities with respect to the explanatory variables.

Associations have been found between training activities and explanatory variables. However, due to the space limitation, our comments will be limited to associations found first between training objectives and explanatory variables, and second between the importance of knowledge sharing by firm and explanatory variables. We observed that these associations give a good indica-

tion of the contingent nature of organizational learning. However, other results of this analysis will be discussed.

With respect to learning objectives (Tables 3 and 4), suggestions for systematic training (formal or informal) in order to imitate were, in general, associated with standardized product, general demand; and human resource-based success. Suggestions for occasional training for imitation were associated with customized products and specialized demand. It is interesting to note that firms whose success is technology-based are extremely reluctant to use imitation in order to learn.

Table 3

Associations between explanatory variables and training objectives

Variable	Categories	Imitation				Discovery of a new technology				Discovery of a new managerial practice			
		Never	Occasionally Systematically & informally	Systematically & informally	Systematically & formally	Never	Occasionally Systematically & informally	Systematically & informally	Systematically & formally	Never	Occasionally Systematically & informally	Systematically & informally	Systematically & formally
Nature of the demand	Customized Standardized	**	**										
Scope of the product use	Specialized General	**	**							**	**	**	**
Target market	End-users Industrial.									**	**	**	**
Technological intensity	Low High					**		**					
Stage of development	Emerging Mature					**		**					
Size of the firm	Small Medium					**		**					
Organizational structure	Organic Mechanistic												
Required core competences	Hum. Res. Technology	**	**	**									
Age of the firm	Young Old					**		**					
Manager's level of specialization	Less. High									**	**	**	**
Manager's level of education	No university University												
Manager's level of experience	Low High												
Age of the manager	Young Mature												

** Association observed in the analysis considering all explanatory variables for the three dimensions and in the analyses considering only explanatory variables per dimension.

Table 4
Eigenvalues and discrimination measures (DM) of correspondence analysis on all explanatory dimensions

	Analysis on all explanatory variables				Analysis on explanatory variables by dimension							
	Imitation		Discovery of new technology		Discovery of managerial practice		Imitation		Discovery of new technology		Discovery of managerial practice	
Eigenvalue*	<i>Axis 1</i> .2080	<i>Axis 2</i> .1422	<i>Axis 1</i> .2160	<i>Axis 2</i> .1370	<i>Axis 1</i> .2089	<i>Axis 2</i> .1439	<i>Axis 1</i>	<i>Axis 2</i>	<i>Axis 1</i>	<i>Axis 2</i>	<i>Axis 1</i>	<i>Axis 2</i>
DM by variable												
Manager's												
Age	.244	.009	.221	.016	.246	.022	.401	.254	.388	.226	.279	.437
Experience	.000	.072	.001	.109	.000	.117	.122	.330	.111	.495	.226	.201
Education	.246	.277	.254	.291	.241	.247	.468	.047	.516	.100	.318	.195
Specialization	.017	.320	.045	.249	.041	.357	.464	.124	.405	.219	.507	.068
Training objective												
<i>Axis 1</i>							.102	(.3114)	.174	(.3186)	.360	(.3381)
<i>Axis 2</i>							.544	(.2600)	.069	(.2218)	.346	(.2494)
DM by variable												
Industry's												
Develop. stage	.638	.002	.641	.001	.672	.008	.545	.075	.626	.037	.660	.023
Techn. intensity	.574	.017	.553	.027	.561	.012	.699	.099	.738	.036	.711	.007
Market segment.	.148	.429	.122	.447	.136	.325	.428	.217	.337	.390	.347	.264
Product special.	.000	.161	.000	.094	.003	.190	.048	.314	.013	.360	.000	.740
Standardization	.019	.314	.024	.308	.015	.185	.000	.576	.004	.570	.003	.108
Training objective												
<i>Axis 1</i>							.291	(.3352)	.309	(.3378)	.273	(.3324)
<i>Axis 2</i>							.254	(.2560)	.065	(.2430)	.408	(.2583)

(continued next page)

Table 4 (continued)
Eigenvalues and discrimination measures (DM) of correspondence analysis on all explanatory dimensions

	Analysis on all explanatory variables				Analysis on explanatory variables by dimension							
	Imitation		Discovery of new technology		Discovery of managerial practice		Imitation		Discovery of new technology		Discovery of managerial practice	
	Axis 1	Axis 2	Axis 1	Axis 2	Axis 1	Axis 2	Axis 1	Axis 2	Axis 1	Axis 2	Axis 1	Axis 2
DM by variable												
Firm's												
Age	.328	.000	.346	.001	.304	.018	.454	.030	.519	.018	.562	.019
Core competences	.050	.176	.064	.309	.052	.241	.102	.353	.207	.269	.144	.024
Structure	.083	.049	.056	.044	.055	.009	.437	.253	.161	.236	.221	.345
Size	.460	.005	.447	.015	.476	.029	.53	.140	.632	.092	.603	.090
Training objective												
Axis 1	.105		.252		.123		.303(.3666)		.330(.3701)		.306(.3673)	
Axis 2	.159		.007		.254		.424(.2400)		.644(.2519)		.767(.2493)	

*For the analysis by dimension, numbers in parentheses represent the eigenvalues

Suggestions for systematic and formal training in order to discover a new technology were associated with an emerging industry, high technological intensity, and young and small firms.

By contrast, suggestions for an occasional training in order to discover a new technology were associated with a mature industry, low technological intensity, and old and medium-sized firms.

With respect to the discovery of a new managerial practice, suggestions for systematic and formal training were associated with less specialized managers, industrial customers, and specialized demand. Suggestions for informal and systematic training or for occasional training were associated with specialized managers, end-user products, and general demand.

Table 5
Associations between explanatory variables and the suggested importance of knowledge sharing by firm

Variable	Categories	Importance of knowledge sharing		
		Weak 6	Moderate 31	High 2
Nature of the demand	Customized Standardized	**		**
Scope of the product use	Specialized General			
Target market	End-users Industrial.		**	**
Technological intensity	Low High	**	**	**
Stage of development	Emerging Mature	**	**	**
Size of the firm	Small Medium	**	**	**
Organizational structure	Organic Mechanistic			
Required core competences	Hum. Res. Technology	**	*	**
Age of the firm	Young Old	**	**	**
Manager's level of specialization	Less. High			
Manager's level of education	No university University			
Manager's level of experience	Low High			
Age of the manager	Young Mature			

** Association observed in the analysis considering all explanatory variables for the three dimensions and in the analyses considering only explanatory variables per dimension

Considering the importance of knowledge sharing by firm, the results in Tables 5 and 6 indicate an association between a high level of knowledge sharing and mature industry, low technological intensity, old and medium-sized SMEs, human resources based-success, standardized product, and end-user customers. A moderate level of knowledge sharing is associated with emerging industry, high technological intensity, young and small SMEs, and industrial customers. Finally, a low level of knowledge sharing is associated with mature industry, low technological intensity, old and medium-sized SMEs, technology-

Table 6
Eigenvalues and discrimination measures (DM) of correspondence analysis on all explanatory dimensions

	Analysis on all explanatory variables		Analysis on explanatory variables by dimension	
	Axis 1	Axis 2	Axis 1	Axis 2
Eigenvalue*	.2160	.1546		
DM by variable				
Manager's				
Age	.225	.041	.197	.538
Experience	.007	.085	.265	.092
Education	.171	.354	.387	.225
Specialization	.004	.265	.513	.067
<i>Training objective</i>			.239(.3204)	
Axis 1				.395(.2632)
Axis 2				
DM by variable				
Industry's				
Develop. stage	.574	.029	.401	.140
Techn. intensity	.608	.001	.587	.251
Target market	.196	.339	.507	.093
Product use	.006	.206	.145	.220
Nature of demand	.010	.299	.019	.568
<i>Training objective</i>			.520(.3632)	
Axis 1				.388(.2767)
Axis 2				
DM by variable				
Firm's				
Age	.301	.020	.402	.009
Core competences	.095	.155	.225	.276
Structure	.079	.040	.288	.366
Size	.469	.000	.608	.013
<i>Training objective</i>			.384(.3814)	
Axis 1				.518(.2365)
Axis 2				

*For the analysis by dimension, numbers in parentheses represent the eigenvalues

based success, and customized product. It is interesting to notice that the nature of demand and the required core competencies make the difference between associations found between low and high levels of knowledge sharing.

DISCUSSION AND PROPOSITIONS

At first sight, it is surprising that the majority of GOSME's managers suggest training as a major means of improving the competencies of their human resources. Their relatively limited resources to carry out formal training structures can lead one to think that they could prefer informal learning means. Indeed, employees interviewed by Tannenbaum (1997) tended to attribute most of their learning to informal sources instead of more formal organizationally-provided methods. Also, Jacob and Ebrahimpur (2001) found that in the globally oriented SME, knowledge acquisition was seen as an experience and its transfer as a process, which occurs in the context of social interactions. However, the examination of other aspects of results allows greater understanding of this situation, as we will see below. As well, this situation may be explained by the perception of those who are interviewed. Indeed, when Kuratco, Goodale, and Hornsby (2001) had invited owner/managers of American small entrepreneurial firms to list tools used to increase the quality of their human resources, the following five programs have been most frequently mentioned: training (62%), employee involvement (48%), employee/team financial rewards (46%), employee/team recognition program (44%), and formal education program (39%).

In the current study, it is important to note that in addition to suggesting training as the means for learning, the majority of managers suggest also that this training should be carried out within the firm by different means. Turan and Stevens (1998) had also observed that firms used different forms of media for communicating knowledge, namely explicit (30%), tacit (45%); and intermediate (25%). For firms without specialized services for training, this means the training is carried out by doing, and other means considered by Tannenbaum as informal, such as supervisors, co-workers, trial and error, and observation. In fact, GOSMEs adopt a "bumble bee" approach (pollination model) by the use of formal training, generally outside the firm, for managers and supervisors; who, in turn, will transfer it within the firm (O'Dell and Grayson, 1998)². We can therefore state the following proposition:

Proposition 1: In order to improve the competence of their human resources, managers of GOSMEs favour mixed and complementary practices that facilitate the acquisition of explicit as well as tacit knowledge.

The fact that the majority of managers suggest the use of different providers for training is also consistent with the proposition above. Managers and supervisors will receive training outside the firm. This knowledge will then

be diffused within the firm through meetings chaired by managers and supervisors. This practice seems congruent with the relatively limited means within this category of firms. But it is also consistent with the absorptive capacity of employees as identified by Szulanski (1996). The situation of the lower-level employees in the current study is a good illustration of this phenomenon. The practice is also consistent with Nonaka's (1994) "middle-up-down model", in which self-organizing teams with middle managers as team leaders create and amplify explicit and tacit knowledge. Finally, these results are consistent with findings by Paradas and Torrès (1996) on globally oriented French firms. These authors observed that despite the fact that managers were less reticent to outsource some training activities, an important part of training could be ensured within the firm by and only by high-level managers and consultants. A further statistical analysis of the current results revealed that the mix of training providers was associated with young and small firms, standardized product, end-user customers, and experienced managers. By contrast, the preference of the firm itself as training provider was associated with medium-sized and old firms, customized product, industrial customers, and less experienced managers. Therefore, the following propositions may be stated:

Proposition 2: In GOSMEs, the higher the position of a person in the organization, the more the person will acquire explicit knowledge outside the firm. The lower the position of a person in the organization, the more the person will acquire tacit knowledge within the firm.

Proposition 3: The more standard the product of the GOSMEs, the more the firm will use multiple training providers, and the more customized the product of the firm the more it will rely on itself for human resources training.

The reluctance of GOSME's managers to rely on imitation is consistent with findings in previous studies. Minguzzi and Passaro (1997), for example, observed that French SMEs that were exportation oriented focused more on innovation from within rather than imitation. Also, Simon (1990) observed that German "hidden champions" relied on themselves in R&D and were highly self-confident, preferring to solve their problems themselves, and were very cautious in engaging in a partnership. Payoffs from learning by imitation have also been found to be less important than those from experimentation, competence acquisition, and continuous improvement (Rheem, 1995). Therefore, the following proposition may be stated:

Proposition 4: GOSMEs managers focus more on learning for discovery than on learning for imitation.

Results of the current study also reveal that the use of systematic training practices is preferred for the discovery of a new technology or the discovery of managerial practices rather than for imitation and after promotion.

Furthermore, results reveal that preferred training content is different according to tasks to be carried out by the employee. Paradas and Torrès (1996) observed similar results in globally oriented French SMEs where training policies were characterized by a high level of formalization, a variety of training content, and a focus on technicians. Findings in the current study suggest that one should consider events in the career of employees, training objectives, and tasks to be carried out as among contingent factors that may explain the variety of training practices (Tannenbaum, 1997). Therefore, the following proposition can be stated:

Proposition 5: All else being equal, the employee's actual tasks on the job, career objectives, and previous knowledge will determine the appropriate method and content of learning in GOSMEs.

To ensure knowledge sharing, the most frequently preferred methods are communication of an employee's success to colleagues and the discussion-meetings directed by the most qualified employees. By contrast, the communication of errors to colleagues has to be avoided. This does not mean that one does not learn from errors. Rather, identifying an employee's errors created the danger of discouragement (Bartol and Srivastava, 2002). Associating errors with their authors is not viewed well by people, even if the errors could be a source of improvement. Tannenbaum (1997), for example, observed that "assign to avoid errors" came in the last position among twelve learning conditions suggested to employees, while "tolerate mistakes as part of learning" was ranked forth. Also, the importance of discussion-meetings chaired by supervisors has been ranked in a prominent position in Tannenbaum's study. In the same way, Sexton et al. (1997) found that entrepreneurs prefer training delivered through discussion methods by practicing professionals in a context similar to that of their workplace. The methods most often suggested for training in Carrier's (1999) study of Canadian small business owner-managers were: discussion in small groups of issues related to practical skills in export process, a combination of conferences and workshops with experienced exporters, coaching, and videos. Therefore, the following propositions may be stated:

Proposition 6: In GOSMEs, knowledge transfer within the firm is more likely to be carried out through social interactions such as discussion groups chaired by managers or the most qualified employees.

Proposition 7: The more the social interactions are related to conditions of replicable successes or avoidable errors rather than to their authors, the more successful will be the knowledge transfer.

With respect to the importance of knowledge sharing, some associations are consistent with previous studies where the learning activities were associated with the level of uncertainty. Thus, associations between the levels of shar-

ing and industrial environment, targeted market, development stage of the industry, technological intensity, and the firm's size are higher in situations that may generate high uncertainty and vice versa. However, associations were found between levels of knowledge sharing and product standardization, the firm's age, and the nature of required competencies. This situation may be explained by the fact that factors other than uncertainty may determine learning activities. Minguzzi and Passaro (1997), for example, had observed that the product and the quality of relationships with customers might determine learning activities. Paradas and Torrès (1966) explained the internalization of training activities in world class SMEs by their high level of specialization and their need for security. Therefore, the following proposition is offered:

Proposition 8: All else being equal, knowledge sharing intensity is determined by the environmental uncertainty, the product standardization, the firm's profile, and the nature of success factors.

To sum up this discussion, one can observe that previous studies already recognized the difference between learning in large firms and in SMEs. They also recognized the prevalence of tacit knowledge and the existence of both formal and informal means of learning. This study has enhanced our understanding of these particularities of the SMEs learning. It has highlighted how SMEs can have access to external knowledge through managers and high level staff and, thereafter, diffuse them inside using social interactional means. It has also highlighted, among other things, how some categories of staff (such as technicians), which deal more often with the explicit knowledge, need more formal structures of learning than other employees in the firm. Overall, the results suggest that learning practices in SMEs should be adapted to the characteristics of the firm and the position and tasks of the beneficiaries rather than being generalized as a monolithic phenomenon (just by contrast to what is done in large firms).

CONCLUSION

This study aimed at understanding the means that GOSMEs use to prepare their human resources to face globalization's challenges. From managers of successful Canadian GOSMEs, suggestions about learning activities were collected and analyzed using Nud*ist and HOMALS programs. Managers suggested that GOSMEs combine formal and informal means. This preference for mixing learning sources can be justified as achieving the goal of acquiring both explicit and tacit knowledge important. Training was considered to be the primary means to learn. Managers suggested that training could be carried out both outside and inside the firm. Outside training that managers suggest could follow the pollination model in which managers and supervisors learn in order to ensure training inside the firm through formal and informal structures. Inside

training that managers suggest could use different structures to facilitate the transfer of tacit as well as explicit knowledge and ensure the security of core competencies. The necessity for, and the content of, training could depend on the position of the employee, the tasks carried out, and career related events. Managers and supervisors could ensure knowledge sharing through discussion groups and other activities implying social interactions.

The results of this study need to be confirmed by an empirical study contrasting a large sample of managers and employees from successful firms with a large sample of the same categories of people from less successful firms operating in the same environment. It would also be interesting to compare results from opinion surveys to results based on practices really carried out in firms. Nonetheless, results found and propositions stated in the current study may already provide a basis for action by practitioners seeking ways to deal with learning practices and providing researchers with a basis for hypotheses. Governments also can take advantage of the contingent nature of organizational learning and, consequently, adapt learning programs and regulation for GOSMEs.

ENDNOTES

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- 1 For each explained variable, the analysis gave two graphics and four tables. These outputs cannot be presented in this paper due to the space constraints, but they are available from the author.
- 2 This has been confirmed by responses of managers to a question beyond the scope of the current report and related to environmental scanning. Managers suggested that managers and supervisors should attend events external to the firm in order to get information.

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