E-Learning: is it also for Small and Medium-Sized Enterprises or only for Larger Organizations?

Andrée Roy

1 Université de Moncton, Moncton, NB, Canada

Abstract – Companies have, over the years, used training to meet the learning needs of their employees and to adapt to changes in their environment. However, in recent years, larger businesses and companies have used e-Learning rather than traditional training to meet their training needs. This research discusses the various elements of e-Learning that are beneficial to larger businesses and verifies, through a case study, if e-Learning is also for small and medium-sized enterprises and if so how we should proceed to bring e-Learning to these businesses.

Index Terms – action plan, barriers to e-Learning, characteristics of e-Learning, e-Learning, SMEs.

I. INTRODUCTION

The economic and social transformation of the last decades, mostly due to the emergence of the new global economy which is based mainly on knowledge and information, has had an impact on the nature of the skills needed by workers. It also has had an impact on the way that larger organizations are fulfilling these needs and consequently conducting training to keep employees up to date on products, services, competitors, and market trends.

Therefore, it is becoming more common to hear about organizations such as Air Canada, Boeing, Dell, Pfizer and Shell that use e-Learning to train their employees. In fact, it has become a necessity for several organizations and large businesses to capitalize on their knowledge and skills, to transmit them in a timely basis and to ensure that the training and skills development becomes an asset in order for them to remain competitive [1]. Traditional training method is not anymore neither a convenient method nor a cost effective method for most organizations or larger businesses. Is it for small and medium-sized enterprises (SMEs)? Is e-Learning better for conducting training to keep employees up to date in SMEs?

In Atlantic Canada, SMEs, which are defined as businesses having less than 500 employees, represent the majority of businesses and they also create the majority of jobs [2]. Due to their great flexibility and adaptability, they represent the sector of the economy that has the greatest growth rate and that creates the most employment [3; 4]. They are considered as the foundation of economic development [3; 5].

This study has both a descriptive and a prescriptive aim. Having identified what we know of SMEs with regard to e-Learning, based on a survey of the literature, the first objective is to determine, through a multiple case study, if SMEs in Atlantic Canada used e-Learning and if they find the same advantages than larger organizations in the use of it. The second objective is to develop a conceptual and methodological framework for an action plan to assist SMEs in the use of e-Learning.

II. THEORETICAL CONTEXT

The adoption of e-Learning technology for the purpose of workplace training and human resource development is rapidly growing in large organizations, both private and public, and to a lesser extent in SMEs [6; 7]. The practitioner literature, adopting a “best practices” approach for the most part [8], has focused on issues of cost and technological issues, whereas research on e-Learning in the workplace is deemed to require a better theoretical grounding [9] and, a broader conceptualization of e-Learning’s impact on the organization and its individual members [10].

A. Definition of e-Learning

There is no clear and common definition of e-Learning, consequently conceptual ambiguity and problems of comparability can be encountered when this concept is used for research on workplace training [10; 11]. The definitions most often provided link learning activities and technologies. In this line of thought, Reference [12] defines e-Learning as basically using the Internet, an intranet, an extranet, or other Web technologies to provide training to individuals in a...
synchronous or asynchronous mode, while for Reference [13], it is defined as “the use of computer network technology, primarily over or through the Internet, to deliver information and instruction to individuals”. A report by the American Commission on Technology and Adult Learning [14] states that “e-Learning is instructional content or learning experiences delivered or enabled by electronic technology”. Reference [15] workplace e-Learning report provides that “e-Learning uses information and communication technologies (ICTs) to deliver content (learning, knowledge and skills) on a one-way (asynchronous) or two-way (synchronous) basis”. Reference [16] defines e-Learning as “the ability to deliver training and education via Web technology”. It is meant to improve training by providing current content anytime, anywhere, and offering learners a customized, interactive, just-in-time experience. For Reference [17], e-Learning comprises all training activities that use Web technologies.

E-learning typologies that combine certain characteristics or criteria have also been developed by some authors [10; 12; 18]. Those characteristics most often used are: time, place, access and support, technology (development and delivery), interaction, personalization and control [19].

B. Benefits of e-Learning for SMEs

Training in SMEs is deemed to benefit from e-Learning for various reasons, both economical and technical [20]. This includes reduced travel costs, training needs being met at a more appropriate time for the organization and its employees, and not having to replace employees during work hours. Reference [10] mentions that e-Learning provides for a higher personnel retention rate, while Reference [21] notes a faster distribution of training materials and a more consistent delivery of course contents. Reference [22] mentions that e-Learning reduces training time and can lead to increased employee productivity and business performance. The various benefits of e-Learning are summarized in Table 1, a number of empirical studies having confirmed their existence. For instance, it was found that some firms believe the two main benefits of e-Learning to be its capacity to support access to training from the workplace, thus reducing the time spent outside the work area, and its capacity to structure the training in small modules that can better meet the training needs of employees [23]. For employees, the main benefits of e-Learning were found to be its convenience and the opportunity to learn at their pace. Another study found that a majority of firms perceived e-Learning as being an economical, efficient, flexible, practical and time-effective mode of training [24]. Reference [25] adds that e-Learning represents an “added value” as compared to conventional training methods. This is particularly important for SMEs, given that the main conclusion obtained from the empirical research to-date is that, in a globalized knowledge-based economy, there are a number of unresolved problems that still beset these firms with regard to workplace learning, and in particular there is still great difficulty in providing education and training that meet the specific needs of SMEs, their owner-managers and their personnel [26].

**TABLE 1**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost</td>
<td>Reduction in training costs (course fees, transportation, meals, lodging, time away from work). There are numerous courses already developed in e-Learning format that are free or available at reasonable prices. These courses, in addition to being less expensive than conventional courses, allow SMEs to save on travel, lodging and meal costs. These courses reduce the loss of employees’ production time or the need to replace employees [16; 21; 22; 27–28; 30; 31; 34; 37–39].</td>
</tr>
<tr>
<td>Flexibility and accessibility (availability)</td>
<td>Possibility for the employee and the firm to choose a course schedule (any time – 24 hours a day / 7 days a week) and place (any location) [21; 27; 28; 30; 31; 32; 33; 34; 35].</td>
</tr>
<tr>
<td>Modularity</td>
<td>Possibility for the employee to only complete the part of the course that pertains to his needs and not the entire course [28; 31; 36;], along with the possibility of working on the course sections that are not as well understood [37].</td>
</tr>
<tr>
<td>Learning pace (speed)</td>
<td>Possibility for each employee to learn at his or her own speed [32; 33; 34; 38].</td>
</tr>
<tr>
<td>Learning style</td>
<td>Possibility of presenting the course material in various formats and meeting the various learning styles of employees [27; 31; 40].</td>
</tr>
<tr>
<td>Interactive Feedback</td>
<td>Possibility of having an instructor and personalized support by this instructor, and of getting feedback by various means (telephone, fax, email, camera, etc.) [27; 31; 33].</td>
</tr>
<tr>
<td>Privacy</td>
<td>Possibility of completing the course alone at home (privacy) and of not having to suffer the discomforts (shyness, feeling of lack of knowledge, etc.) that some employees experience from time to time [33].</td>
</tr>
<tr>
<td>Customization</td>
<td>Possibility of customizing the training according to each participant’s needs [35; 37; 41].</td>
</tr>
<tr>
<td>Evaluation</td>
<td>Possibility of evaluating employees’ progress on a continuous basis [28; 30; 36; 37].</td>
</tr>
<tr>
<td>Distribution of training material</td>
<td>Faster distribution of the training material [21].</td>
</tr>
<tr>
<td>Consistent delivery</td>
<td>Consistent delivery of the content of the course, from one time to another [21; 42; 43].</td>
</tr>
</tbody>
</table>

In order for SMEs to benefit from these benefits, attempts have thus been made to identify the barriers (contextual conditions, pedagogical prerequisites, design principles ...) for the successful implementation of e-Learning in SMEs [44; 45].

C. Barriers to e-Learning in SMEs

Barriers to e-Learning as a method of training for learners, both for businesses and educational institutions, have been identified by various studies. For example, Reference [46] mentions that the main barriers to the use of e-Learning in Canada are learners and technical infrastructure. Among other barriers mentioned by Reference [46], we find the lack of knowledge towards e-Learning, the accessibility, the lack of commitment from senior management, the lack of quality courses, the development costs and the
 priorities of investment. According to Reference [47], the bandwidth, the access to the Internet, the reluctance of employees to use the technologies, the lack of investment on the part of companies in technology and the lack of university-level courses and non-academic relevant to the needs of businesses are still barriers to e-Learning. In addition to the lack of relevant courses, the reluctance of employees and the lack of expertise or technical capacity of these as barriers to e-Learning, Reference [42] refers to the lack of realism of businesses towards what e-Learning can and cannot do. The barriers facing companies when they want to use e-Learning are summarized in Table 2.

### TABLE 2
**BARRIERS TO THE USE OF E-LEARNING**

<table>
<thead>
<tr>
<th>Barriers</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility</td>
<td>Difficulty for the trainer and learner to acquire or have access to the necessary technology (hardware, software, bandwidth) [30; 31; 32; 46; 47; 48; 49; 50; 51]</td>
</tr>
<tr>
<td>Training and support not available</td>
<td>Teachers and learners do not always understand how to use the technology required for the course (computers, software, Internet, TV…) [33; 49; 47; 51; 52; 53]</td>
</tr>
<tr>
<td></td>
<td>Support service not available or inadequate for teachers and learners [33; 49; 53]</td>
</tr>
<tr>
<td></td>
<td>Lack of support from senior administration [49; 47]</td>
</tr>
<tr>
<td></td>
<td>Lack of involvement of different stakeholders and no strategic plan [49; 54]</td>
</tr>
<tr>
<td>Course and course content</td>
<td>Determine the purpose of the course: learning through technology or learn technology [55]</td>
</tr>
<tr>
<td></td>
<td>Determine the course content and the order of presentation of content [29; 34]</td>
</tr>
<tr>
<td></td>
<td>Align the objectives of the course with the course content and assessments [48; 33]</td>
</tr>
<tr>
<td></td>
<td>Choose the method of training (an active method, which allows the learner to construct his learning, and have access to a teacher if necessary, is a better method than an affirmative one) [52; 53]</td>
</tr>
<tr>
<td></td>
<td>Determine the duration and cost [48; 33; 56]</td>
</tr>
<tr>
<td></td>
<td>Lack of university-level courses and non-academic relevant to businesses [47]</td>
</tr>
<tr>
<td>Interaction</td>
<td>Lack of human interaction (face to face) [31; 32; 54]</td>
</tr>
<tr>
<td>Learners</td>
<td>The profile of the learner may not always match the desired profile. The following characteristics are desirable in order to ensure the success of the training: self-motivated [28; 33; 46; 57; 52], ability to work alone [57; 52], self-disciplined [29; 46; 57]. &quot;I am not familiar with the proper term but I suppose it is e for electronic.&quot; - Gilbert (G:132)</td>
</tr>
<tr>
<td>Environment</td>
<td>The political, social and economic forces which may influence the choice of courses offered, the quality of courses and the place [54]</td>
</tr>
<tr>
<td>Costs</td>
<td>Costs (infrastructure, development and / or purchase of course) required to support e-Learning [58; 59]</td>
</tr>
</tbody>
</table>

### III. RESEARCH METHODS

Given the present state of knowledge on e-Learning in SMEs, a qualitative and exploratory research approach was used. The case study method is well adapted in situations where theoretical propositions are few and field experience is still limited [60]. A multiple-site case study allows one to understand the particular context and evolution of each firm with regard to e-Learning. Sixteen SMEs located in the Atlantic region of Canada were studied. That is, four in each of the provinces of New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland. They were, selected to be sufficiently successful (at least 10 years in business) and representative in terms of industry and size, for theoretical generalization purposes. Following North American research [61; 62], a small enterprise (SE) is defined as having 20 to 99 employees, whereas a medium-sized one (ME) has 100 to 499.

Data were collected through semi-structured tape-recorded interviews with the owner-manager or CEO and with the firm’s HR manager or manager responsible for training. E-Learning users were also interviewed in four cases. Interview transcripts were then coded and analyzed following Ref. [63] prescriptions. As presented in the research results section, these firms range in size from 60 to 485 employees and operate in industries whose technological intensity varies from low to high. The SMEs were regrouped in four e-Learning profiles of increasing intensity, based on the extent of their knowledge and use of e-Learning (none, weak, average, strong).

### IV. RESEARCH RESULTS

The study shows that the training process of SMEs emanates from a training function, as for larger companies and organizations. The training function has a formal structure in most cases (14 cases out of 16 cases) but not very elaborated. Traditional training and e-Learning is offered to employees trough this function.

A. Knowledge and perceived benefits of e-Learning in SMEs

The majority of SMEs who participated in the study are quite knowledgeable of e-Learning and offer definitions that closely resemble those that are found in the literature. As indicated in Table 3, while the e-Learning concept is fairly well known by the majority of SMEs studied, it remains to be defined for some.

### TABLE 3
**ILLUSTRATIONS OF E-LEARNING DEFINITIONS OFFERED BY SMEs**

<table>
<thead>
<tr>
<th>SMEs</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;It is any kind of system that allows you to learn a skill through the computer and basically, Internet, an interactive software or text notes; text notes would be the worst case scenario and some kind of an interactive software that would give you results and test questions and so on...pick and choose kind of thing, so you can actually see if you are taking the right decisions.&quot; - Bert (B:491-496)</td>
</tr>
<tr>
<td>&quot;e-Learning is learning through a computer program, with a computer program on-line. It is almost like distance education whether it is local or not but it is obviously something you can do on a computer system as opposed to going to a building.&quot; - Fiona (F:437-438:442-445)</td>
</tr>
<tr>
<td>&quot;I am not familiar with the proper term but I suppose it is e for electronic.&quot; - Gilbert (G:132-133)</td>
</tr>
</tbody>
</table>

Further analysis enables us to qualify the SMEs’ stated knowledge and use of e-Learning, as these firms can be categorized under four distinct profiles. There are SMEs that use e-Learning a great deal (strong use), those that use it quite a bit (average use), those that...
don’t use it much (weak use), and those that don’t use it at all (non-existent use) as indicated in Table 4. Evidently, SMEs that make greater use of e-Learning have a better capacity to define it.

Table 4 also shows that several SMEs in Atlantic Canada use e-Learning, up to a certain degree, to train their employees. During this study, 75% of SMEs were using e-Learning to train their employees. This tends to confirm what is indicated by Reference [64], i.e. that Internet and Web-based training methods are being increasingly used by SMEs. An interesting fact to note, in the case of a “weak” use of e-Learning by SMEs, it is usually the employee who has chosen to develop his/her knowledge through e-Learning. Julien (firm J) provides an example “Some employees have chosen e-Learning, but it is usually on an exception basis, to develop their work knowledge and it was suggested by the employee and not the employer”.

The decision to use e-Learning by the employees in order to further develop their knowledge is linked to their perceived benefits of e-Learning. Fiona (F) provides us with an example: “The employee chose this method because she wanted to continue working; she needs to work; she wanted to complete her bachelor’s degree while working at the same time”. Denise (D) gives us another example: “Since I have a three-year-old daughter and that my work schedule is rather full, I can complete the work at 3:00 am in my slippers. Honestly, I chose e-Learning because of the flexibility”. As for the choice of SMEs to use e-Learning to train their employees, that decision is also a function of the benefits they may obtain from e-Learning. To this effect, Table 5 illustrates different statements regarding the perceived benefits of e-Learning by SMEs who use it. These benefits are basically the same as those described in the literature. These benefits, as shown in Table 6, are not only perceived benefits but attainable benefits that motivate SMEs to further use e-Learning for training purposes.

Table 4
PROFILES OF E-LEARNING’S UTILIZATION AND KNOWLEDGE BY SMEs

<table>
<thead>
<tr>
<th>Profile</th>
<th>N</th>
<th>Utilization</th>
<th>Knowledge</th>
<th>Strong</th>
<th>Average</th>
<th>Weak</th>
<th>Non-Existence</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROFILE I</td>
<td>300 TO 485</td>
<td>STRONG</td>
<td>AVERAGE</td>
<td>WEAK</td>
<td>NON-EXISTENT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROFILE II</td>
<td>60 TO 280</td>
<td>STRONG</td>
<td>AVERAGE</td>
<td>WEAK</td>
<td>NON-EXISTENT</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The International Conference on E-Learning in the Workplace 2010, www.icelw.org

SMEs encounter some barriers when they want to use e-Learning as a means of training. Even SMEs who rarely or never use e-Learning are aware that certain barriers may be encountered with e-Learning.
B. Perceived barriers of e-Learning by SMEs

The bandwidth, which is part of the accessibility, is one of the barriers often quoted. The capacity to download e-Learning courses is not available because the required bandwidth is not always available in the workplace or in regions where employees reside. This problem is illustrated by the comments of Gérôme, who says: « The bandwidth is insufficient. It takes an eternity to download an e-mail, forget videos and other sophisticated things. It would be difficult to administer training of this style with the system such as it operates at present. By the time a course would be online, the employees would have left home » (G:181-186). In addition, some SMEs do not have a training room equipped with the necessary equipment for this type of training, and some employees do not have a computer at home.

Another barrier often mentioned is the level of knowledge of employees towards computers. There are several employees whose level of knowledge is not sufficient or still, they have no interest in computers. The comments of Jules illustrate the problem « There are some employees who are fascinated by computers and there are others who don’t want to touch them … Is that the medium that is most suitable for these people to learn » (J:652-654). The motivation and discipline required to take a course online were also mentioned.

The lack of knowledge about the courses available is another barrier highlighted. It is not known what courses are offered, where they can be found, what their level of interaction is, what the possibilities of mentoring are, what the possibilities for the evaluation are and what level of security is necessary in order to avoid problems and ensure that it is the right person that participates in the course. Hector gives us an example of the lack of knowledge about what is available, he says: « there’s no directory, or if there is one, I am not aware of it » (H:145-146).

The barriers cited by SMEs in the use of e-Learning are illustrated in Table 7. These barriers, as shown in Table 8, can be grouped into broad categories, namely: the lack of access to computers or the Internet, the lack of training and support both for SMEs and for the employees, the lack of knowledge on the courses and content relevant to the needs of SMEs including false expectations of SMEs as to what e-Learning can and cannot do, the level of interaction, the cost of purchases or development and the learner himself. The barriers faced by SMEs are similar to those found in the literature.

Therefore, in order for e-Learning to be beneficial for all SMEs, we must eliminate or at least alleviate some of these barriers. Activities to promote e-Learning, at all levels of the organization, have to be undertaken. The action plan presented below is a start in that direction.

C. Action plan

“Reference [65]” considers that in the knowledge-based economies, the investments of a company in the training and update of the employees’ skills are one of the key elements of growth. According to this organization, SMEs need to exploit e-Learning to address their training needs in order to ensure their growth and survival. “Reference [66]” mentions more or less the same thing, and for the latter, e-Learning has to be part of the development of businesses in order to ensure the sustainability of these businesses.

However, according to [58] and [59], if we want businesses to use e-Learning, barriers to the use thereof shall be removed or at least reduced. In addition, a culture more favorable to e-Learning, in addition to the benefits associated with it, encourages companies to use e-Learning [47].
The action plan to encourage SMEs to use e-Learning must include both actions to develop a culture more conducive to e-Learning and actions to remove or reduce barriers in using this method of training.

According to Reference [67], if companies want to position themselves so that they can compete on a global scale, they will need better trained employees and this will be done through a change of culture towards training. Moreover, the culture change must be transmitted and adopted by all stakeholders, i.e. by SMEs, the various players in economic development and society in general.

The development of a learning and e-Learning culture passes, among other things, by valuing learning and having a better understanding of e-Learning [65, 32, 68]. The comment issued by Denise illustrates indeed the need to enhance learning and to learn more about e-Learning. She says: «We must develop a learning culture, in society in general, because without education or training businesses cannot survive. » (D:985-999)

For its part Ivan says: « There must be information sessions. People should be made aware of what is e-Learning. They should be presented a demo of what e-Learning can do. » (I:1081-1085)

We need champions of e-Learning for the promotion and awareness of e-Learning in companies. This promotion and awareness can be done by internal champions of e-Learning [68, 69, 70], as well as by external champions [65, 71, 72]. However, champions must have credibility and knowledge of e-Learning. The comment issued by Edna clearly illustrates the need for champions of e-Learning. She says: « I think it should be someone, like economic development agencies, to tell them about what is available. » (Edna E:613-615)

As previously mentioned, in addition to actions in developing a culture more conducive to e-Learning, the action plan should include actions in removing or reducing barriers in using this method if we want to encourage SMEs to use e-Learning. To this end, the action plan should include various actions including the upgrading of employees towards technology in general and the e-Learning, offering technical support, the development of a toolbox, and the increase in bandwidth in some regions.

Among the factors that discourage students from using e-Learning, we find the lack of knowledge towards this method of training and of the technology [73]. Thus, in order to ensure that learners do not drop out or refuse to use e-Learning, we must ensure that employees have the equipment, the software, the skills and the necessary knowledge needed to use e-Learning [68, 73]. It is also necessary to provide basic courses to those who do not know how to use computers. Jules's comment goes in this direction, he says: « Some of our employees do not have the knowledge and skills necessary [...] » (I:654-658)

One of the factors which discourage businesses in using e-Learning is the lack of support available. Thus, in order to ensure that learners do not drop out or refuse to use e-Learning, they must be given the necessary support to use e-Learning [58, 59, 73, 74]. To this effect, Ivan said: « Universities or another body should put available resources, by e-mail or phone, to provide consulting services for SMEs. » (I:1086-1090)

Although, according to [74, 75], there are currently a large number of courses on the Internet and, even for SMEs, the lack of information about what is available on the Internet is one of the barriers identified in the use of e-Learning; barriers identified by both authors and SMEs. To overcome this barrier, some researchers [22, 75, 76] suggested using tools to explore the availability of e-Learning, and thus better understand what is available on the Internet. For its part, [68] suggests to create and distribute tools to help companies use e-Learning. The comment of Gérôme illustrates well this need of a toolbox, he says: « The most interesting way would be to bring me a catalogue and to tell me what is available as training […] ». (Gérôme G:595-597)

Finally, initiatives should be undertaken in order to increase bandwidth in the regions because this barrier reduces the companies’ and employees’ ability to download training courses, in e-Learning format, depending on where they are.

Although communication is not a barrier to the use of e-Learning, it seems that the communication between SMEs and economic development agencies is not what it should be. Indeed, SMEs are under the impression that the agencies do not know their needs and that the programs they offer are not fitted to their needs. These problems are not directly related to e-Learning, but would have an impact on how SMEs can meet their needs. They could possibly be mitigated through various outreach initiatives emanating from the economic development agencies via an action plan.

5. CONCLUSION

An increasing number of SMEs in Atlantic Canada are aware of e-Learning and use it to train their employees. During this study, three quarters of the SMEs participating in the study use e-Learning, to various degrees, to train their employees and they
perceive the same benefits from it than larger organizations. However, they face many barriers when using e-Learning and these barriers are similar to the ones encountered by larger organizations.

There are a number of pre-requisites that could constitute the core of an action plan to further enable the use of e-Learning in SMEs. The first pre-requisite mentioned is the need to develop an e-Learning culture within the organization, where managers and employees are truly motivated and committed to using e-Learning because they believe it is essential to their individual development and their organization’s development. This implies greater awareness and promotion of the value of e-Learning through the dissemination of knowledge among SMEs as to the nature, possibilities and advantages of e-Learning for workplace training, and as to the supply and appropriateness of e-Learning services and products available. A second pre-requisite mentioned by the respondents is the necessity to lower the present barriers to the efficient and effective use of e-Learning by SMEs. This implies that employees possess the computer knowledge and skills required to use e-Learning effectively, and that they be provided with e-Learning software that is user-friendly and appropriate to the task at hand. This also implies better management and technical support of employees with regard to e-Learning, support which was found lacking in a number of SMEs. Champions must also be identified, inside and outside of SMEs, to promote e-Learning. Last but not least, learning strategies have to be developed to satisfy business needs and goals.

REFERENCES

Authors

A. Roy is with the Université de Moncton, Moncton, NB, Canada E1A 3E9 (E-mail: andree.roy@umoncton.ca).
Published as submitted by the author