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E-Learning and SMEs: Considerations from an Italian Study

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ABSTRACT

E-learning is one of the most promising sectors within the Information and Communication Technologies industry and growth forecasts are more than optimistic. Despite these good premises, current data do not show a strong acceptance of e-learning by European enterprises and, in particular small and medium-size enterprises. This paper introduces a research project about SMEs in Italy aimed at understanding SMEs' decision processes in the field of e-learning and at identifying enablers and obstacles to e-learning diffusion.

INTRODUCTION

Among the most promising changes induced by Information and Communication Technologies e-learning plays a relevant role. Literature and mass media stress opportunities deriving from e-learning at any level: individuals, enterprises and countries (especially developing countries)[1].

Market analysts foresee double digit growth rates for the e-learning market [IDC, 2001] both in the US and Europe.

In magazines, newspapers and conference proceedings it is frequent to read reports about the experiences made by big multinational groups[2] where e-learning enables those companies to train thousands of employees in dozens of countries.

Despite this positive scenario small and medium size enterprises (SMEs) do not seem to be much involved in the phenomenon.

From a theoretical point of view SMEs could easily benefit from the technical and economic advantages of e-learning: easy-to-manage infrastructure, easy-to-use technologies, growing offer and decreasing costs. They should all be factors stimulating the diffusion of these new media in SMEs training.

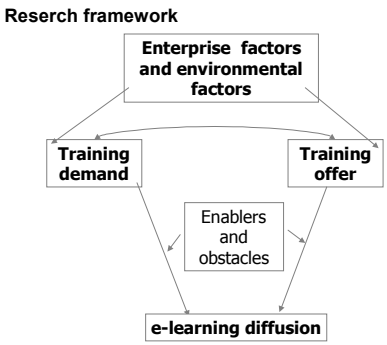
However, present data about the real use of e-learning in Europe do not show a wide diffusion. This evidence stimulated the authors to investigate the problem and in particular, to analyse the use of e-learning by SMEs. This paper introduces a research project co-financed by Assolombarda (the association of enterprises located in Milan, Italy) aimed at understanding attitude and expectations towards e-learning of enterprises in Milan.

Personal experience, literature review and interviews with a small group of firms (both from the demand and the supply site) enabled the development of the following research framework (Figure 1).

The theoretical framework posits that the e-learning diffusion derives from the decisions at the demand and the supply level and they are influenced by enablers or obstacles[3].

The research started in September 2001 and will be completed in June 2002 and it includes a survey among Assolombarda's 5000 associates and direct interviews with a small group of firms which show high propensity to e-learning.

Figure 1: The research framework



E-Learning: Definition and Data

Literature offers different definitions of e-learning. These definitions vary between two extremes: at one side, a broad definition considering e-learning as a synonymous of technology-based learning. "The term e-learning covers a wide set of applications and processes, including computer-based learning, web-based learning, virtual classrooms, and digital collaboration. We define e-learning as the delivery of content via all electronic media, including the Internet, intranets, extranets, satellite broadcast, audio/video tape, interactive TV, and CD-ROM" (Urdan, Weggen, 2001, p. 8). According to this perspective on line learning is one of the possible forms of e-learning.

At the other side, there is also a strict definition of e-learning where "E-learning refers to the use of Internet technologies to deliver a broad array of solutions that enhance knowledge and performance. It is based on three fundamental criteria:

1. E-learning is networked, which makes it capable of instant updating, storage/retrieval, distribution and sharing of instruction or information […];
2. It is delivered to the end-user via computer using standard Internet technology […];
3. It is focused on the broadest view of learning – learning solutions that go beyond the traditional paradigms of training […]." [Rosemberg 2001, pp. 28-29].

Three main requirements emerge from this definition and characterize the strict approach to e-learning: networking, internet protocols and learning (instead of training)

Both definitions agree on differentiating e-learning from distance learning: the concept of distance learning is wider than the concept of e-learning (Urdan, Weggen, 2001, p. 8; Rosemberg, 2001, p. 29). "e-learning is a form of distance learning, but distance learning is not e-learning" (Rosemberg, 2001, p. 29). In fact distance learning includes also text-based and mail courses (Urdan, Weggen, 2001, p. 8).

Literature discusses the benefits of adopting and using e-learning (Rosemberg, 2001, p. 30-31):

- Lowering learning costs (e.g. related to travel, training length, etc.)
- Enhancing business responsiveness (in fact, it allows to reach "an unlimited number of people virtually simultaneously"[4]);
- Learning customization (personalization);
- Improving content updating;
- Improving learning accessibility (i.e. e-learning is available anywhere and anytime; Internet protocols and browsers are standard);
- Enhancing community building;
- Scalability;
- Leveraging the corporate investment in the web.

At the same time also risks deriving from adopting e-learning are clear (van Baalen, Moratis, 2001):

- Darkening of learning factors (i.e. technology factors can have a predominant role over learning factors);
- Unbalanced selection of participants (i.e. less experienced users can be excluded from learning process);
- Non-neutrality of ICT (i.e. ICT can influence the conception of data, information and knowledge by users);

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- Different media-richness in heterogeneous ICT applications[5];
- The problem of measure the efficiency and effectiveness of e-learning activities.
- The lack of current standards in e-learning platforms.

In terms of market size, analysts predict a relevant growth trend for e-learning [IDC 2001, OECD 2001], as shown in Table 1.

Table 1: Expected growth of the e-learning market

	2001	2002	2003	2004
Noth America	4.213	7.372	11.816	15.072
Western Europe	705	1.319	2.335	3.847
Italy	45	84	157	259

Source: IDC, 2001- in million of dollars

All countries are experiencing a rapid growth of their e-learning industry, but an in depth analysis shows that they are in different stages of the so called industry life cycle (Rogers, 1995; Levitt, 1965; Buzzel, 1966; Dhalla, Nariman, Juspeh, 1976; Gibson, Nolan, 1974; Nolan, 1979).

The USA can be seen as pioneers (innovators) in the industry (Schumpeter,1939; Rogers, 1995). In fact, the OECD report [2001, p. 37] cites: "One thing we can say with complete confidence is that the US is significantly ahead of the rest of world in terms of market size and valuation […] In the United States it is fairly easy to get an overview of market developments, and a growing number of investment companies compile data on market size and growth expectations. Gathering and analysing data on the European or Japanese lifelong learning market is more difficult compared to the US market, not least because it appears to be much more fragmented. The heterogeneity of information and data sources, and the often imprecise terminology, compounds the problem". Differences in forecasts depend - among others - on the adopted definition of e-learning.

Literature and market analysts also try to identify the drivers to e-learning diffusion (IDC, 2001; Urdan, Weggen, 2001). Among them the most important factors are:

- Internet and e-commerce penetration;
- Deregulation, increased competition, consolidation and skill shortage;
- Rapid obsolescence of knowledge and training;
- Continuous need for skilled employees and demand for flexible access to lifelong learning;
- Improvement of quality and breadth of e-learning portfolio (in terms of products, platforms and services);
- Emergence of technology standards;
- Search for cost-effectiveness in meeting learning needs of globally distributed workforce.

At the same time it is also possible to identify the inhibitors of e-learning diffusion (IDC, 2001):

- Localization needs (i.e. language and cultural differences);
- Technology issues (e.g. bandwidth limitations, video streaming quality and low compatibility between new technologies and existing infrastructure);
- Billing systems;
- Security;
- High Prices.

RESEARCH QUESTIONS AND METHODS

Coherently with the theory of diffusion approach (Rogers, 1995) the research framework (Figure 1) posits that e-learning diffusion results from the combination of several forces or variables representing both the demand and the supply side[6].

At the demand side we have individuals and organisations which want/try to satisfy their training needs via e-learning. Several factors influence the decision to adopt or to reject e-learning: some are firm-specific factors (such as firm's culture, organisational structure, technical infrastructure, products, etc.), others are external (industry- or environment-specific) factors (such as legislation, fiscal policies, funded projects, local offer, technical infrastructure in a country, etc.).

To better understand decision processes and the interaction between demand needs and supply the general research framework has been divided into two detailed research frameworks, each one answering a defined research question and each one requiring a specific research approach.

In deed, the general research framework raised two main sets of questions:

RQ1 -What are the factors influencing enterprises' decision to accept (or to refuse) e-learning? What are the perceived enablers and the perceived obstacles?

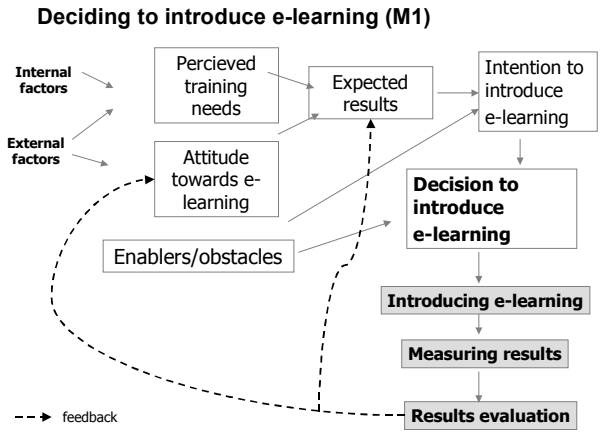
RQ2 - How do external and internal factors influence this decision? Is the enterprise aware of its training needs? What is the role of the supply side?

RQ1 requires a quantitative research approach, aimed at testing the research framework M1 via data collected within the enterprise sample.

Basing on the existing literature[7] the research team developed the model represented in Figure 2. The decision to introduce e-learning in a firm is a combination of factors, such as expected advantages/ disadvantages to the organisation (expected results), usability of the system, attitudes towards e-learning and innovation and general, which all originate the intention to introduce (or to reject) e-learning. Coherently with the TAM perspective (Davis, Bagozzi, Warshaw, 1989) the decision to introduce derives from the intention to innovate, but the present research model also hypotheses that incentives (e.g. fiscal policies) or obstacles (e.g. difficulties in getting funds from the financials institutions) might prevent organisations from implementing a conceived intention.

This model is tested via a questionnaire (Q1[8]) sent to all Assolombarda's associates.

Figure 2: The enterprise decision process



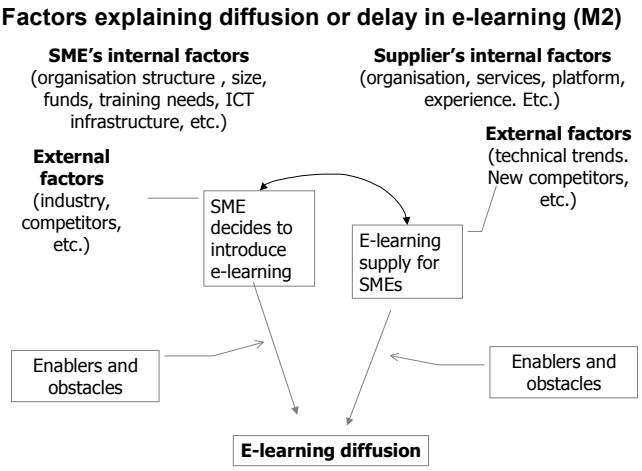
The second set of questions (RQ2) concerns qualitative issues (Maxwell, 1996) and it focuses on understanding the decision context (the firm deciding to introduce or not e-learning), the meaning of training and e-learning for that specific firm, the process of decision making. Besides, via the qualitative approach the research team looks for unanticipated factors and causal relations which can explain why e-learning has a positive (or negative) value within a firm.

The framework underpinning the qualitative approach is depicted in Figure 3 and it will be tested via direct interviews (supported by a second questionnaire - Q2[9]) whose focus is on decision factors and causal relations among them.

The research team believes that both models can be applied to big and smaller organisations and therefore, they fit with the focus of the

research project on SMEs. At the same team a different weight of some factors (e.g. lack of funds as adoption obstacles) might play a stronger role in small businesses.

Figure 3: Factors influencing e-learning diffusion



THE RESEARCH PROJECT

The research project illustrated in this paper is co-financed by SDA Bocconi and Assolombarda, the association of enterprises located in Milano (Italy).

The expected duration of the project is nine months and it includes seven steps from analysis of existing literature, to data collection and report publication.

In addition to the demand side analysis (which is the target of the research framework), the research project needs an overview of e-learning supply's state and attitudes.

The simple survey of e-learning products and services available in Italy will be integrated with a focus group with some suppliers in the area. The focus group plans to understand the supply's perception of training needs, and the factors they see as critical to the industry start-up.

The first results from processing Q1 are expected at the end of March 2002, while in depth interviews will take place starting from end of February.

CONCLUSIONS

E-learning is expected to be one of the industries with the highest growth rates in the next few years. However, in Europe enterprises (especially SMEs) do not seem to rush up to introduce e-learning.

Despite its potentialities e-learning is not a well known phenomenon especially in terms of decision drivers and decision processes.

The research project described in this paper proposes a model to understand e-learning decision processes, which identifies variables influencing the intention and subsequently the decision to accept e-learning, enablers and obstacles which may prevent the intention to innovate from becoming a real decision.

An in depth test of decision maker's assumptions, attitudes and of the context where decision is taken will be done using a qualitative approach.

The theoretical frameworks still need an empirical validation which will happen during the first term of 2002.

A final comment about the generalisability of research results. While the research frameworks are sufficiently general to fit with any organisation and context, expected results will be strongly affected by the context where decision is taken. Firm-specific (such as size, work force and offered products) and environment-specific (high tech or low tech industry, the ICT infrastructure in a country, innovation policies, etc.) factors determine the state and the perspectives of e-learning in any organisation. Therefore, the research results, will need careful attention to be generalised and to be used as reference for other research projects.

ENDNOTES

1Keegan, 1993; E.U., 1995; Harry, 1999; Biolghini, Cengarle, 1999; Costa, Rullani, 1999; Urdan, Weggen, 2000; E.U., 2001, Rosemberg, 2001; OECD, 2001.

2 Cisco, IBM, etc.

3 The research framework adopts a new institutional approach (Scott, Meyer, 1983), where any fact or task depends from two sets of variables: the task environment and the institutional environment. The task environment is composed by "sources of resources for inputs, information and know-how for throughputs, markets for outputs". (Scott, 1983, pp. 158-159). The institutional environment, on the other hand, corresponds with "locus" from which institutional pressures originates and it includes the institutions (rules, requirements, beliefs) influencing actions (decisions and behaviors); the spheres (cultural, economic, juridical and so on) and the reward systems of actors (Scott, 1991, p. 167).

4 Rosemberg, 2001, pp.30 -31.

5 "Using a less appropriate medium in a certain educational setting will lead to a loss of information, biased transmission and interpretations and thus to a loss of quality of education". (van Baalen, Moratis, 2001, pp. 18).

6 The framework takes into consideration the so called fashion management perspective about innovations. One key assumption is that in a uncertain context organizations imitate innovations promoted by "management fashion setters" (Abrahamson, 1991, Abrahamson, 1996; Abrahamson, Fairchild, 1999).

7 Davis, Bagozzi, Warshaw, 1989; Compeau, Higgins, Huff, 1999; Bhattacherjee, 2001

8 Q1 is made by six sections of 4-scale questions covering the following areas: firm's data, definition of e-learning, perceived training needs, perceived enablers and obstacles, future intentions. An annexed table collects some basic data about the ICT infrastructure within the firm.

9 Q2 is divided into 5 sessions to highlight the profile of the industry, the organisational settings of the firm, trends occurring in the industry and in the broader environment, personal attitudes and believes of the interviewees towards innovation and e-learning.

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