Cognitive Organizations and Distance Learning

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Abstract

International businesses are trying to find an alternative to the traditional paradigmatic units of time, space and action which persist in the learning sphere. Immaterial assets have become strategic and the relationship to knowledge and information is thus changed. In this context, e-learning, which has emerged more slowly than expected, is becoming a real field of research in information systems. It plays an important role in the organizational transformations of globalized businesses. Are remote teaching devices capable of contributing to the evolution of cognitive organizations? An inductive approach was applied to a series of interviews and a model defined. Indeed, the ability to adapt to the environment's fast variations must be regarded as necessary to encourage the appropriation of frequent technological changes. It may thus be noticed that in order to succeed, businesses must not rely only on access to knowledge anywhere and at any time.

Key-words

Distance Learning; Coherence; Managerial Reactivity; Performance; Organizational Change

Introduction

The gradual disappearance of traditional boundaries is now a major issue for international companies seeking to go beyond conventional paradigms of units of time, place and action in learning. Faced with a multitude of requirements for educational choice generally related to the pursuit of a specific competitive advantage, they prone a diversification of means. However, to adapt to rapid changes in the environment, management must face frequent changes in technology and simultaneously develop new approaches to learning.

International companies are aware of the strategic nature of the dominance of their intangible assets and technology on emerging markets. It is not surprising that learning has become an important strategic issue and that evaluation has become a key concern of all businesses. Information and communication technology enrich training resources, and their use can lead to the questioning of existing processes, the features of which thus become spaces of learning aimed at the mastery of technological changes in the organization of work.

Companies hoped to deploy standardized training for thousands of employees while reducing training time. However, technological experiences in the field have so far lacked continuity, without achieving the desired generalizations, sometimes precipitating the failure of homogeneous educational projects. Organizational changes aimed at anticipating the uses of technology in education are seen as "a set of concepts, methods and tools using new Internet media technologies" (Council of the European Union 2001).

From this perspective, there is a risk of dispersion of educational projects in the use of a particular technology.

For INSEE, the distance education sector does not exist as such: if 90% of large French companies offer training, less than 20% of small and medium-sized companies do so. In total, the share of online courses taught varies from 5 to 7% (Ifop.com 2005). Organizations nevertheless enjoy a "margin of freedom they use strategically in their interactions with others" (Crozier, Friedberg, 1977), but fail to effectively control the reversal of the value chain in the training offer.

Companies are becoming aware that it is not only a question of storing information, but that the real challenge is to collectively build tools before proposing training, while formalizing the learning strategy.

If companies remain highly responsive to local needs, increasingly complex strategies depend on the ability of employees to implement them. A close correlation with the professional activity is related to the ease of use. Today, training focuses on organizational forms that are constantly evolving. The fact remains that if learning raises many questions because of recent changes in the technological environment, few studies have yet examined the teaching methods related to organizational changes, while there has been a mobilization of technological resources valuing a variety of learning styles.

In this context, we decided to consider the overall learning process in order to imagine the conditions for local managerial responsiveness in the field. In other words, we wonder if the means of remote learning contribute to changes in cognitive organizations. To try to answer this question, our analysis seeks to complete research on learning to understand how interactions take advantage of technological tools and how businesses adapt the technology to their strategic objectives.

First, our approach aims to reduce the dependence of the organization on its technological context, so deplored by the research community, to consider the theoretical framework (2). An inductive methodology appears best adapted to account for the diversity of learning contexts (3). While many studies have reported new methods of organization, few analyses incorporate the contribution of technology to education in order to understand the organization, a vital issue. Analysis of the results will be discussed in terms of theoretical and managerial contributions (4).

The conclusion analyzes the methodological question of the object of study (5).

The Theoretical Framework

Conventional studies have shown different levels of learning: organizational, group or individual levels that contribute to the evolution of organizational forms. This leads to a set of knowledge that emphasizes learning. A cognitive organization is a construction or a theory that asserts that there is learning when its members contribute to the increase or modification of this organizational construction (Argyris, Schön, 1978). Firstly, the processes of the organization to its environment reveal a set of knowledge representations that can be shared between implicit and tacit knowledge and allow a sustainable competitive advantage (Nonaka, Takeuchi 1995). Then groups transform the cognitive devices which also structure learning. New knowledge developed by students reveals the "duality of technology" (Giddens 1984). The social determinants of use give sense to learning (Piaget, 1967). Finally, employees assess the quality of the means and prefer to stick to proven solutions when they have to deal with complex applications. In all cases, the technology is a device constructed by the actors. The organization is a device for converting a variety of means of learning.

Learning remote solutions can thus be considered both in terms of the structuring of technologies and social context. More abstract, intellectual work often involves technical expertise which attempts to adapt the training to the professional activity. Training is no longer based on technological change, but includes levels of change in the formative process.

The individualization of training gradually replaces a collective logic and becomes a management tool that can assess the resources of the company. Skills give a representation of the professional trajectories of the actors (Reynaud, 1982).

It appears that changes occurring with the introduction of technologies in the organization result from the complexity of social phenomena. Once an interpretive positioning helps to understand the forms of interaction with the social context, an inductive methodology should allow to discover the pedagogical changes in organizational technologies.

Thus, the relationship between the categories and contextual factors lead to the identification of three phases synthesized in a matrix of conditions.

Induction phase: from data collection, we identify categories and their conditions of implementation in an open coding: Context; Deduction phase: we explain the relationship between facts and causes in an axial coding: Explanatory conditions.

Verification phase: we note the logical consequences of saturation according to a selective coding: Consequences. External validity requires us to compare the results with other available data. Internal validity gives operating force to results when actors agree on the method used.

The coding ensures the integration of the categories to the inductive re-grouping resulting from central categories. The variables, related to the context, permit to evaluate company distance learning in terms of its organizational environment. Despite the specificities of companies, a series of relationships can be identified as heuristic; contextual and technological variables are used as a reference in the organization of work, which can not be isolated from the use of tools by the actors.

Field and Methodology

Our positioning requires clear concepts and appropriate categories to give an interpretation and explanation in a constant comparison between the selected companies. In addition to collecting information in the field and in order to avoid the methodological critique of "an un- representative sample and a lack of methodological objectivity" (Wacheux, 1996), we also rely on information obtained at symposia and professional conferences.

We base our study on Glaser and Strauss's Grounded Theory (1967). After eliminating irrelevant cases, exploratory interviews were conducted within a sample of five companies from varied sectors. Our sample includes diverse activities of large groups in the areas of insurance, banking, automotive, energy, telecommunications and passenger transport. The interviews respected the triangulation of data. They were cut into units of analysis, then gradually compared and combined in a matrix of conditions. A recursive relationship in observed trends in management technology solutions has been updated according to the organizational logic.

This qualitative approach is based on three types of coding. Open coding involves verbatim transcription of significant responses to determine the units of

analysis. Axial coding gradually transforms the units into categories used to identify organizational changes. The final type is selective coding. The sample studied allowed a training model to emerge:
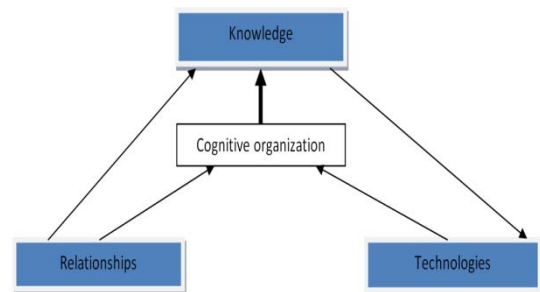
MODEL DISTANCE LEARNING

The first is related to the organizational context.

The inductive approach helped to highlight the important role played by the dissemination of knowledge between the partners involved.

The second takes into account social interactions in relation to the technological device. The last concerns learning and how the representation of distance education depends on its use in a professional situation.

Organizations consider the competitive environments when adopting solutions; detected representations participate in the adjustment of technology in an environment rich in meaning to the capitalization of knowledge, including the integration of skills involved in the various combinations of use of technology that can have a negative impact on training. In this combination, knowledge and relationships identified by the use of distance education are indicators of social performance.

Results and Discussion

Our research has identified three business profiles that can sometimes be combined.

First, there are companies that enhance the functionality of the means for learning.

Just-in-time access to a standardized resource network disseminates information among partners in the environment. The importance of objectives, of learning approaches, based on existing organizational forms. To minimize the risk of adapting the organization to its environment, training becomes a management tool in the service of the business strategy. "Our new model of distance learning built from the competitive

environment aims to anticipate future needs and provide skills development" (org 16).

Specific resources are mobilized in devices that reinforce the detection of skills and of knowledge the company needs. Leaders communicate freely around the learning outcomes (saving time), do not hesitate, if necessary, to change the initial technology choices.

Then, other companies provide the training system as an array of pedagogical relationships (Girin, 1995). Sharing knowledge in solving problems in the workplace is part of a transversal effort to transform the organization. Technological advances in training promote collaborative functionality between actors (Akrich, Callon, Latour, 1988). "The appropriation of distance education by learners occurs in relation to needs which appear as a new way of training" (org 12). "It is rather a gradual deployment which was adopted because e-learning is a strategic decision within the organization" (Org.6).

Finally, we identify a final set of companies where employees refuse new computer-structured training: "One of the criteria concerns the usefulness of e-learning; failure has a psychological effect on employees involved in their company. Our aim is to transform informal learning into formal training "(Org 11). "Everything must be done to avoid rejection; it is out of the question to [disseminate] wireless technology without support (Org 18).

Why develop e-learning if employees do not have the motivation and refuse to appropriate it due to the high dropout rate? A balance must be found between social performance and the cognitive environment of the organization concerned about the needs of employees. The solutions adopted show a variety of training practices with regard to the complexity of the environment.

Indeed, in some cases, distance education takes into account the organizational constraints. In other cases, training defines the constraints linked to a responsive organization desired by management without responding to the diversity of situations encountered by users. Thus, a combination of organizational technologies identifies challenges faced by organizations.

When companies participate in a global team, e-learning enhances the strategic relationship between the various partners in the business social system. The managerial interest remains uncertain. Technical devices (Latour, 1994) are used to connect players together and may create advantages in emerging markets. When companies work in a collaborative workspace, learning is constructed through interaction, the device amplifies the role of learning. Individualized training in a workstation or resource center promotes the career path of employees, the business network is a regulatory factor of shared knowledge.

The fact remains that our research has limitations inherent to the prospects selected. Generalization of the results in an inductive approach is never easy. While the interviews are similar to what is observed, we must not overemphasize the unobservable managerial reality that makes of the organizational form a key element of distance education at the risk of forgetting the technological devices. If the confrontation with facts is essential, it is always difficult to accept the managerial reality in all situations where it applies. The company always seeks the link between the management of its relations with its environment and organizational performance, which most often leads to the adoption of a strictly instrumental perspective of its own strategy. The evaluation of the training must however take into account the extent of disruption of the technological resources for each business activity; only an examination of social interactions gives organizational learning its entire institutional scope. A graduation in theory does not facilitate observation: the devices targeted do not always lead to the degree of transformation expected by organizations. It is particularly difficult to establish credible findings beyond a qualitative approach.

In an unstable environment, organizational learning is a competitive advantage factor.

But differentiation can be operated according to the organizations involved. In companies taking part in a global team, training is evaluated according to the strategic input in relation to other learning methods. In companies characterized by a collaborative workspace, training educates employees in the values of the changes made to appreciate the strategic vision of the organization. Information and communication technology refer to the company's business. In general, any deployment induces new ways of working in a collaborative network to capitalize knowledge.

Thus businesses are increasingly aware of the difficulties of implementing the organizational forms of technology, and they often choose blended learning

that require reflection on the means of training related to imperatives of contradictory social performance.

In any case, we find that in order to succeed, companies should never stick to a local vision of learning. They have to think in a holistic way, taking into account the relationships, knowledge and technology. In other words, the features must always focus on both the individual and the collective human dimension.

Also, when the intangible takes an important place in business management, technology is a clear risk factor for pedagogical change. Many perspectives of action also show that even if the training has traditionally been a special place for learning, technology solutions are dependent upon learning levels and the diversity of organizational forms.

Conclusions

The relationship between global and local dimensions is a distinctive feature of pedagogical changes that allow two approaches to implementing organizational technologies. Either they align learning with strategy, or they build strategy on technology. Thus, the various elements of the social system become clear (organization, group, individual). But it is much more difficult to comment on the consistency of such an approach. Modeling is still difficult to control.

Leaving too much room for intuition in the concepts used at the expense of previously developed theories may produce only simple opinions; it is necessary to develop an indefinite situation rather than seeking only the "truth".

The question should not be evaluated in terms of its credibility, but also with regard to the relevance of the knowledge produced in order to meet the needs of organizations. The risk of moving away from managerial practice is nonetheless always present.

As regards an eternally emerging question, treated as a managerial style, the real problem of distance learning is to enable better consideration of social, collaborative and technical skills to meet rapidly-changing learning consistent with the specific constraints of professional training.

In other words, do remote learning devices contribute to changes in cognitive organizations? Companies that align their training policy with international goals adopt global integration policies, and at the same time

are responsive at the local level. Far from being isolated, technological resources tend to transform individual learning into a collective expertise in the countries where the companies are located. Influential forms of interaction pose risks to the coordination of the organization. The appropriate use of resources nevertheless requires the implementation of increasingly developed management devices. Companies are trying to encourage the overcoming of traditional patterns to establish extensive partnerships. Thus the management of organizational change (Duper, 1983) stems from social regulations related to flexibility in training.

For the moment, it seems that distance learning models are still being reinvented. What to do in the future? Retaining only one technology is often a mistake which could affect organizational performance.

In any case, our present research shows that in any learning project, it is not the technology that is in question but the social structures in which the actors find themselves. Suffice it to say that the educational and technological changes are more dependent than ever on the human dimension, especially when educational change in real time is a critical requirement for international companies.

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