

# A management model of a company's knowledge system via learning control

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## **Abstract :**

The implementation of knowledge management in organizations collides in difficulties which widely reduce the expected benefits of such a solution. In this paper, we suggest to complement traditional methods by a panel allowing the management of the organization's knowledge system in respect with firm's leaders strategic aims. This control panel centered on the training was conceived in an engineering step in a craft bakery. It appears as a dynamic management tool of the theoretical knowledge and know-how. The knowledge that allowed the setting of this tool is inherent to the manufacture of the bread.

## **Keywords:**

knowledge management, training, knowledge dynamic

## **Introduction**

The knowledge management models implemented in France since the beginning of the 1990's, appeared often insufficient and had to face difficulties of application reducing the benefits expected from them. [BARTHELME-TRAPP and VINCENT (2001)]. One of the main weaknesses presented by knowledge management surrounded areas was their static and descriptive aspect. Models were satisfied with capitalizing past knowledge. This limit was strengthened by the lack of commitment of the organization's members to reuse capitalized knowledge and afterward to update it. This hesitation was re-enforced by the fact that potential users of models did not, most of time, participate to the method's development. Mostly, these methods were developed around one single person : the expert who has knowledge to preserve. And once more, as in many areas, the lack of consideration of users constitutes an important factor of failure in a computer solution development. [ROSENTHAL-SABROUX (1996)]. Finally, classical knowledge management models' implementation was made harder by numerous difficulties appeared during application : for instance as the interest conflict between the knowledge bearer and the firm or the "Not Invented Here" syndrome.

Jean-Louis Ermine proposed one of the approaches developed to overcome these limits in 1994. This method named MASK (formerly MKSM) [ERMINE (1996), BRUNET and ERMINE (1994)] allows to model knowledge evolution [BARTHELME, ERMINE and SABROUX (1998)]. However, this method, by not integrating unpredictable events nor the strategic and future wills of the manager, is not sufficient to allow a control of knowledge future evolution.

On this analysis, we developed a dynamic model of knowledge management taking into account the firm's aims and strategy [TARONDEAU (1999)] and not only operational objectives. This management leans on a planning definition and a forward-looking cognitive demand of the organization. From a systemic analysis of knowledge, we elaborated a method that aims to preserve

and create knowledge dynamically thanks to an organization of internal training and learning program. The model consists of a cognitive information system (paragraph 2) that establishes the basis of a control panel (paragraph 3) allowing manager to decide on actions of learning and knowledge transfer. The process on which the model is built is mainly an internal knowledge exchange [MOULETTE (2001)]. This method is presently being tested in a craft bakery. (paragraph 4)

## **1. A cognitive information system**

The model of control is based on a cognitive information system structured according to a triple approach of the company through the actions, the actors and learning.

- Actions are considered as a unit of observable activity. They can be appreciated by a level of mastery and are the components of productive processes. The level of mastery of each process depends on the ability to perform actions and to coordinate them. Actions are expressed using verbs and can constitute an educational objective.
- Actors are identified with the notion of competences' groups. These groups gather members of the organization participating collectively to the same process. Thus, members of the same group are responsible on the process performance. They can be composed of single individuals or several people. Moreover, the groups can be explicit in case of an official collective realization or implicit when the responsibility of actions and the coordination is transferred to one member. Finally, they can be planned or appear spontaneously in the same knowledge community.
- Learning covers every formal or informal way of education, training and transfers of knowledge in the company. Learning is defined by reference to actions as "to learn to do something" and can be related to a range of educational modalities that can be compared on efficiency, cost and lasting.

These three points of view offer an approach of an organization knowledge system as in the implementation of knowledge through a production rather than in the inter-individuals transfer and creation of knowledge.

## **2. A panel to control knowledge evolution**

From this information system, we extracted a control panel [KAPLAN and NORTON (1998)] which includes updated indicators allowing the manager to be notified of a critical evolution of the knowledge repository in his firm. Thanks to this panel he is able to pilot this evolution and launch training decisions according to his strategic aims. The [Figure 1] shows the global architecture between the control panel and the cognitive information system. This control panel is made up of different relevant indicators as the innovation's rate which is assimilated to the number of new actions (or new coordination of actions) developed during the last six months, the number of training days per employee or the number of critical actions. Critical actions are characterized by a "no easy" level and by a critical number of members able to master knowledge to realize it. We considered that in a very small organization this critical number was a single actor. This critical level can be unnoticed because this one actor can belong to several competences' groups. The control panel also contains several reports editable for a specified period. Next to reports relating an action and its potential actors, for instance, the user can for a targeted action, mainly a critical one, obtain the list of the potential internal coaches who are actors mastering this action at an operational level. The user can also associate documents or information capitalized on it to each action. To decide on the best learning mode, they can compare criteria as cost or duration of the different way of knowledge transfer. Very specific and valuable action can guide him to a knowledge capitalization whereas very common action can guide him to a training session in a professional institution. If a capitalization was already done a simple learning by doing training would be chosen. Thus, capitalization models are a possible support of training [BAUMARD (1996), BUKOWITZ and WILLIAMS (2000)] but do need not generalized from an economic point of view.

### 3. Model development and validation

The system was developed and implemented by using an engineering methodology in a craft company: a bakery. In this manual trade, a culture of apprenticeship between craftsmen and young apprentices exists. This culture seemed to be one of the best to study, to formalize and develop a formal and informal exchange model of knowledge. Model is in the process of integration. A process taken into account are for instance “ the launch of the kneading machine” for which the first action is “to weight flour”. The actors are identified to competences’ groups such as “the craftsman and the apprentice”, “the apprentice and a bakery worker ”, “the apprentice alone”. Finally, learning is identified as an action such as “to learn to use the mill”.

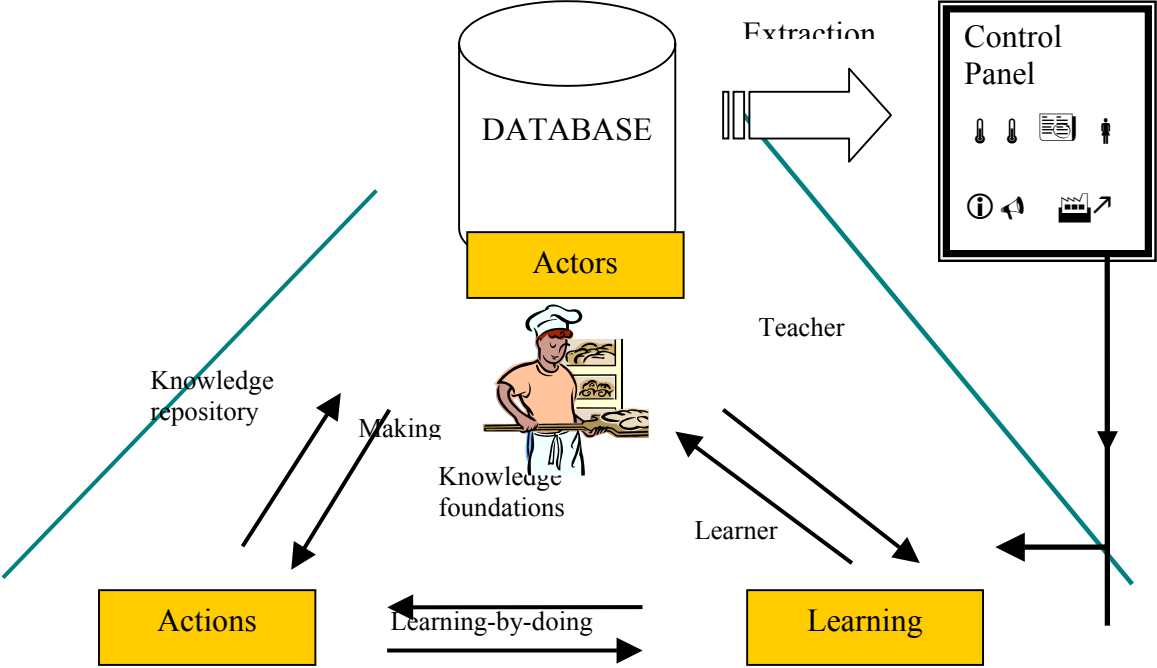


Figure 1: Database’s architecture of the of the cognitive information system

The first steps of the model development led to several changes within the company. First, the part of learning appears now as the guarantee of the organization durability and of the products quality. Thus the model integration introduced the idea of a durable development of the knowledge patrimony. [SVEIBY (2000)].

More than just knowledge itself and its formalization, it is location, transmission, acquisition and creation of validated knowledge, as well as cooperative behavior, which appeared the most important part in a dynamic knowledge management implementation. Our model aims to support, thanks to an overall policy, these processes and to introduce such cooperation.

### 4. Conclusion

Knowledge is today one of the most interesting asset but also one of the most fragile asset of a company. Our work is a contribution to the new perspectives offered by the development of knowledge management. We therefore propose the introduction of management of knowledge on the basis of company’s competences to enrich and to widen the training area. By underlining the strategic

dimension of knowledge transmission, the implementation of information systems dedicated to the management of collective intelligence based on company's members' activity, new ways towards a large field for management sciences are opened. It proposes also a way of integrating knowledge management in small companies.

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