THE PRACTISE OF KNOWLEDGE MANAGEMENT WITHIN THE INNOVATION PROCESS OF A COMPANY MAKING LUXURY WATCH.

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1. Introduction

The present evolution of the industrial environment is characterised by a high level of uncertainty concerning the effective expectations of the market, the available technologies, the abilities to integrate the pressure placed upon companies and the increasing role of information and knowledge on the economic activity [Groff et al., 2003].

The industrial company's competitiveness and the efficiency of its strategy are largely depending on its ability to control the main technologies linked to its activity area, the relevance of its strategy and of its management of the global process of creation, production and marketing. A firm has to manage the technological resources [Morin et al., 1989] that are available in order to offer a way to support a strategy that will allow it to keep and if possible increase its shares of the market. This realness of the consumer industry also represents the evolution context of some luxury companies.

After laying down the theoretical concepts of KM, this article shall present the organisation that was chosen by a company from the top quality watch-making area. We shall detail the implemented techno-centred approach and the interaction with the organisation chosen by the actors of the company.

2. The problem

2.1 Innovation and creativity: the reasoned differences

Making out the different answers to the requests that are as much technical as environmental is an exceptional achievement. It is necessary to be able to identify, analyse, assimilate and take in an important number of parameters. The difficulty lies in both the quantity of information to deal with and their particularities. Bernard Stiegler [Stiegler, 1994] treats this process by qualifying the peculiarity of this process as "diffuse rationality". It is necessary to negotiate gently, get a glimpse at the possible adaptations between the systems and integrate the technical pressure and the environment. The given definition and especially the combinatorial innovation one confirm the hypothesis that innovation proceeds from creativity, whether it is associative, analogical or of any other kind. Innovation results from a process allowing us to transform an idea into a product or a service which can be commercialized. In opposition to invention, innovation underlies that there is an appropriation by the users. Creativity is polyform, contextual and independent from the environment in which it is realizing itself.

Michel Serres [Serres, 1993] while quoting Pierre-Gilles de Gennes's notion of percolation illustrates it that way: percolation comes from a random flow in a random environment. Moreover, in the considered interlaces design, it defines a threshold, below which, globally, nothing can pass or flow, because of the very small number of realized connexions, but above which, the spring suddenly dashes, thick, heavy and continuous, because the local paths were raised until they federated

2.2 The dynamic processes of innovation/ knowledge management

At this stage, we shall not discuss the implicit hypothesis that there is a right analogy between the process of a fluid flow (such as percolation) and the innovative process. We consider that this was corroborated by authors like Moles [Moles et al., 1970] and Parnes [Parnes 1992]. In the same manner, the creative phase of innovation can be situated in logic of technical combination occurring at random. Nevertheless, it is predetermined and fed by a general environment upon which it is leaning and that it is developing. This argument brings us to reconsider the link between information, knowledge, experience and innovation.

The theoretical study of the fields of innovation and knowledge management which is including according to us the approach of watch, shows that creativity is a "hidden" act (in the sense that it can be completely defined) of production of ideas based upon a random cerebral process of learning and information combination.

The research we are presenting is situated at the interface of knowledge management and creativity. In our point of view this particular area of research could be explored in a more detailed manner. Our field study has proved us that the actors of the industrial innovation are daily faced with continuous flow of data. Each one of its sensory sensors is requested by a multimodal swarming of data. The contextual environment is disturbing the necessary sorting to take into account those data. The adequacy between transmission and reception becomes fundamental

Barthes et Grunstein [Barthes et al., 1996] are talking about most important knowledge in the field of KM. A problem rises here: how can a piece of knowledge be identified as crucial when it is involved in the creativity phase of an innovation process and how can we identify it as crucial at time T when it is going to be the ferment of a creativity later ? To our knowledge, no researcher in the field of capitalization has yet brought an answer to these fundamental questions.

Barsalou et Medin [Barsalou et al., 1986] have demonstrated that a typology of individuals can, according to the context, interpret differently a same piece of information. Moreover, each actor is following a logic based upon his own instant interests influencing any kind of arbitration built through a rational judgement.

We think that an innovative process appealing to creation demands an organisation centred around the structural and cultural aspects of the firm. In the same manner behaviours, capabilities and desires, whether it is about the users of the products and services of the company or it own staff, are structuring elements in the innovation process [Alberti, 2006].
Nonaka et Takeuchi [Nonaka et al., 1995] are suggesting a modelization of the innovative processes putting forward the role of knowledge management. Wiig [Wiig, 2004] shows the importance of « people-focused » approach. In addition, Grunstein [Grundstein et al., 2007], Alberti [Alberti et al, 2006] confirm the fact that knowledge management can not be reduced to a simple drafting and transcription of knowledge upon a support. It is ferment of tradition, but also a vector of exchanges between the actors that are allowing practises and knowledge to evolve. It has to take into account the whole complexity of the interaction between the actors in their work system.

This bibliographic analysis as a whole shows that first of all creativity comes from the human being, a complex system that is very sensitive to its physico-emotional environment. As a matter of facts, we consider that an adapted form of KM aiming at promoting percolation at time T for the actor of a

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company, in a particular context, can become inefficient at time T+1 because of minor variations in the emotional or psychological state of the actor as well as in the context.

Moreover, it shows the importance of the combination of knowledge in the genesis of not only new ideas, but also of the knowledge of polymorphism as much on the form as on its impact on the action. In the eye of this theoretical approach, this researcher has analysed the practises of a company specialized on the top quality clock-making area.

3. Methodology and experimentations

3.1 Building a concept frame of references

In order to carry through this field study, we have made a qualitative enquiry. The latter allowed us to make out from the speech data the representations that the conception actors (25 people) have of practising KM in a firm. In that case the notion of conception starts with writing a marketing CDC and ends with the first realisation on a medium scale.

We shall borrow to Allard-Poesi [Allard-Poesi et al., 1999], the general definition she gives to the notion of representation:

"[...] structure made of beliefs, standards, opinions about a peculiar object and of their interdependency links. This structure is supposed to allow the individual to impose coherence to some information and therefore simplify its understanding and interpretation [...]"

We have been collecting data according to a semi-structured method, thanks to semi-guided interviews. We have divided the collected speeches into analysis units that we have classified in different categories. This sequencing allows us to analyse and understand its sense.

Then we have done a qualitative analysis of the content. This one enabled us to interpret, in the context of a speech production, the presence or the lack of one of the categories that we established previously.

3.2 Field study

This ground study can be divided into two parts: a qualitative enquiry following the protocol that was defined above and an analysis of the documents that carry the company's knowledge..

3.2.1 The documents of the company

Over the course of our enquiry we gathered the following documents:
1. a lexicon of the different clock-making terms used in the firm,
2. pendulum production,
3. passing on the « Know how » - area of the interlocking,
4. a project to pass on the knowledge,
5. directions for making a watch,
6. Quality frame of reference on clock-movement engineering, quality frame of reference watch-assembly engineering
7. chart of the relations between trades and branches,
8. a video showing how to dismantle a specific watch,
9. technical guides and technical information reports,
10. Cd-rom presenting a gauge (specific mechanism of a watch),
11. CdC of a « sturdy » gauge,
12. report on electro-erosion,
13. design of the components

This very interesting documentation is very unequal as much on the content as on the form. It can be grouped into 3 parts: the documents that are specifically conceived in a so-called KM approach (1,2,3,4,6,7,9), the information documents meant for any person external to the company and/or to the clock-making area (5,8,10), and work documents(11,12,13)

The first documents come from a techno-centred approach. They are giving the supposed technological evidence more credit than they are due. They are presented as "frames of reference" to be known and referred to. For all that, the question of their contextualised use has never been discussed at any time. Who can use the documents, in which purpose, for which type of action and with which efficiency?

Let's take document n°6 for instance (Quality frame of reference on clock-movement engineering, quality frame of reference watch-assembly engineering). Those documents, internally nicknamed "the mistake Bible", are built by return of experience. They are constituted of some lists of points that have to be checked a posteriori during the conception landmarks. They are neither offering any measurement criteria, nor any validation protocol. They are supposed to be known by everyone but in fact their existence is often mentioned, their materialization seldom ascertains.

The second group of documents, meant to inform the people that are external to the firm, gives a « pedagogical » approach of knowledge. They provide details on some information according to many modalities while carefully giving them a sense. By the same token, the information is technical and functional. It is linked to the watches conceived in the firm. Those documents offer the way of different lines of observation and understanding.. Moreover they allow a real understanding if not an extrapolation of the presented information.

The last group of information gathers the work documents which are structured in order to allow action. In fact they are based on the general knowledge of the area and the specific knowledge of the company. Nevertheless, their analysis shows that the implementation of new knowledge is wished for but seldom or even never carried out.

Except for the work documents, and especially the plans, the other supports are very scarcely used as constituent elements of KM's approach. This situation can be explained through different points of view.

First of all, KM's approach can't be taken into account on a systemic and global way. The documents are created as and when some issues are identified. They are conceived by the actors of the company who have either no formation in KM or no global vision of the system in which those capitalization supports should register. The documents are mostly conceived to leave a trace, with the underlying idea that this trace could be able to bring some knowledge to the one reading it. This piece of knowledge, outside its context and the brain of the one who has carried it, is never at any time meant to lose its statute to be suddenly transformed into a piece of data having to go through some processing in order to become a new piece of knowledge in an other actor's brain [Durand, 1993].

Then, the KM is a transverse problem that is sensed as important by the actors of the company but it is explicit in the management process of the company's staff. The identification of the specific knowledge is neither instrumented nor clearly asked to the conception actors. Moreover, the use of knowledge or of good practises that could have been identified and "stored" on a support is not explicitly favoured. The company has a "project guideline". This document, updated in 2002, reports on the general activities to be developed in a process of organisation through projects. It is defining the task of each "managerial" participant. The project manager is seen as a "super facilitator" in promoting the project. The document splits up the project into several stages while identifying the incoming and out coming documents. This macroscopic vision of an organisation through projects does not bring an operational enough structuring. Amazingly, the "mistake Bible", a document largely known of by all the people we have met even though they had never seen it, is only quoted once as a

stage outgoing piece of data. This "mistake Bible" is considered as a document recording the incidents and dysfunctions, but not as an instrument allowing enforcing good practises.

This state of affair is well linked to the running method which is perpetuated within the company and that we are going to detail below.

3.2.2 Qualitative enquiry

The analysis of the qualitative study shows very clearly that there is a strong commitment to the brand and even to lingering enterprise culture (the company is 140 years old). The latter is conveyed by marketing documents or press articles, nevertheless it does not seem to be the leitmotiv of the managerial speech since it does belong to the company's evident facts. In the same manner, other pieces of information appear to be truisms which do no longer need to be expressed. This point of view can even be corroborated by the practises in the area of top quality clock-making to which the company belongs. The top-quality clock-making field has got values, the numerous journalists and experts in the domain do write down on this subject. For all that, when you bother questioning this notion (what we have done), you find yourself, to our knowledge, in front of an obvious lack of definition and consensus on those terms.

Barney [Berney, 1986], Fiol [Fiol, 1991] or Leonard-Barton [Léonard-Barton, 1992] have clearly shown that culture is an important element in the theory of resources. Durand [Durand, 2006] is suggesting that behaviour and identity form one of the important dimensions competence, in a positive or a negative way. According to Durand:

« resuming Porter's argument [Porter, 1991] any tangible resource can be naturally identified and thus is not essential, in the sense of Pralahad and Hamel. If there is a long-term competitive advantage, it means that it is difficult to copy the product. From then on the intangibility of the organizational process, of the culture (as well as other elements we still have to identify) looks to be a fertile possibility to characterize the content that is really interesting and strategic for the concept of competence »

The notion of « intangibility of the organizational process » has to be understood as a « structure built-up » around individual and collective knowledge and know-how. .

The qualitative study has shown that among part of the company's actors there remains a will to « act well », to act according to a reasoned and strict manner and that these notions are sometimes linked to a passion for the top quality clock-making area. The will is conditioned by what psychologists call the self as a definition of the personal identity of Man and as a matter of fact of the company's actor.

The will is conditioned by the actor's motivation which is itself fed by the relations of confidence between the actors based on the respect of the differences in thought, reasoning, point of view, knowledge, means of expression [Le Cardinal et al, 1999]. The arguments developed by the people who were interviewed show that they feel and enjoy this state of confidence.

On the contrary, a breach in the confidence structure comes from a lack of visibility as far as progress in the company is concerned. We are talking here about the future prospects that the actor of a firm may be able to make out or wish. Being in an effective flow of evolution dynamics enables the actors of the company to emancipate themselves from the old relationship "information=power=ensuring the stability in office jobs. Besides, mastering one's future can be conditioned by a codified implication of the participation to KM's efforts.

Moreover it appeared clearly that the actors of the company don't identify easily the interactions between their activity within the conception process of a watch and within the very organisation of the company. Weick [Weick, 1979] showed that the efficiency of an organisation partly depends on the interaction between the actors forming it but also between its members and the outward environment. According to Durand [Durand, 2006]:

« a vision that is share and spread through the layers of the organisation contributes towards the coordinated display of the working population and the resources, in mobilizing the spirit and the commitment of the human resources around a common project [...]. A similar reasoning can be held concerning the enterprise culture which also acts as an organizational cement , as a cohesion factor. »

There again, the analysis shows that the actors of the company don't have an accurate vision of their position in the conception chaining, in the triptych: "cost, quality, delays" and even less on their impact on the strategic objectives of the company This lack of knowledge can be seen on the formalization of some documents such as plans.

What we consider as most interesting is the fact that the actors are organizing themselves on a « community of practise » basis, which can be a strong point for the company and perhaps a weak one as far as a techno-centred approach of KM is concerned. They have developed a notion of mutual agreement, as Chanal [Chanal, 2000] defines it is based on competence complementarily and on the ability of the individuals to « connect » efficiently their knowledge to the others'.
They also have the competence to know how to help and be helped in order to be able to answer issues. Sharing knowledge and its appropriation are particular answers given to KM's questioning.
The actors of the company have generated means of sharing materialized by physical supports such as prototypes or models, routines, words, tools, procedures, stories, concepts created or adopted as the projects went along and which became little by little an integral part of their practise. According to Chanal [Chanal, 2000], this makes a basis to crystallizing a community of practise. .

4. Discussion

First of all let's bring back to mind the status of this study. It does not intend to bring generic evidence to light. This is a "photography" of the knowledge management of a company from the top quality watch-making area, the preliminary work for a future study in this domain.

This analysis of a real situation shows that if knowledge capitalization is viewed as a creation of documents that is not taking into account the transformation process of a piece of data into a piece of knowledge, then it ends up into an inefficient action [Barthes et al., 2000], [Durand, 1993] In 2000, Arthur Andersen & Co. Inc, in partnership with Valoris and Trivium, have realized a study of KM in France. A questionnaire was sent to the KM or HR manager of 750 firms whose turnover is superior or equal to 76M €. 9.6 of the firms answered the enquiry. One of the results of this study show that the right information is never available at the right time, or that already known errors are repeated themselves because of a decontextualization approach of the environment of the knowledge creation and of the transformation processes of this one.

This approach is a static and techno-centred vision of the KM that is absolutely not in adequacy with the innovation dynamics linked to the company strategy. The documents that are not conceived to answer an innovation flow, open the possibility of stocking the data that will be needed a posteriori during the phases of verification, without the mode and form of storage being defined. The cognitive processes of the actor's typologies, as well as the codes and usages of the community of practise, are not at all discriminatory as far as the composition and use of these documents are concerned. We find ourselves into an "accounting" conception of the KM approach in the sense that what seems to be important is the quantity of collected data and not the abilities to stimulate and support the process of innovation.

Then the study showed that the implicit organisation of the conception actors is made of:
- steady mutual relations (whether they are appropriate or conflictual),
- common methods of commitment to make things together,

- lack of opening preamble in talks, as if the interactions were forming a continuous process in time,
- knowing what the others know, what they can do and how they can contribute to the collective action,
- jargon, short cuts in communication, shared stories and jokes that are inner to the group
- a shared speech reflecting a peculiar way to view the world,
- shared and localized repertoires.

Those characteristics take fully part in KM, but they lead to numerous constraints. Because of their construction they don't take part in a controlled and systemic approach of KM. They are resting on an "autarkic" form of functioning. In fact tit is difficult to introduce new elements (whether they are human, technologic or scientific) in the artefacts built by the community of practise. Using the idioms peculiar to this community causes communication to be more fluid but it also brings a cloud of fuzziness on the definition of the terms used and on the supposedly known knowledge. The shared repertoires are thus made by data seldom supported by an effort of explanation, what is nevertheless compensated by a "learning through doing" approach in the sense that Durand gives to this notion [Durand, 2006].

Finally, a good deal of the intangible value of the company rests on the actor's behaviour which itself matches a strong enterprise culture. This specificity of that company, that we have never observed in any of the car-manufacturing companies we have been working with, supports and increases the will to get the values of top quality clock-making progress. As such, this behavioural characteristic, which can be seen as a way to anchor the actors in the company, loses the whole of its sense in an economico-geographical context. Actually, all the competitors of the same renown are grouped together within the Joux Valley in Switzerland and are fighting over a very restricted quota of human resources. From then on and because of the inner context previously described, the human resources management takes the appropriate place it should have within a KM approach.

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