Innovation assessment as a management information tool: a case study

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The assessment of managerial action can be viewed as an information tool for the improvement of management decision-making processes. Such an assessment might serve to improve both the managerial actions directly assessed and other related organizational aspects. This research focuses on what we can call a "specific assessment", as opposed to a more permanent assessment which is normally facilitated by traditional information systems. From a learning perspective, it is the generation of second-order learning on management systems that is being considered here. In terms of information flows, we are talking about the creation of information in order to improve management action, and eventually contribute to the excellence of management. The accounting system has been the privileged source of information but how well does this tool address managerial action? How well does this tool address innovation and learning dimensions? A review of the literature shows that the answers to those questions can be disappointing. What is more, the advances brought about by the quality initiatives do not seem yet to greatly improve those aspects. During the last eight years we have been engaged in a broad action-research program in a large pharmaceutical multinational company. From this rich experience we pick one of the main axes of transformation: a case of multiple process reengineering. An assessment of this organizational innovation allows us to study the questions stated above. We start with a presentation of the particular context of the company. We identify then descriptive and explicative contextual variables concerning success factors and limits of the managerial actions studied. Finally, we present expected results, and other parallel impacts not initially expected.

Re-engineering, Innovation, Assessment, Information, Decision making

Information flows have been traditionally dealt with in a rather mechanistic fashion (Romme and Dillen, 1997). Acquisition, distribution, interpretation and storage of information are sometimes presented as just "the information processes". The belief

is that if information tools are implemented, "everything else" will follow. There is, though, perhaps a need to increase the understanding of what information is, or what are the different possible natures of information. Besides the "everything else will follow" it may need to be further developed or, in other words, we may need to ask ourselves more often for what purpose we need information and what different alternatives we have in order to fulfil this need of convenient information.

If we take a holistic stand, we can see up to what point those kind of questions are important (Denton, 1995). Information flows are key to follow what is going on, which is the main traditional use of information. In that sense we may want to ensure that the information is valid and reliable. At the same time, though, information is essential to guarantee the possibility of learning. In that sense, different questions arise concerning how we learn and what types of information are necessary for different types of learning. Of course, we can also ask ourselves how knowledge intervenes in such a process, and how knowledge and information flows interact. Furthermore, decisions on change and innovation will be somehow based on information flows so it seems again essential to study what type of information may be convenient on those occasions. One way or the other it seems that managers face a great complexity, which has been most of the time hid by instrumentally oriented perspectives on information and even, more generally, on the conception management and on management theory. More global approaches seem necessary to deal with this complexity (Kanter and Brikerhoff, 1981).

This article deals with the problem of managing a type of information flows which happen to be not broadly formalized in companies. Specifically, we focus on the study of assessments on managerial action, and how such assessments help learning and improving management decision-making processes. Apart from searching for an understanding on how these assessments can be better implemented, there is a clear interest to investigate the impacts and interactions with other dimensions as specified in the previous paragraph.

The accounting system has been the main source of information for managers. However, this type of information is mainly oriented towards financial purposes (Kaplan, 1986). Besides, it is focused on measuring final results. Apart from final results, intermediate performance measures should also be taken into account (Bartoli and Hermel, 1989). There has been a first evolution that tries to better measure operational aspects. Activity based costing appeared precisely to put much closer the nature of measures with the nature of work processes. This need to complement financial with operational measures is also evident through the evolution of quality management approaches. Process measurement and the calculation of cost of quality or non-quality are some of the concrete ways that companies have put in place in order to narrow this gap between financial and non-financial information. However, we find now a risk in the fact that the responsibility for this operational measures is normally separated from the traditional accounting systems and, therefore, there is not always a coherent link between the ones and the others (Tayles et al., 1996). What is more, financial managers may even sometimes be unaware of the methods used to quantify quality and other operational efforts (Breedlove, 1994). Methods that can be useful to evaluate the results of managerial action.

Even though the advances brought about by those operational measurement initiatives are important, some areas are consistently ignored. Thus, quality information

processes like collection, analysis or dissemination are often concentrated on only operational control aspects; whereas the learning aspects of quality are often ignored (Sitkin et al., 1994). Along the same lines, some authors have reported a clear lack of measurement systems on innovation in total quality management initiatives (Sinclair and Zairi, 1995). Those revelations give support to the need of more global approaches to the management of information; approaches that may take into account overall organizational effectiveness and other important aspects such as learning or innovation. The balanced scorecard appeared as one of those perspectives which take into account this holistic approach (Kaplan and Norton, 1992). The balanced scorecard tries to encompass four different types of information: financial customer, internal processes and learning and innovation. More recently, the balanced scorecard concept has been applied taking into account human resources questions (Becker et al., 2001). However, it is claimed that 70 percent of balanced scorecard implementation efforts fail (Neely and Bourne, 2000). Of course, this failure rate is not different from other well-known management initiatives, such as business process reengineering. It is interesting, though, to note that implementation issues are most often mentioned as the main cause for failure. Those facts probably demand more research effort on implementation issues (Hermel and Ramis-Pujol, 2001).

Davenport and Beers (1995) conduct a thorough study that has important consequences on our present research. The management of information is segmented concerning whether it helps managing the "performance" or the "relevance" loops. The concepts of performance and relevance loops are similar to what Argyris and Schon (1974) present as single and double loop learning. According to Davenport and Beers, even though the holistic nature of the information needed is understood, companies have difficulty putting holistic information systems into place. Even in quality programs the main functioning roles of information are probably not well understood. Furthermore, they remind us that information is broadly composed not only of measures but also of ideas. Ideas include current and best practices, improvement possibilities, potential innovations, and so on. What is probably more interesting is their assertion that measures and ideas are often associated with the two types of learning introduced above. Relevance loop information, based mostly on ideas, is found in companies with broad, cross-functional innovation programs. However, in an analysis of information processes (identification, collection, distribution, and use) that was realized among 20 companies known for their leadership in innovation processes, Davenport and Beers found that only two of those companies had a formalized relevance loop information management system.

All different information types and dimensions are to be taken in principle into account since they may have a potential impact. Eventually any final relevant information combination will probably depend on the particular context of the organization (Kirchhoff, 1977). We have developed only those types and dimensions of information specially relevant to our research question. We will leave the reader, though, with a non-exhaustive list of pairs of information types or dimensions that may give an idea of the complexity inherent in the issue discussed: financial versus non-financial information, internal versus external, local versus global, operational versus strategic, intermediate versus final, dynamic versus static, quantitative versus qualitative, explicit versus implicit, objective versus subjective, effectiveness versus efficiency, verbal versus non-verbal information...

The treatment of information may have little sense if it has no clear links to managerial action or, in other words, if it is not well integrated into the management systems (Davenport and Beers, 1995). Managers need information to control costs but also to create results; in other words, it is important to have at least: basic financial information, productivity, resource allocation, and customer market information (Drucker, 1995). Furthermore, managers need information that links today's actions with tomorrow's goals (Kaplan and Norton, 1996). Unfortunately accounting systems are based on past events and, therefore, risk providing obsolete information.

Not all blame should be placed, though, on information systems. On the contrary, even if there was improvement on the quality of information, we fear that management systems may be unprepared to take full advantage of it. According to Senge (1999), quality companies have just gone through a first wave which was based on front-line workers participation; a second wave based on the quality of management is taking place. We recall the words of Didier Groz, General Manager of Xerox Europe and Guest Speaker of the 2nd MAAOE International Conference held in Versailles: "After 20 years of quality management at Xerox, we start feeling now that management starts taking it seriously: management tries to see how their own improvement is to be done". Management and general organizational issues tend to be more a question of ideas than just quantitative figures. The seven quality management tools (affinity diagram, relationship diagram, etc.) were developed precisely taking into account the need to treat consistently qualitative information (Shiba et al., 1993).

The democratization of decision rights is an interesting evolution brought about by the quality movement (Wruck and Jensen, 1994). In that sense, managerial skills are actually needed at all levels. It is true that the nature of decisions may be different at different hierarchical levels so that the nature of information required is probably also different. However, the development of both decision-making skills and information loops seems a general organizational requirement, and not just what has traditionally being considered a high level management issue. Other evolutions like reengineering programs have posed other important practical questions. For instance, the creation of the case worker, realizing different tasks that where previously separated, is putting under stress traditional internal control systems (Kien and Neo, 1997).

We have already mentioned that important organizational innovations suffer from a high failure rate. The management processes dealing with innovation or organizational transformation may need also to be further improved so as to reduce those important failure rates. We have seen that implementation issues are most of the time somehow neglected. In any case both the quality of the conception of innovation and the quality of the implementation of innovation are important (Bartoli and Hermel, 2001). From a global perspective many issues may need to be taken into account. For instance, organizational control specificities can affect how the information provided by different operational sources, such as activity based costing systems, is used. Therefore, the innovation on such production processes is restrained simply because coherent incentives for the use of this available information are not in place (Drake et al., 2001). Of course shared beliefs on the nature of management processes or the different possible utilizations of information have also an important weight on innovation pro-cesses of different organizations. According to Davenport and Beers (1995), the emphasis placed on information, the processes of creating and distributing it, and the importance given to people receiving that information are in fact cultural aspects that are more often absent than present in different companies.

During the last eight years we have been engaged in a broad action-research program in a large pharmaceutical multinational company. One of the main objectives of this enterprise since the late 1980s was the modernization of its traditional management and structures. This transformation process has followed a relative acceleration since 1995. Such a transformation is viewed as a long-term initiative; therefore, the management of assessment information is key to the successful evolution of the whole modernization process. From this rich experience we have picked one of the main axes of transformation: a case of multiple process reengineering. This axes has represented an important organizational innovation for this company. We followed this reengineering initiative during the last seven years in which ten different processes have undergone reengineering. During the last year and a half an in-depth assessment was realized on this seven-year reengineering program. The group of researchers has collaborated in the realization of this assessment. It is the dynamic study of this assessment that allows us to see how and why different elements intervene precisely during this year and a half process of preparation. This process of preparation and the results of the assessment have a direct impact on management decisions concerning both the innovation program assessed, reengineering, and other larger organizational aspects.

This study is based on two main methodological perspectives. In the first place, we have to consider the seven-year long longitudinal case study. Concerning this longitudinal approach, we have participated to the periodical evaluation work of the reengineering steering committee. This participation adds up to more than 50 meetings during those seven years. In the second place, the assessment realized in the last year and a half was based on several different approaches. First of all, 12 semi-directive interviews were made with participants of one of the reengineered processes, "new product launch". Those participants were chosen because of their participation in different stages of the process of reengineering. Some of them had participated to the initial conception of the reengineering, some others to the implementation process of the reengineering, some others were support staff, and finally some were top decision-making managers. The results were presented to the participants interviewed in order to obtain validation and take into account different additional nuances. In the second place, different historical operational measures were gathered to see the evolution of the new product launch process after reengineering. Thirdly, reports and meeting minutes corresponding to the stages of conception and implementation of this reengineering were also studied. Furthermore, the opinions of the reengineering program steering committee were also recorded as a part of the assessment. This steering committee has been meeting periodically during the last seven years as we already mentioned, and had the chance to give important feedback to the initial synthesis proposed after the treatment of the semi-directive interviews. In total three meetings of this steering committee, and eight meetings with the steering committee pilot, were devoted to enriching the assessment. Finally, other longitudinal data corresponding to the seven year period was also used to improve the assessment.

We would like finally to point out again that the reengineering program was the opportunity for the realization of the in-depth assessment, which is at the center of this research. We must indicate that the basic reengineering unit of analysis considered in this study is that of a single process reengineering. Therefore the whole seven-year reengineering process is composed of ten such experiences. For the purpose of

clarity of this study, we define reengineering as the in-depth reconfiguration of a single process with the objective of obtaining a large improvement in terms of the quality, cost and delay in the realization of the process and its outcomes. This definition is not very different from that proposed by Hammer and Champy (1993). Finally, some longitudinal elements corresponding to the seven-year long modernization program allow us to enrich the context of this study. This context is thoroughly developed in the following section.

During the last 15 years the worldwide structure of the pharmaceutical industry has profoundly changed. These changes are led by an important trend of concentration that has produced large pharmaceutical giants such as Pfizer, GlaxoSmithkline, Novartis, etc. This industry is naturally subject to many controls. Some of the controls stem from the environment in form of public controls and strict authorizations. Other controls are obviously self-imposed in order to assure that the multiple external requirements are fulfilled. Strict procedures and quality standards are necessary to guarantee and satisfy the different customers: doctors, pharmacists, hospitals, patients, etc.

The pharmaceutical industry

The evolution of the last years has been led by governments interested in reducing their public deficits. Therefore, there has been a trend to adjust the prices of the drugs in order to reduce the public health systems expenses. Of course this increased sensitivity to prices has rapidly been transmitted into other health system actors which happen to be also important stakeholders of the pharmaceutical companies. Pressures are therefore growing from different fronts. Besides, another strategy utilized by the governments has consisted in allowing the introduction of generic drugs. Generic drugs can be introduced after the protection patent period has expired. However, from 1999 the pharmacists have been granted in France with a right to substitute a prescribed brand drug by its generic substitute. This right is complemented by financial incentives for those pharmacists that achieve a substitution rate of 35 percent. Finally, other potential product substitutes based on biotechnologies, molecular engineering or other advances, are posing other threats or maybe opportunities depending on the strategic positioning of every company.

In face of those developments, pharmaceutical companies have been obliged to impulse their strategic management policies in order to build the necessary capabilities to survive in this changing and more demanding environment. Thus we can see a general innovation movement centered on those different dimensions: products, technologies, and processes. Besides, the relationship skills with all stakeholders are more and more developed. Finally, it is evident an increased weight of quality in final products and services, in all initial and intermediate processes, and obviously in the global steering capabilities of the companies. For all those reasons, global strategic programs become an essential tool of pharmaceutical companies.

The company studied has an original approach to the innovation movement mentioned above and, thus, a total quality program has been in place from the early 1990s. We can see there a clear anticipation compared to other pharmaceutical firms that initiated modernization programs only by the end of the 1990s. This total quality program has a very broad definition which makes of it actually the framework for a global project of strategic management. We will develop the main formal components of this total quality program in the next section. In this section we will develop the main global characteristics of the company.

Total sales for the year 2000 were of 1,359 million Euros with net profits of 217 million Euros. The firm employs a total of 4,594 people. A total of 91 percent of sales correspond to the pharmaceutical activity and the rest to the chemical activity; 64 percent of pharmaceutical sales are realized internationally; 80 percent of pharmaceutical sales correspond to "ethical" products that are normally protected by a patent, and 14 percent correspond to generic drugs; and 38 percent of sales of pharmaceutical "ethical" products are in the area of diabetes treatment followed by 21 percent of sales in respiratory treatment products. The global success of the diabetes area which is commercialized in 117 countries explains largely the great success of the company in the last years. However, the dependence on this particular area has become lately an important matter of risk for the near future. Finally, the company has multiple ongoing alliances mainly on the commercial and research and development sides. These alliances are established with educational institutions and other well-known companies around the world.

Concerning the internal characteristics of the company, we are going to present some details under the following global framework: strategy, structure, culture, and behavior (Bartoli and Hermel, 1989). The strategic dimension will cover mostly internal aspects since some external aspects have been addressed through the previous paragraphs. The structure is envisioned under a large perspective including physical and technological elements; organizational aspects like roles, functions and activities; and dominant value systems. Those structural elements can be formal or informal, and tangible or intangible. Culture is defined as the representations of the different strategic, structural and behavioral aspects of a company. These representations guide eventual action, and are of course not always homogeneous in a single company. Behaviors can be seen as a series of actions bearing a certain characteristic pattern.

On the strategic side, the company has followed a very profound evolution. Those changes are clear at the top management level, and specially concerning the formalization of strategy. Thus, different strategic plans from yearly to medium and long term are periodically updated. On the other hand, the deployment of these plans, specially the yearly operational plan, is not always easily realized. Therefore, if analysis and formulation are greatly improved, they are not followed at the same quality level during implementation and evaluation.

The general structure of the company has importantly changed to adapt to continuous market changes, and to the requirements and turbulences brought about by the parent company. Concerning the organization of processes and work, the main changes are brought about by the process reengineering program. Of course, this program is at the base of multiple functions and role changes. However, some structural barriers seem to affect this dynamics; for instance the human resource department has been hardly able to cope with the changing needs. It is important to say, though, that the strict employment rules in France make sometimes this

adaptation very difficult. Other important changes concern the evolution of information systems evolution through, for example, the adoption of the SAP system by all worldwide operations.

Cultural representations have definitely evolved during the last years. The company has gone in 15 years from a traditional familiar local environment into a medium-sized multinational professional environment. However, some representations are still highly compartmentalized following a tradition of strong separation between different functional departments. This compartmentalization is also important between different specialties for instance between different types of researchers, or even between people at the production or research sites, and people at the headquarters.

Behaviors are importantly influenced by the individual and by the situational conditions. If anything, we can say that there is a clear pattern towards more professional behavior even though there is still a long way to overcome some ancient traditional reflexes. Concerning the concrete aspects of reengineering, we have encountered people that have been very much implicated at some point, and which have eventually lost interest, and also people that have followed the inverse process. We have lately sensed a general feeling of expectation towards the uncertain possible futures of this initiative.

The overall modernization program has consisted in a series of sub-programs that have been put in place progressively. We are going to enumerate those sub-programs using the same framework of analysis utilized in the previous paragraph.

- Strategic initiatives:

    Strategic plans.

    Links to annual budget.

- Structural initiatives:

    Project management school.

    Reengineering program called PROCED.

    Information technologies (SAP).

- Cultural initiatives:

    Company values.

    Management principles.

- Behavioral initiatives:

    Employee competence program.

    Employee appraisal program.

    Decision-making process methodology.

    Time management initiative.

A few of those initiatives were started from the late 1980s. Most of them were put in place between 1992 and 1995. Since 1995 there has been a trend of acceleration

in the implementation process of the different initiatives. Apart from this program, there has been a transversal effort for the modernization of management processes. From 1994 the top management team meets periodically to treat transversal matters. Every month and a half this top management team realizes a one-day seminar with the participation of one, sometimes two, of the researchers realizing this study. This seminar has served to expand the cross-knowledge in the different areas of the company, and to improve the top management skills specially concerning the quality of decision-making, strategic management, and other management processes and systems. In parallel to this development, during spring of 1994 an action-formation program was started for the managers one level below the top management team. This last program is based on the issues of management processes, quality management, and change management. This program consists of a two-day seminar followed by a one-year in-house project development that allows the participants to put in place the new acquired management skills on a real day-to-day project. This type of project has been put in place for other lower management levels since the end of 1994. This initiative is still in place nowadays. Even though the improvement of management processes is important, there are still some matters that may need further improvement:

1. communication and information sharing;

2. follow-up of process interfaces between different functional departments; and

3. formalization and follow-up of internal process indicators.

The reengineering initiative

The reengineering initiative is known as PROCED (*PRO*cess; *C*ustomer; *E*conomy and *D*elay). The main objectives appear in the brackets and conform the denomination given to the program. The origin of the reengineering initiative can be traced to the month of June of 1994 when the parent company established a debate concerning a possible application of such an initiative. By September 1994 the launch of PROCED was decided.

The ten different reengineering experiences realized up to today are based on a common methodology. This methodology consists in the following stages:

☀ Determination of general objectives.

☀ Description and evaluation of the existent process.

☀ Reconstruction of the "ideal" process.

☀ Preparation of the implementation and action plans.

☀ Project test and validation.

☀ Communication, information and initial institutionalization.

☀ Implementation of the restructured process.

☀ Follow-up, evaluation and adjustments.

The ten reengineered processes are by chronological order:

☀ New product launch.

☀ New molecule acquisition contracting/licensing.

☀ Market launch administrative authorization.

- Sales administration.
- Promotional material purchases.
- Molecule development clinical phase.
- Drug master file process.
- New molecule acquisition legal follow-up.
- Logistics.
- Packaging design and realization.

It is precisely on this initiative that the specific assessment, base of this study, is realized. This assessment of course produced some results concerning this reengineering initiative that are presented in the next section.

As for the concrete process assessed in-depth, new launch process, several issues concern information and management processes and deserve special attention:

- During the different stages of reengineering the communication efforts towards the rest of the company seemed not enough; specially if we take into account the novelty of the initiative and the important weight of overall expected organizational impacts.

- Certain operational manuals that were supposed to accompany the implementation stage were not actually validated by the corresponding management and, therefore, never made available.

- After five years the process measurement system is not yet formalized. Measures exist but they are mostly based on the follow-up of every project launch, and not on the development of the overall process.

- There is not a clear process responsible manager who may be in charge of all this potential information.

- The different project launch managers do not consistently share whatever information they may have on the development of each launch.

To sum up, the formalization of information flows seems to be somehow neglected and, therefore, information flows partially and mostly informally or implicitly. At the same time some basic management processes are not even formalized or, sometimes, the managers do not get to completely finalize some others.

Concerning the overall reengineering program, these are the aspects that can be pointed out:

- The communication on the overall initiative seemed also not enough for the same reasons that we mentioned above. Besides, the general functioning of the different reengineering teams and committees is not always understood as well as the process choice of the different processes to be reengineered.

- The documents produced are generally considered as too abstract, and not operationally oriented.

- Process measures of performance are sometimes put in place for some processes reengineered but this is not always the case.

* The follow-up of process measures by responsible managers is not always assured.

* Finally, there is not much information available for other organization members on concrete or overall results of the initiative. However, the results of this assessment have appeared in the firm's internal magazine.

Other organizational results

The changes induced by the reengineering initiative have had other important organizational impacts. Of course the point of entry of the change initiative was structural and those initial changes have been transmitted to other organizational dimensions:

* Concerning the structural changes, there was sometimes hesitation when different structural boundaries were concerned in the reengineering of different processes. Also the different changes on roles and functions have sometimes followed a lengthy process of maturation. However, if those formal aspects have been difficult to change, there have been some informal evolutions that have permitted the functioning of the new structures. Concretely, the increased communication between participants from different departments has somehow permitted this evolution. However, this has occurred mostly at the headquarters. The process activities realized on other sites have not benefited so strongly from this dynamics.

* Concerning other organizational impacts, we have to point out the cultural evolution as the most important. The overall representations of the company evolve with reengineering and with other programs, and allow now for increased and better team work and communication.

* As for the overall organizational results, the malfunctions that were at the base of the choice of different reengineering initiatives have been importantly reduced. It is not possible to measure the impact on organizational performance; however, there is a largely shared perception that the reengineering program has brought about positive results to the organization.

The contribution to the relevance loop

In the first place, it is quite clear that this in-depth assessment is not only a nominal information tool but an instrument for making and giving overall organizational sense. Besides, it can also be considered as a knowledge tool since specific know-how on a management innovation initiative is formalized.

Concerning the performance loop, this in-depth assessment gives direct feedback on the functioning of the processes analyzed. However, we must say that if all measures were in place and already followed the benefits of such an assessment on the performance loop would not have been as important. The most important benefits come in terms of the relevant loop. We will explain how those benefits are actually produced through the assessment and, finally, what are some of those benefits.

As Davenport and Beers (1995) or other quality management references seen above specify, the relevance loop is a world mainly of ideas. Therefore, it is key to under-standing the process of gathering, analyzing, making sense and spreading the sense arising from all those existent ideas. Some of the technical sources to gather those ideas have been presented in section 4. The techniques to treat qualitative data are well-known and are not going to be developed here. We have also mentioned above that the quality movement provides tools that may help for the treatment of qualitative data. Besides, those quality tools are more easily applicable than other more strict scientific methods. Apart from those technical matters, it seems to us that in the

longitudinal perspective of preparation of the in-depth assessment other aspects must be pointed out. Thus, the process of sense making is not a steady one. On the contrary, special situations may have a deeper impact than others. For instance, implicit messages or symbols sent from top management proved to be very powerful during the period that the assessment was prepared. In this process of sense construction, there have also been cultural, political and social aspects that have sometimes slowed down the process. Those aspects have to be taken into account not only because there is a need to "manage" them but also because they are important producers of sense and have effects on actions. To sum up, in this process some sense is produced and some counter-sense may also be avoided.

One of the main benefits of the assessment has been the uncovering of a context. The context of work or innovation is most of the time taken for granted. A more or less shared view of the context is often well ingrained in people's minds. The assessment produced an evolution on this shared view of the context. That is where double loop learning was actually possible. There is an interesting paradox that actually shows this specific learning working. Just after the assessment there was a general belief that the reengineering results produced positive impacts on the organization even though some aspects could still be improved; we have specifically seen some information and management issues above. However, it was decided to slow down the overall initiative for some time. Thus, during some months no new reengineering projects would be launched. Precisely at the base of this decision we find the discovery of a new context; furthermore, a context that was going to be specially uncertain for several months. Under those conditions it seemed wiser to propose a temporal stop of the reengineering initiative. What is key for us is the understanding that this type of double loop learning will not happen often because this kind of assessment is not broadly implemented, and perhaps is not even well understood: actually the discovery and understanding of a new context came mostly as a surprise.

Finally, from the comparison of the ten different reengineering experiences, which took place during the seven-year period, we may draw a last interesting lesson. There has been a consistent trend repeating from reengineering process to reengineering process. This trend has also been evident from phase to phase within every reengineering process; for instance, from conception to implementation phases. We find that every time every new team is confronted with the same painful learning process. Of course a process that, as we have seen, is also accompanied by cultural, political, and social factors. In other words: it is difficult and complex to transmit the knowledge acquired through practical experience! Thus, a little break in the general organizational dynamics to both take some distance and evaluate managerial action can lead to better learning and decision-making processes.

Thanks to the works of H. Simon (1945), it is already some time since we know about the close and complex links between information and decision. The case studied shows a particular aspect of this link: when the information collection process is realized in a open and precise way, centered on the observed subject and taking into account induced effects, it can lead to a decision totally different to that which might have seemed "logical" with a less rich and more specific information.

Our analysis shows also how both the continuous information collection and an in-depth assessment on a particular matter and moment can complement each other. Both information strategies are key for the dynamic and rigorous excellence of management actions and processes. Of course, the same can be said under a context of organizational innovation. In fact innovation means a lack of framework and

the possibility of spontaneous comparison. External benchmarking can be useful but it cannot be a substitute for the creation of internal data allowing for the specific assessment of managerial action.

This kind of assessment may help the global development of the organization. As we have seen in the particular case studied, it can lead to concrete strategic decisions, to a suppression of structural barriers, to a cultural evolution, and to a stimulation of certain behaviors. However, all those benefits should not hide the apparition of a new critical challenge. The decision makers are also obliged to deal with the risks unveiled precisely by such an assessment. Thus, even though the information produced is overall positive for the managerial action evaluated, this information can equally produce a greater conscience about the inherent risks incurred. It can also bring about a certain organizational anxiety (Schein, 1993). This increased knowledge can paralyze action as it actually happened in the pharmaceutical company studied. The dilemma is thus important for the manager: is it better to share all information issued from the assessment and risk to stop the innovation? or is it better to hide a part of that information and maybe risk a later failure? It is a real problem of managerial responsibility that arises accountability and, more broadly, ethical matters in respect to the firm's stakeholders. If the company has accumulated in the past skills concerning collective double-loop learning, it is possible that the treatment of information and parallel risks can be done in a constructive manner. Otherwise, the manager can find himself, as it seems to happen usually, all alone in face of his multiple responsibilities.

Autobiographical notes

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