Knowledge Management in the Manufacturing Industry
An Asset for Innovation

Promoting information sharing, motivating employees to stay with the firm, forging partnerships for knowledge acquisition – industrial companies are becoming increasingly aware of the need to manage individual and collective knowledge. The bigger the company and the stronger its affiliation with a high-tech industry, the more it is likely to roll out such policies. The advantages deriving from knowledge management are not only explained by company size, specialisation or research & development efforts. They endure ‘all things being equal’. Knowledge management stimulates innovation, a productivity factor.

Preserving a company’s skills and expertise, acquiring and disseminating knowledge, improving knowledge use to improve production – knowledge management (KM) is the management of the company’s individual and collective knowledge. Companies are becoming aware of the fact that knowledge is a resource requiring explicit management methods if the knowledge is to be processed efficiently: storing knowledge, communicating, forging links and synergy between each individual’s knowledge, and generating new collective knowledge. Among other things, the role of knowledge management is to foster all kinds of innovation to improve the company’s productivity and its mid and long term competitive advantage.

A Recent Concern

Different factors can promote knowledge management. Companies have to manage a more complex world because of changing technologies. The firms have

Definition: The classification of technology intensive industries per technological intensity is based on an international definition (OECD, 1997) that relies mainly on the weight of R&D of the sector in production.

Scope: manufacturing companies with 20 employees or more (not including the food industry)

Source: Sessi, CIS3 Survey
to react increasingly faster to keep their competitive edge and to be able to build on or part of their past experience. They are becoming aware of the fact that competencies often rely on individuals or on tacit knowledge special to the company. They are concerned about the loss of skills caused by reengineering and the extreme mobility of their personnel within and without the company. For all these reasons, companies are striving to motivate their employees to stay with the firm. They are guaranteeing employees career mobility and increased pay. The firms are rolling out training courses and developing professionalism.

Last, ICT are spreading, creating new needs while making some knowledge obsolete. ICT facilitate the automation of some tasks and make it possible to outsource other tasks. But above all, ICT provide access to knowledge and technological watch, all of which requires increased codification and entails the set-up of the appropriate organisational structures.

**New Practices**

Over the past years, companies have rolled out different knowledge management practices. Four have been identified (see box 1). In 2000, nearly one out of two companies adopted at least one of the four policies.

Knowledge sharing was in the lead: 28% of the manufacturing companies with 20 employees or more stated they had a culture to promote knowledge sharing. Almost as many companies implemented an incentives policy to keep executives and employees in the firm (27%), thereby seeking to avoid knowledge loss. Likewise, 23% of the industrial companies forged partnerships or alliances for knowledge acquisition. Written knowledge management policies were not as widespread (17%).

**Especially in Big Companies**

Information circulates more easily within small companies. Setting up a special organisation is not as critical. Knowledge management may actually exist without anyone fully realising it. Informal procedures may enable efficient operations.

On the other hand, identifying the experts or knowledge holders in the bigger company is a requirement vis-à-vis other employees, and working with outside experts is an asset for the company. Hence the bigger the company, the more extensive its roll-out of effective knowledge management policies (see chart 1). In 2000, 80% of the companies with 2,000 employees or more stated they had a knowledge sharing culture while only 20% of the companies with 20 to 49 employees said they had one. Likewise, forging partnerships for new knowledge acquisition or the written codification of knowledge management was more important for big companies. One out of two companies with 2,000 employees or more had a written knowledge management policy. This was true for merely one out of ten of the smaller companies.

On the other hand, the smallest companies are weaker when one of their employees leaves. That is why motivating employees to stay in the firm is a more widespread policy than a knowledge sharing culture. This policy is also quite widespread in other SME categories.

**High Technology**

Ordinarily, ‘knowledge industries’ are defined as the industries resorting extensively to technology and to human capital. In the manufacturing industry, this concerns the high and medium-high technology industries, such as the pharmaceutical industry, aeronautic and space construction, and electronic component manufacturing. These sectors are adept at knowledge management: 40% to 45% of their companies implemented policies to foster knowledge sharing, to motivate employees to stay with the firm or to establish partnerships for knowledge acquisition. Some 30% implemented a written policy.

These policies do not concern low technology sectors such as clothing and leather, home equipment, publishing, printing & reproduction, and the wood and paper industries as much. The dissemination of knowledge management methods was roughly twice as low as in high technology sectors (see chart 2).

**Changing Management Methods**

From 1998 to 2000, one out of five companies rolled out new methods of management or administration in the broad...
sense. The methods affected all corporate functions and not only knowledge management. This was the case for project-based management that led to the generalisation of corporate cross-departmental culture and radically altered existing working relations. Unsurprisingly, knowledge management practices were always more widespread in companies that had adopted new management methods. Hence, three-fourths of these companies adopted at least one of the four practices while half had a knowledge sharing culture 

**The Internet and ICT - The Lifeblood of Knowledge**

More than four out of ten industrial companies generated product or process innovation from 1998 to 2000. Companies used in-house as well as external information sources to foster innovation. They marshalled the entire company to gain a firmer grasp on the technologies, materials, processes, customers, suppliers or competitors and used institutional information sources, i.e., databases, public research laboratories (with a focus on academic laboratories), seminars, trade fairs and exhibitions.

The Internet and ICT clear the way to accessing datamines. Indeed, 40% of the innovating companies used the Internet, 35% resorted to computer resources for knowledge sharing and 25% stated that they used both tools. Among this group, three out of five had a knowledge sharing culture and two out of five had a written knowledge management policy. These figures are twice as high as those for the entire manufacturing industry.

**Complementarity**

When companies set up knowledge management, they very often implemented several policies at the same time. For instance, among the 28% of companies with a knowledge sharing culture, nearly one out of two also had a written knowledge management policy. Likewise, one out of two companies forged partnerships for knowledge acquisition and three out of five rolled out an incentives policy to keep employees in the firm.

On the other hand, of the 72% of companies stating they did not have a culture to promote knowledge sharing, fewer than one out of ten had a written policy and fewer than one out of six forged partnerships for knowledge acquisition or set up an incentives policy to keep employees in the company.

Because of the complementarity of the different policies, the intensity of knowledge management was three times greater in companies with 2,000 employees or more than in companies with 20 to...
Knowledge Capitalisation Buttressing Innovation

Whatever company size, industry or research and development efforts, firms innovate more extensively and file more patents if they set up knowledge management policies. Hence all things being equal, nearly two-thirds of the industrial companies rolling out the four KM policies generated product innovation from 1998 to 2000 (see chart in box 2). This finding was not as relevant for patent applications. However fewer than half the companies that did not adopt any of these policies innovated.

Beyond the mere propensity to innovate (or to file a patent), the share of product innovation or patented products in company turnover is that much greater when the company has implemented several KM policies.

Knowledge management also has a positive effect on labour productivity. For instance and all things being equal, value added per employee was higher by roughly 6% in companies that adopted at least one knowledge management policy compared to the companies that did not adopt any.

Suggested Reading

- FORAY (Dominique): L’économie de la connaissance (the Knowledge-based Economy, in French), Editions La Découverte, Collection Repères, 2000

- LHOMME (Yann): “Technological Innovation in Industry”, Le 4-Pages des statistiques industrielles, Sessi, no. 168 - December, 2002

- La France dans l’économie du savoir: pour une dynamique collective (France in the Knowledge-based Economy, a Country on the Move, in French), Commissariat général du Plan, la Documentation française, November 2002

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