Knowledge Management

The Central Management Focus for Intelligent-Acting Organizations

Karl M. Wiig

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-- Thinking about Thinking --
How People and Organizations Create, Represent, and Use Knowledge
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Chapter 2

Executive Perspectives on Importance of Knowledge
A Survey of Executive Perspectives on Knowledge and Its Management
Some of the most valuable assets of the organization are often hidden and
invisible to its owners, managers, and other stakeholders. These assets are the organization’s knowledge assets, which include its technology assets.

In a 1989 survey, we focused on how competitive stance may be strengthened by active management of knowledge and expertise. The survey covered a selected sample of chief executives or their designees from 18 U.S. corporations with average annual sales of $7.5 billion. In their responses, these executives all agreed that knowledge is the organization’s most important asset -- yet, it does not appear on any balance sheet. Every year, considerable investments are incurred to create these assets, but these investments are typically expensed, are not capitalized, and have no accounting value; and most importantly, they are not managed as assets.

Because knowledge assets are not capitalized, they are not included when return on assets are considered. As a result, management is not rewarded for creating these assets or using them effectively, nor are they penalized for wasting them. Several critical perspectives came to light as a result of this survey. Some of the more important include:

- Most executives consider the knowledge and expertise that reside in their employees to be their enterprise’s most valuable assets.
- Executives are very interested in managing knowledge actively and effectively and consider it to be important for competitiveness in the future, but they do not know how to go about it.
- The concepts of knowledge management (KM) are new to most, although a few feel that they have a beginning understanding of how to manage knowledge.
- The executives and their managers, by and large, do not know where the critical knowledge areas are within their enterprises.
- Executives are keenly interested in surveying (i.e., finding, describing, and evaluating) critical knowledge. However, they do not know how to do so -- they do not know any practical and meaningful methods to perform such work.
- The executives believe that codification and automation of knowledge and expertise in the form of expert systems is desirable and important, and will be part of determining their competitive edge in the future. Some indicated that their companies already are using this technology while others are initiating building staff and prototype expert systems.

It is interesting to observe how consistent the executives’ views were regarding the importance of KM -- even at this early stage when most do not have much experience in this area. Thus, it is clear from the opinions expressed that KM may be of considerable competitive and economic value to the companies that understand how to incorporate these concepts into their practices. It is similarly clear, that much work needs to be done to create methodologies, adopt new technology and make the available approaches known and accessible. Finally, it is clear that there is a great need to provide executives and their staffs access to the available KM concepts and approaches.

Observation: Given the nature of the responses and the identity of the participants, the perspectives obtained through this survey represent viewpoints that are both advanced and progressive. Consequently, the opinions revealed should not be taken as indications of general attitudes among U.S. executives. Instead, they may reflect views that will guide the most competitive and successful companies in the 1990s and beyond. Indeed, the sample was partially self-selected, therefore, the viewpoints should be considered to be biased.

Company Goals and Competitiveness

To better interpret the executives’ opinions and perspectives on knowledge and its management, we established their ranking of goals and objectives for their firms. We asked participants to weight the importance of four goals as...
seen from their companyís perspective. We found the executivesí views to place less emphasis on short-term values than anticipated. That is, as a group, the participants considered long-term goals and observation of humanitarian and ethical values to be significantly more important than meeting short-term obligations and profitability (Table 2-1).

Table 2-1. iIndicate the importance that you place on each of the following concerns.i(0 is least important and 10 is most important)

<table>
<thead>
<tr>
<th>Concern</th>
<th>Average</th>
<th>% Rated at 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximize future wealth, i.e., build longer term value of your company in terms of market value, competitive position, and financial health. (iFuture Wealthi)</td>
<td>9.567%</td>
<td>67%</td>
</tr>
<tr>
<td>Observe humanitarian and ethical values in dealing with your employees, your business partners, and the community. (iValuesi)</td>
<td>8.356%</td>
<td>56%</td>
</tr>
<tr>
<td>Meet short-term obligations (debt service, payroll, etc.) and maximize present periodís goals (net income, revenues, etc.). (iShort Termi)</td>
<td>7.328%</td>
<td>28%</td>
</tr>
<tr>
<td>Maintain or improve the economic, social, and physical environments in which your company will function and its employees and owners will live so that they can enjoy what they have earned. (iEnvironmenti)</td>
<td>6.60%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Observation: The executives indicated that longer-term and value concerns are more important than meeting short-term financial obligations and goals. The responses fell into three separate, A, B, and C, that were used to classify several perspectives throughout the survey. Weights given to the four goals by executives in the industry groups are shown in Figure 2-1.

The survey focused on the competitive attitudes and self-images that the executives held for their firms. Slightly over half considered their firms to be dominant or strong within their industry; 39% saw their firms as in a favorable competitive position. None considered themselves to be tenable or weak (Table 2-2). 56% listed their firmsí maturity level; 11% of these saw their firms to be in embryonic businesses, 20% in growth businesses, and the majority (69%) in mature businesses. None were in aging businesses.

Since KM is a new approach that often involves new technologies (such as knowledge acquisition and codification, knowledge-based systems, and advanced information technology), it was of interest to explore attitudes towards adoption and use of new technology (Table 2-3).

Figure 2-1. Importance of Goals for Industry Groups A, B, and C.

| Industry | Chemicals | Oil & Gas | Retailing | Construction & Engineering | Telecommunications | Aerospace | Automotive | Railroads | Financial |
|----------|-----------|-----------|-----------|---------------------------|--------------------|-----------|------------|-----------|-----------|-----------|
Utilities
Pharmaceuticals
Semiconductors
Manufacturing
Transportation

Table 2-2. “What is your opinion of your company's competitive position?”

<table>
<thead>
<tr>
<th>Total</th>
<th>Industry Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>We are competitively dominant and consider ourselves</td>
<td>17%</td>
</tr>
<tr>
<td>the pioneer and leader</td>
<td></td>
</tr>
<tr>
<td>We are competitively dominant but we are vulnerable</td>
<td>28%</td>
</tr>
<tr>
<td>My company is competitively strong -- in the forefront</td>
<td>17%</td>
</tr>
<tr>
<td>My company is in a competitively favorable position</td>
<td>38%</td>
</tr>
<tr>
<td>My company is competitively tenable</td>
<td>0%</td>
</tr>
<tr>
<td>We are competitively weak and followers</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

We are in an emerging or embryonic business | 6% | None | Few |
My company is predominantly in growth businesses | 11% | None | None |
My company operates in mature businesses | 39% | All | Some |
We are primarily engaged in aging businesses | 0% | None | None |
Total | 56% | | |

As shown in Table 2-3, the majority of companies (88%) attempted to be in the forefront of adopting new technology although some liked to wait until one or two other companies have shown the way. Depending upon the application, the technology, and in-house expertise, companies were willing to buy the technology (89%), bring it in-house with outside help (84%), or develop it by themselves (78%). It is interesting to note that 15% of the executives would not consider bringing in technology with outside help and then develop applications in-house.

Table 2-3. “How do you characterize your company when adopting new technology?”

<table>
<thead>
<tr>
<th>Always</th>
<th>Sometimes</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>We attempt to be in the forefront of adopting new technology</td>
<td>44%</td>
<td>9%</td>
</tr>
<tr>
<td>We prefer to wait until applications in one or two other companies have shown that the new technology is useful</td>
<td>6%</td>
<td>72%</td>
</tr>
<tr>
<td>We wait until the new technology is in general use by competitors</td>
<td>0%</td>
<td>61%</td>
</tr>
<tr>
<td>We develop technology and applications in-house without external help</td>
<td>6%</td>
<td>72%</td>
</tr>
<tr>
<td>We prefer to bring technology in-house with outside help and then develop applications in-house with our own staff</td>
<td>6%</td>
<td>78%</td>
</tr>
<tr>
<td>We buy technology applications from outside sources</td>
<td>0%</td>
<td>89%</td>
</tr>
</tbody>
</table>

The majority (72%) of executives considered their companies to be very competitive as a result of their employees’ knowledge (Table 2-4). By comparison, about one in four thought that the company’s knowledge assets only increased their competitiveness somewhat. No one perceived knowledge not to be a competitive factor. These views coincide with the perspectives expressed in
Tables 2-6 and 2-18.

Table 2-4. How competitive is your company because of your people's knowledge?

<table>
<thead>
<tr>
<th>Very Competitive</th>
<th>Somewhat Competitive</th>
<th>Not a Competitive Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>72 %</td>
<td>28 %</td>
<td>0 %</td>
</tr>
</tbody>
</table>

Observation: For the most part, the companies were aggressive when it comes to new technology and they ascribed a significant part of their competitive dominance and strength to the knowledge in their people.

Importance of Knowledge

All executives agreed that expertise is of great importance and should be considered highly valuable as indicated in Table 2-5. In addition, more than one half of the respondents viewed expertise as their enterprise's most valuable asset, while the rest thought it only highly valuable, after other assets such as technology, market position, and financial assets.

Observation: Most of the CEOs felt that knowledge/expertise was their most valuable asset. This perspective has significant implications for how KM is considered by companies.

Table 2-5. Is expertise of great importance in your organization?

| Knowledge/expertise is our most valuable asset | 56 % |
| Knowledge is highly valuable, but after: | 44 % |
| Technology assets | 56 % |
| Market position | 33 % |
| Financial assets | 11 % |
| Somewhat valuable | 0 % |
| Not particularly valuable | 0 % |

Our judgment is that technological assets mainly are manifestations of the knowledge that technical people possess and are considered part of the knowledge assets. Accordingly, 80% of the executives actually considered knowledge as their company's most important asset (Table 2-6).

Exhibit 2-6. What are the most important knowledge areas in your company?

<table>
<thead>
<tr>
<th>Overall</th>
<th>Industry Group Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>RankABC</td>
<td>A</td>
</tr>
<tr>
<td>Management Knowledge</td>
<td>Executive management knowledge</td>
</tr>
<tr>
<td>Middle management knowledge</td>
<td>2</td>
</tr>
<tr>
<td>Supervisory knowledge</td>
<td>3</td>
</tr>
<tr>
<td>Administrative knowledge</td>
<td>4</td>
</tr>
<tr>
<td>Functional Knowledge</td>
<td>Operations/manufacturing knowledge</td>
</tr>
<tr>
<td>Marketing knowledge</td>
<td>2</td>
</tr>
<tr>
<td>Research knowledge</td>
<td>3</td>
</tr>
<tr>
<td>Product design knowledge</td>
<td>4</td>
</tr>
<tr>
<td>Other: Leadership, Human Resources</td>
<td>5</td>
</tr>
<tr>
<td>Financial knowledge</td>
<td>6</td>
</tr>
</tbody>
</table>

Observation: The majority of CEOs ranked operations/manufacturing
knowledge as most important, with marketing knowledge second. A few ranked other knowledge areas as highly important, thus indicating different areas of emphasis in specialized companies. Most important was executive management knowledge. However, executives from Industry Group C judged middle management knowledge to be more important for overall company operation. Perspectives were more divided on functional knowledge. For example, industry Groups B and C considered operations/ manufacturing knowledge most important overall while Industry Group A considered marketing knowledge to be most important as might be expected from mature industries. Group B rated marketing knowledge second, while Group C rated research knowledge second. It is important to note the diversity in opinions reflected in the ratings since this, we think, properly reflects the relative importance of the different functions in the various organizations and industries.

Executives were asked about expected changes in the business environment as a result of technological and international trade changes. Two quotes were presented to elicit responses. The executives generally agreed that the next 20 years will present large changes in all areas of business and that the rules of competition will change significantly. Most agreed with conclusions quoted from an Office of Technology Assessment report, although some were neutral to these projections. One half of the CEOs agreed with the notion proposed in a quote by Edward Feigenbaum et al. that there will be an international battle of knowledge and that a U.S. knowledge frontier will be created to compensate for the loss of our past manufacturing dominance. An almost equal number of CEOs, however, were uncertain on this point (Table 2-7).

Table 2-7. Forecasts predict significant changes in the business environment.

“(During the next two decades, new technologies, rapid increases in foreign trade, and tastes and values of Americans are likely to reshape virtually every product, every service, every job in the United States. These forces will shake the foundations of the most secure American businesses. ... An overwhelming body of evidence suggests ... that new technologies for collecting, storing, manipulating, and communicating information do have the potential to revolutionize the structure and performance of the national economy. ... Information technologies have the potential to change the performance of the economic system itself.”

(Henry Kelly et al. in Technology and the American Economic Transition, Congress of the U.S., Office of Technology Assessment 1988, pp. 3, 15, 16)

Agree 72 % Neutral 22 % Disagree 6 %

“The developed nations there is a sense of urgency about building the so-called knowledge-intensive businesses to earn back the wealth that has been lost as manufacturing work moved to less developed countries.”


Agree 50 % Neutral 44 % Disagree 6 %

On the need to improve knowledge in the workforce, there was unanimous agreement that employees must be provided with better knowledge to be able to interpret and use information. Almost all felt that the modern work environment is becoming increasingly complex and most thought there is a significant gap between knowledge that people have and what the job requires (Table 2-8).

Table 2-8. Needs for improving availability of knowledge.
There is a need to provide employees with knowledge of how to interpret and use available information. Agree 100% Neutral 0% Disagree 0%

The workplace is becoming increasingly complex to meet competition. There is a need for better management of professional knowledge and operational expertise to provide continued improvements in performance. Agree 94% Neutral 6% Disagree 0%

There is a gap between knowledge required for job performance and knowledge in the workforce. Agree 83% Neutral 17% Disagree 0%

Employees do not know how to use and interpret information available to them through information technology currently in place. Agree 50% Neutral 28% Disagree 22%

Most knowledge workers are overburdened with information and cannot take effective advantage of it. Agree 17% Neutral 61% Disagree 22%

Observation: CEOs uniformly expressed that there are extensive needs to improve the knowledge levels in employees at all levels. These needs are in part caused by an increase in the complexity of the workplace, but more importantly, they are caused by the desire to improve competitive position.

When asked if knowledge workers by and large are overburdened with information, the CEOs were not in agreement. One half thought their employees were not able to utilize all information available to them for whatever reason. The CEOs from high-technology companies agreed that their employees were overburdened with information, while CEOs from retail, oil, and resource companies felt that their knowledge workers were able to cope with the information they receive. The majority, however, were neutral or uncertain on this point.

These responses may be interpreted as being in conflict with one another. They may also be in conflict with attitudes and observations by middle managers and supervisors who consistently voice concerns about their subordinatesí lack of time and ability to digest and act on all the relevant information provided them.

It is interesting to note that most executives felt that it may be particularly valuable to distribute knowledge and expertise to points-of-action in different areas of their company (Table 2-9).

For the most part, the executives also agreed that they knew of situations with potentials for vulnerability due to loss or relocation of knowledgeable people. The majority agreed that there are problems with knowledge transfer when people and functions are moved around. In contrast to these opinions, however, most CEOs thought their companies had not suffered costly setbacks due to lack of knowledge or expertise. That may be true -- or it may be wishful thinking.

Table 2-9. Experiences with lack of critical knowledge.

Do you have situations in your enterprise where it would be particularly valuable to have more employees know what now is only known by one or two? Yes 78% No 11%

Are you aware of any situations in your enterprise where the expertise of one, or a few people, is of vital importance and where these people may leave, retire, or be promoted? Yes 56% No 33%
Have you experienced, or do you expect to experience, problems with transfer of knowledge when restructuring operations or transferring personnel?

Yes 56%
No 33%

Have you suffered costly errors or mistakes because employees lack sufficient knowledge or expertise?

Yes 39%
No 50%

On Knowledge Management

The executives were asked how better and more active KM might improve operations and competitiveness. They had high expectations for potential improvements in several areas, noting that many competitive factors (see Figure 2-2) and areas of operation (see Table 2-10) might be significantly improved with better KM. All executives agreed that the two most important factors, as determined by a Boston University study, maintenance of consistent quality and conformance to customer specifications, and dependable delivery of products and services would most likely be improved.

As shown, the majority of respondents expected that active KM will improve competitive conditions significantly. No one thought that there would be no improvement. As shown in Figure 2-2, according to the competitive importance ranking more than one half of the executives thought it likely that better KM would improve competitiveness for all factors, either significantly or somewhat.

Observation: All the participating CEOs expressed that they expected active KM to significantly improve both competitiveness and operational effectiveness. The areas that will be improved most vary, but total quality and marketing-related activities were expected to show the greatest benefits.

The executives showed even greater expectations for improvement of operational effectiveness as indicated in Table 2-10. Of the 18 operational areas listed, eight received unanimous agreement that better KM would improve operational effectiveness, either significantly or moderately. In seven other areas, only a small fraction of respondents thought there would be little or no improvements. Some interesting judgments were reflected in the responses. For example, the executives expected that middle management and supervision will improve significantly with better KM while executive management was expected to be improved only moderately; however, everyone expected moderate or better improvement for all three areas.

Figure 2-2. Will knowledge management improve competitiveness?

Observation: Executives’ Expectations for Improvement in Competitive Factors Through Active Knowledge Management.

(Competitive factors are ranked according to importance, 12 being least important)

Surprisingly, the executives ranked general administration and secretarial as the least likely area to be improved by better KM. This response, we think, reflects the general misconception that clerical work requires little knowledge -- which is contrary to all our findings when investigating knowledge required to deliver high-quality work. In addition, over the next years, many executives and managers will unload additional responsibilities on their administrative staffs as they themselves take on additional responsibilities as enterprises are flattened. As a result, we can expect the knowledge requirements of the administrative and secretarial staff work to increase, leading to a need for better and more active KM to attain the desired levels of quality.

Table 2-10. Will knowledge management improve operational effectiveness?
Operational Areas | Significant Improvement | Moderate Improvement | Little or No Improvement
--- | --- | --- | ---
Marketing and Product Development | 67% | 22% | 0%
Middle Management | 61% | 28% | 0%
Supervision | 50% | 39% | 0%
Management Information Systems | 50% | 39% | 0%
R&D | 44% | 44% | 0%
Engineering | 50% | 28% | 0%
Production and Manufacturing | 50% | 28% | 6%
Staff Functions (Legal, PR, Planning) | 39% | 50% | 6%
Purchasing and Stores | 39% | 44% | 6%
Personnel Management | 33% | 56% | 0%
Customer Service | 33% | 50% | 6%
Maintenance | 33% | 50% | 6%
Finance | 28% | 56% | 6%
Executive Management | 28% | 50% | 0%
Logistics and Traffic Management | 28% | 50% | 6%
Accounting | 17% | 61% | 11%
Sales and Order Taking | 11% | 61% | 11%
General Administration and Secretarial | 6% | 61% | 22%

It will be interesting to observe how different companies will conceptualize the use of various KM activities to change their operations and internal practices to benefit from changes in KM. It will be of particular interest to discover what the actual benefits will be. However, such data cannot be expected for several years.

All executives expressed that they consider KM to be of great importance and that they personally should be involved in many of its aspects. They also indicated that they expect KM to increase in importance. Yet they indicated that they don't know how to go about it in practical terms. Nor do they know how to integrate overall perspectives for how to manage knowledge with their other practices and responsibilities.

How Should Knowledge Management Be Organized?

When the executives were queried about their level of engagement in, and responsibility for, KM, there was full agreement that they should be personally concerned about this area (Table 2-11). Respondents also felt that they should be part of conceptualizing uses of knowledge and setting priorities and guidelines -- areas that they may have been excluded from up to now due to a lack of practical and accepted methods and approaches for managing knowledge.

How Should Knowledge Management Be Organized?

| Should Executive Management:
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Should Executive Management:</td>
</tr>
<tr>
<td>Be concerned at all?</td>
</tr>
<tr>
<td>Conceptualize to strengthen the company through better use of knowledge?</td>
</tr>
<tr>
<td>Set investment priorities for collecting, structuring, and exploiting knowledge?</td>
</tr>
<tr>
<td>Set guidelines for how to approach throughout the enterprise?</td>
</tr>
<tr>
<td>Guide directly to exploit knowledge in the marketplace?</td>
</tr>
</tbody>
</table>

Delegate to: Other Top Central Middle or Human Management Individual Other Shared
On the issue of delegation, most agreed that KM can be delegated to other top, middle, and professional managers. A smaller group favored delegation to a central staff group. Very few thought that KM should be delegated to Human Resources, MIS, or to other groups. Some of the executives who favored delegation to other management ranks, also thought that individual professionals should be responsible for their own KM and that these responsibilities should be shared throughout the enterprise. From the responses, it is clear that the CEOs thought KM is very important. The majority considered KM to be “As Important” or “More Important” than R&D, Personnel Management, and Information Management (Table 2-12).

Table 2-12. “How should knowledge management be emphasized relative to other areas?”

<table>
<thead>
<tr>
<th></th>
<th>KM is More Important</th>
<th>As Important</th>
<th>KM is Less Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vis ‡ vis R&amp;D?</td>
<td>17%</td>
<td>50%</td>
<td>22%</td>
</tr>
<tr>
<td>Vis ‡ vis Personnel Management?</td>
<td>28%</td>
<td>56%</td>
<td>11%</td>
</tr>
<tr>
<td>Vis ‡ vis Information Management?</td>
<td>33%</td>
<td>50%</td>
<td>11%</td>
</tr>
<tr>
<td>“All are important”</td>
<td>6%</td>
<td>6%</td>
<td>6%</td>
</tr>
</tbody>
</table>

We find these responses surprising considering that, to our knowledge, there are no organized functions or institutionalized procedures for broad KM in any of these organizations. However, there still appear to be clear perspectives for how well knowledge is managed in these companies as expressed in Table 2-13.

Table 2-13. “How good is your Knowledge Management?”

<table>
<thead>
<tr>
<th>How effective is your company’s knowledge management?</th>
<th>Very Effective</th>
<th>Moderately Effective</th>
<th>Not Effective</th>
</tr>
</thead>
<tbody>
<tr>
<td>17%</td>
<td>78%</td>
<td>6%</td>
<td></td>
</tr>
</tbody>
</table>

Do you have objectives and strategies for your company’s knowledge and its management?

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Objectives</th>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>11%</td>
<td>78%</td>
<td>11%</td>
</tr>
</tbody>
</table>

Are your knowledge strategies consistent with your business objectives and strategies?

<table>
<thead>
<tr>
<th>Consistent</th>
<th>Consistent</th>
<th>Consistent</th>
</tr>
</thead>
<tbody>
<tr>
<td>6%</td>
<td>83%</td>
<td>11%</td>
</tr>
</tbody>
</table>

Is your allocation of knowledge management resources consistent with your business strategies?

<table>
<thead>
<tr>
<th>Consistent</th>
<th>Consistent</th>
<th>Consistent</th>
<th>Consistent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>83%</td>
<td>11%</td>
<td>17%</td>
</tr>
</tbody>
</table>

A small proportion of the executives thought that their company’s management of knowledge is very effective. Some, although fewer, thought they had clear objectives and strategies in this area. Very few thought that their knowledge strategies are fully consistent with the business objectives and
strategies. None thought that the actual allocations for KM are fully consistent with the business strategies. Instead, the feeling was that the situation is much better for selected operational areas and for general correspondence between goals and execution. On the whole, over three quarters of the executives thought that their performance is generally acceptable, presumably given the present state-of-the-art rather than the potential for KM.

Since knowledge and expertise in many instances are directly tied to various areas of technology, we asked the executives if they presently are surveying the technologies that support their business (Table 2-14). The majority responded that their firms regularly survey technologies using either formal or informal methods. Almost half indicated that they also survey characteristics and values of expert knowledge. We did not investigate how this is done and how broad these investigations are. When asked if they would find results from knowledge surveys useful, the great majority responded yes.

Table 2-14. iHow active is your company in applying and building expert knowledge?i

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is your company presently surveying the technologies ...Yes 39 %Yes 56 %No 11 % that support your business as a regular activity? Using formal using informal methods methods</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If not, are you considering performing such surveys?....Yes 0 %No 11 %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you survey characteristics and values of expert knowledge?Yes 44 %No 44 %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you, or would you, find results from such surveys ...Perhaps 6 %Yes 72 %No 6 % to be of value to you?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Some of the executives indicated that they did not know of any meaningful ways of surveying knowledge methodically; others noted that they had no idea of how to conduct such surveys. This attitude is strongly supported by the perspectives expressed by the executives with regard to which KM activities they find to be important. One half felt that isurvey critical knowledge areasi is important at this time, while two-thirds felt it is important now to icreate plans for strategic use of key knowledgei.

These perspectives are detailed further in Table 2-15, which shows that two-thirds of the executives indicated that they would find it valuable to survey knowledge to identify and describe important knowledge factors; 33% were undecided or did not know how this would benefit their organizations.

Table 2-15. iIf well-tested methodologies for surveying knowledge were available to identify and describe critical and highly valuable and manageable knowledge factors, would your organization benefit from using such methods?i

<table>
<thead>
<tr>
<th>Frequency Distribution</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>33 %Perhaps -- don't know.</td>
<td></td>
</tr>
<tr>
<td>33 %Continually as part of each manager's ongoing business and professional duties.</td>
<td></td>
</tr>
<tr>
<td>22 %Annually as part of technology and strategic planning.</td>
<td></td>
</tr>
<tr>
<td>17 %Annually as part of each manager's personnel management duties.</td>
<td></td>
</tr>
<tr>
<td>6 %Annually in important departments and situations.</td>
<td></td>
</tr>
<tr>
<td>0 %Occasionally in isolated situations when specific needs are perceived.</td>
<td></td>
</tr>
<tr>
<td>0 %No, not at all.</td>
<td></td>
</tr>
</tbody>
</table>
When asked about KM and its future importance, almost half of the executives stated that they considered KM important for competitiveness in the 1990s (Table 2-16). This is a lower fraction than we expected based on views of how better KM could improve competitive factors and areas of operations (Figure 2-2 and Table 2-10). One third of the executives indicated that they were familiar with conventional approaches to managing knowledge, while about one quarter had a beginning understanding of how they should manage knowledge. Another quarter indicated that KM was new to them. Several of these executives also indicated that they were very interested in managing knowledge to secure their competitiveness. No one felt that they were familiar with advanced concepts for managing knowledge.

Table 2-16. iWhat are Knowledge Management trends and future importance?i

44% I consider knowledge management to be important for competitiveness in the 1990s.
33% I am familiar with conventional approaches to managing knowledge.
28% I have a beginning understanding of how we should manage knowledge.
28% Knowledge management is new to me.
22% I am very interested in managing knowledge to secure our competitiveness.
0% I am familiar with advanced concepts for managing knowledge.

We asked about the levels of knowledge awareness and preparedness in their companies, distinguishing between iPromising,î iCompetitive,î and iStandardî knowledge areas as defined in Table 2-17. When asked how well business unit managers know the important knowledge areas of their operations, the executives provided a range of perspectives (Table 2-17a). The majority thought that their managers would know ipromising knowledgeî only partially, while they are thought to know icompetitive knowledgeî and istandard knowledgeî quite well. We must conclude that in these companies, knowledge is thought to be well known, particularly after it has become well established (istandard knowledgeî).

Knowledge may, however, not be so well known for the newer knowledge areas that often are crucial for competitiveness. This may leave companies vulnerable and make their strategies difficult to implement -- or even arbitrary. For example, we do not have insight into how well the knowledge is understood or defined in terms of its detail, who possesses it, and how it compares with their competitors’ knowledge. We also do not know about the policies and plans that are referred to by the executives for managing their enterprises’ knowledge. Given these uncertainties, it is difficult to judge how well the companies surveyed actually know the important knowledge in their organizations.

Observation: The executives were very interested in ways of finding, describing, and evaluating critical knowledge factors throughout their organization. Yet most of them did not know if that can be done in meaningful and practical ways.

Table 2-17. iWhat is the knowledge awareness in your company?î

Use the following definitions for this table:
iPromising knowledge areasî are in early development stages with demonstrated potentials for changing the basis of competition. (Some of today's ipromising knowledgeî becomes tomorrow's icompetitive knowledge.)
iCompetitive knowledge areas îdifferentiate your company and have the greatest impact on competitive performance.
(Competitive knowledge in time becomes standard knowledge for an industry). Standard knowledge areas are highly essential to your business, and are widely available to all competitors.

a. How well are the important knowledge areas in your firm known to your business unit managers?

Well Partially Relatively Known Known Unknown

The promising knowledge areas?........0 % 56 % 33 %
The competitive knowledge areas?......50 % 39 % 6 %
The standard knowledge areas?........72 % 11 % 6 %

b. Does your firm have established policies and methods for:

Promising Competitive Standard

In terms of: Knowledge Knowledge Knowledge

Preparing for management of knowledge?...0 % 22 % 44 %
Building and producing knowledge?......17 % 33 % 61 %
Using and applying knowledge?........11 % 39 % 56 %
Controlling and safeguarding knowledge?...39 % 50 % 39 %

When asked if their firms had established policies and methods to deal with knowledge (Table 2-17b), the executives provided more diverse perspectives. The emphasis in most firms were still on the better understood, mature standard knowledge, hence most firms have procedures for building, producing, and using such knowledge. When it comes to the competitively more important areas of knowledge, the companies were much less prepared, and when it comes to tomorrow’s knowledge — the promising knowledge areas, they may be characterized as being unprepared.

Organization and Human Resources

Different uses of knowledge, requirements for knowledge in the work place, and options for how to manage knowledge are all expected to have implications for how companies are organized and how human resources are managed. We solicited perspectives from the executives by asking their level of agreement with selected quotes. Almost three-fourths agreed that in many organizations there is a new environment for knowledge and learning, a result the need for knowledge and learning to be at the heart of productive activity. No one disagreed with this notion (Table 2-18).

Table 2-18. Will organizations change as a result of new reliance on knowledge?

<table>
<thead>
<tr>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>72 %</td>
<td>28 %</td>
<td>0 %</td>
</tr>
</tbody>
</table>

The informed (sic) organization is a learning institution, and one of its principal purposes is the expansion of knowledge — not knowledge for its own sake (as in academic pursuit), but knowledge that comes to reside at the core of what it means to be productive. ... The behaviors that define learning and the behaviors that define being productive are one and the same. Learning is not something that requires time out from being engaged in productive activity; learning is at the heart of productive activity. To put it simply, learning is the new form of labor. (Shoshana Zuboff in the Age of the Smart Machine, Basic Books, 1988, p. 395)

Our knowledge of management is (not) complete. ... What we knew about management 40 years ago ... does not necessarily help managers meet the challenges they face today. What has made that knowledge obsolete is, in large measure, its own success in hasten
shift from manual work to knowledge work in business organizations.¹


Agree 61 % Neutral 39 % Disagree 0 %

More than half of the executives agreed that they observe a shift from manual to knowledge and that this shift has made management knowledge partly obsolete -- i.e., conventional management practices and knowledge does not apply when one is managing knowledge intensive activities. Again, no one disagreed.

Many companies are changing their operations by flattening organizational structures. Considerable attention has been paid to the difficulties associated with designing the resulting new functional relations, spreading and sharing responsibilities and work tasks, and changing operating practices and procedures. To our knowledge, less attention has been paid to the skill and knowledge transfers required (except for needs for training). We were, therefore, interested in the executives' perspectives on the role of knowledge in this regard. The majority agreed that current ways of managing knowledge hamper changes such as organizational flattening. No one disagreed with this notion, although 39% were neutral. This view was strengthened, since two-thirds of the executives thought it is Important Now to rely on automated knowledge (i.e., knowledge-based systems) to flatten organizations and distribute responsibilities (Table 2-19).

Table 2-19. Effects of knowledge requirements on personnel.

Organizational flattening, transfer of responsibilities, and other types of organizational changes to streamline the company are hampered by difficulties in managing the knowledge required for such changes.

Agree 61 % Neutral 39 % Disagree 0 %

The investment required to make a new hire productive is greater today than it was ten years ago.

Agree 61 % Neutral 33 % Disagree 6 %

Young people coming into the labor pool are less prepared to perform the increasingly complex work tasks that are required.

Agree 33 % Neutral 28 % Disagree 39 %

Observation: The majority indicated that KM will have important impacts supporting organizational flattening. They also thought that knowledge environment and learning needs will continue to change in significant ways and will receive important support from KM.

When considering the effects of the new knowledge environments on personnel, more than half of the executives felt that it is more expensive to train new hires now than a decade ago. This may be due to several factors: lower educational levels of new hires, increased workplace requirements, it may be a combination of the two, or even other factors. Also, as indicated in (Table 2-8), the executives agreed almost unanimously that the workplace is becoming increasingly complex and that there is a need to provide employees with knowledge to fill the gap between knowledge required for the job performance and knowledge in the workforce.¹ However, these perspectives seem partially to contradict the perception that young people coming into the labor pool are less prepared than required. Only one third of the executives thought this to be the case, and another third disagreed with that statement.

Knowledge Technology and Knowledge-Based
In the future, advanced KM may in part rely on codification of knowledge and automation of expertise to bring about different and better ways of doing business. During the last decade considerable attention and efforts were devoted to creating capabilities in these areas. Some companies have used sophisticated, technical approaches to improve their competitive situations by considerable margins. We explored the executives’ thoughts on these subjects by asking if they agreed with statements that expressed different perspectives.

Two-thirds agreed that expert systems will be routinely used and that technology will help people with judgment and expert knowledge. Less agreement as found with the statement that reliance on expert systems and artificial intelligence will make the outstanding expert executive of tomorrow. The majority were undecided, one third agreed, but only 6% disagreed with that notion (Table 2-20).

The view that use of expert systems and artificial intelligence is not premature was further reinforced when executives were asked directly about this issue (Table 2-21). No one thought it premature. Also, no one stated that they were holding back to wait for others to show the way. This corresponds with the attitudes toward adopting new technology indicated in Table 2-3. However, it does not agree with the general adoption of KBS applications in any industry. A few executives thought that this technology did not apply to them. Many companies (all from Industry Group C see Figure 2-1) responded that they are not sure how to use AI and expert systems within their firms.

Table 2-20. Perspectives on knowledge automation.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Many companies (will) routinely use expert systems and other artificial intelligence applications. Knowledge bases, in which expertise is stored along with information, will become as commonplace as data bases are today. Technology will increasingly help people perform tasks requiring judgment and expert knowledge.”</td>
<td>67%</td>
<td>33%</td>
<td>0%</td>
</tr>
<tr>
<td>“Those who believe in the partnership of knowledge, understanding, and application (of artificial intelligence) and take these ideas to heart and apply them to their businesses or professions will be the outstanding expert executives of tomorrow.”</td>
<td>39%</td>
<td>55%</td>
<td>6%</td>
</tr>
<tr>
<td>(David Hertz The Expert Executive, John Wiley &amp; Sons, Inc. 1988, p. 223)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The technology for codifying and automating expert knowledge is too immature for practical use.</td>
<td>11%</td>
<td>67%</td>
<td>22%</td>
</tr>
<tr>
<td>Agree 11 %</td>
<td>Neutral 67 %</td>
<td>Disagree 22 %</td>
<td></td>
</tr>
<tr>
<td>It is too expensive to codify and automate knowledge.</td>
<td>6%</td>
<td>44%</td>
<td>50%</td>
</tr>
<tr>
<td>Agree 6 %</td>
<td>Neutral 44 %</td>
<td>Disagree 50 %</td>
<td></td>
</tr>
<tr>
<td>Automation leads to gradual loss of human expertise, flexibility, and loss of competitive leadership.</td>
<td>0 %</td>
<td>17%</td>
<td>83%</td>
</tr>
<tr>
<td>Agree 0 %</td>
<td></td>
<td>Disagree 83 %</td>
<td></td>
</tr>
</tbody>
</table>
These perspectives may be based on misunderstandings of where and how the technology applies, and may change as more companies report their experiences in a wide variety of applications. Understanding the applicability of these new knowledge technologies will also increase as more organizations report specifically on how they have automated reasoning in a wide variety of functions that previously were performed as intellectual tasks by knowledge workers. On the other hand, the optimism indicated by the executives may be misplaced since many of the firms involved are slow to adopt KBS applications and many of their information systems departments are still characterized by lack of knowledge. To this point, as reported later, most KBS applications implemented in the past have fallen into disuse after two years, primarily due to lack of expertise in the initial implementation.

Table 2-21. “Is your company presently using or planning expert systems or artificial intelligence to distribute expertise, to capture or preserve knowledge, to incorporate knowledge in products or services, or to manage knowledge in other ways?”

<table>
<thead>
<tr>
<th>Industry Group</th>
<th>Number of Executives</th>
<th>Who Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Few</td>
<td>Few</td>
<td>Many</td>
</tr>
<tr>
<td>-</td>
<td>Few</td>
<td>Many</td>
</tr>
<tr>
<td>Many</td>
<td>Few</td>
<td>-</td>
</tr>
<tr>
<td>Few</td>
<td>Many</td>
<td>Few</td>
</tr>
<tr>
<td>Many</td>
<td>Few</td>
<td>Few</td>
</tr>
</tbody>
</table>

Two-thirds of the executives indicated that their companies are active in applying expert systems and artificial intelligence. They stated that they have systems under development or in different stages of operation. Industry groups A and B include several companies who are using KBS technology actively, while Industry Group C have only a few active companies, but it is interesting to note that those appear to be farther along with more systems in full operation. This profile corresponds to other surveys and by our own experiences with a number of companies.

Observation: Two-thirds of the companies were active in knowledge automation. The executives noted that knowledge automation is important and will shortly be a standard technology. They did not consider automation of knowledge premature or too expensive, nor did they think it will have significant adverse effects. These views, however, may be too optimistic and contrary to their organizations’ actual progress.

Importance of Knowledge Management Activities

For KM to become practical, the specific activities that make it possible must be mastered and prioritized. On the executive level, the first step is to identify the issues that need CEO attention in their own opinion; that is, exploring which corporate objectives and KM activities executives would consider to improve the important issues. We explored the importance of 14 knowledge-related issues with the executives (Figure 2-3).

The executives agreed that the four highest priorities were associated with improving employees’ knowledge levels and understanding of their work. The
fifth highest priority involved cost (labor reduction) and was still considered to be important by over two-thirds of the respondents. Next, and considered important by over one-half of the executives, were the two issues associated with strategic use of knowledge and expertise -- issues number 6 and 7. Figure 2-3. Executives’ Perception of How Important It Is to Be Personally Involved in Knowledge-Related Issues.

About half of the executives thought it was important for them to be personally concerned with conceptualizing how knowledge should be used and overall integration of operations (Integrated enterprise) -- issues number 8, 9, and 10. We take that to mean that they wanted to set the general direction and purpose, but not perform the detailed conceptual design. We inquired about the executives perspectives on the importance of 30 KM activities, divided into iConventional Activitiesi and iNew and Advanced Activitiesi. We asked which of them are iImportant Nowi and which ones will be iImportant in 5 yearsi (Detailed responses to these questions are presented in Appendix C.)

When the executives considered activities to iPrepare for Management of Knowledge,i the majority felt that all conventional activities are important now. However, the majority of executives from Industry Group C often held the opposite view, i.e., many conventional activities are not yet important. For the new and advanced activities, the two activities that were considered important now by the majority included isurvey critical knowledge areasi and icreate plans for use of key knowledge.si

Observation: Executives overwhelmingly thought that it is important for them to be concerned with knowledge-related issues. They noted that it is particularly important for them to be personally concerned with improving their employees knowledge levels.

When the executives considered activities to ibuild and produce knowledge,i the majority felt that all but one of the conventional activities are important now. It is interesting that, again, the majority of executives from Industry Group C often held the opposite view (i.e., many conventional activities are not yet all that important). The activity that most executives felt could be postponed was iscribe procedures manuals. For the new and advanced activities, one-third responded that these activities are important now, with good agreement between industry groups.

When the executives considered activities to iUse and Apply Knowledge,i the majority felt that all the conventional activities are important now. Again, however, the majority of executives from Industry Group C held the opposite view. For the new and advanced activities, the majority noted that all of these activities are important already now. The advanced activity that received the highest level of agreement for immediate importance was isimplify organization and distribute responsibilities while relying on automated knowledge.si This perspective was expressed unanimously by Industry Group B but was opposed by Industry Group C, whose majority also indicated that none of the new and advanced activities were important now.

When the executives considered activities for iControl and Safeguard Knowledge,i the majority felt that all the conventional activities are important now. Again, the majority of executives from Industry Group C held the opposite view in the case of ascertaining that appropriate knowledge is used. For the new and advanced activities, more than half felt that control of knowledge is important at this time. Many also thought that to iExamine, validate, and choose appropriate knowledge was iimportant now. Most executives from Industry Group C indicated that the new and advanced activities might wait while the executives from Industry Group B thought that these activities may be
Observation: The majority of the executives considered almost all conventional KM activities to be important at this time. This view was not unanimous, however, as one industry group representing pharmaceuticals, semiconductors, manufacturing, and transportation expressed that many conventional activities are not yet important, though they will be important in the future.

Observation: The majority of the executives considered most advanced KM activities to be important sometimes in the future. This view was not uniform, however, as advanced activities for using and controlling knowledge were considered to be important already now.

Concerns of Many Executives Related to Knowledge Management

Several of the surveyed executives thought that management of knowledge is too nebulous and broad a subject to be handled meaningfully at this point. They were aware that all kinds of knowledge is used by people everywhere in their organization and in many different functions. These notions are shared by many other executives that we meet. Yet, they could see how it is possible to locate and describe important knowledge situations that require management attention and identify in practical terms the pertinent knowledge and possible management options involved. To these executives, KM is an interesting and potentially promising idea that is not yet relevant.

Not all executives considered KM to be ready for adoption at this time. Many did not think that it is necessary for them to accept the intellectual burden to learn a whole new set of concepts and perspectives that will require a substantial investment of their time. In addition, they were aware that adopting KM will also require investments of time and efforts by their managers and staff, in addition to new systems, procedures, and capital investment projects. Furthermore, as they saw it, the competitive value of all these efforts is unknown until each situation has been investigated and practical experience has been obtained.

Some executives were explicit about their concerns. Their attitudes may be characterized by the example monologue presented in Table 2-22.

Table 2-22. Monologue by a Concerned Executive.

ìSo we recognize the ëMyth of the Communication Gap.í But what can we do about it?î

ìThe problem is very complex. There are all kinds of knowledge missing on both sides of a large number of important ëCommunication Pairsí to be considered in my organization. Where do we start? And what do we do in each situation? We cannot possible make an expert system for each end of each communication pair! Or train important people in all the facets required to build the requisite knowledge to have a perfect exchange and interpretation and use of information. And many of the communication pairs should be integrated into one function and collapsed anyway -- and we know that already!î

ìI think that we should just trust our good people to continue to develop their knowledge and understanding in the way they are doing it now. They are doing a good job as it is, and our strength is in their knowledge and expertise. So go away and donít bother me with highfalutiní new ideas!î

Several executives wonder why they should be concerned with KM. Some think that they are doing an adequate job already. Others feel that they have more pressing things to do. They are not convinced that KM offers anything of competitive value, or for that matter, anything of personal value to them in
promoting their own careers. As they see it, their managers and staff have enough to do, and do not need additional tasks to perform. These executives also feel that it is difficult and perhaps of questionable value to invest in learning new concepts and perspectives and going through the paradigm shift required to internalize and integrate the new methods and procedures into their daily lives. They would prefer the issue to go away so they could continue business as usual!


The Myth of the Communication Gap recognizes that what appears as a communication gap between two people or two departments is often a knowledge gap. In these cases, lack of understanding and knowledge prevents correct information or leads to wrong interpretation and use of received information.

Executive Perspectives on Importance of Knowledge
Index