

Innovating for a New Beginning

In this chapter you will:

Learn that constant innovation is a must for the survival of an organization. Organizations and managers cannot afford to neglect investing in innovation, even during difficult periods.

Understand that innovation consists of three components: reuse of existing knowledge, invention of new knowledge, and exploitation of overall knowledge.

Realize that innovation is not limited to technology but can and should happen in all business activities, including business development, human resources, customer relations, marketing, and work processes.

Learn how to establish a culture of innovation that encourages and enables workers to innovate.

This chapter reviews the concept of innovation as a core aspect of knowledge organizations. Learning how to foster and manage innovation is one of the most important tasks of a manager in a knowledge organization, and lies at the heart of proper knowledge management. The chapter reviews methods for requiring, enabling, and encouraging innovation in your organization.

Innovation as the Essence of Knowledge Organizations

Successful knowledge organizations require a culture of continuous renewal, whether of products, technology, or methods. They need some kind of innovation in order to survive and should check their progress periodically according to whether they are meeting this goal.

In this section, we present some examples of role models known for their culture of continuous innovation. These role models, together with

the IBM example described in Chapter 3, are aimed to convince you that innovation is the essence of knowledge organizations. We will see that the innovation in these examples, while manifested mainly in their products, lies not only in technology and R&D but in all focus areas of intellectual capital (IC).

Apple Inc.

Apple Inc. has been an example of innovation for more than 30 years since its establishment in 1977. Currently Apple is one of the largest technology corporations in the world, with more than 30,000 employees and more than \$40 billion in annual sales. It has redefined its products and markets many times and in many ways, and will continue to do so.

Apple pioneered the personal computer industry with its computers in the late 1970s and revolutionized it with the Macintosh in the 1980s, the PowerBook in the early 1990s, and the iMac in the late 1990s. All the revolutions were comprehensive and successful, in performance, design, and user-friendly interface.

In the 2000s Apple entered into the sphere of consumer electronics and reinvented the market with the iPod and the iPhone; at the time of this writing, it had also just introduced the iPad. All three have been highly influential both in personal computing and in the general consumer electronics industry. A known innovator in marketing, Apple continually outdoes itself with unique advertising campaigns and special concept stores worldwide.

Intel Corporation

Intel Corporation is the world leader in semiconductors, especially microprocessors, with more than 80,000 employees worldwide and more than \$35 billion in sales.¹ Founded by Gordon Moore and Robert Noyce in 1968, the company's major breakthrough began with the dawn of the personal computing era in early 1980s.

Intel's culture of continuous innovation is inspired by Moore's Law:

Moore's Law

This law was presented in a 1965 paper by Intel co-founder Gordon Moore. It is not really a physical law, dictated by nature, but a prediction of trend: The law predicts that the number of transistors on a chip board will double every two years, thus promising exponential growth in performance and/or an exponential decrease in size.

Moore based his prediction on the evaluation of products from 10 years before 1965, and presented the conclusion that he expected it to hold for the next 10 years. His prediction is still valid now—more than 40 years later—because Intel has made Moore's Law somewhat of a self-fulfilling prediction!

Moore's Law inspired developers at Intel so much, that they have been guiding their efforts by setting an ever-increasing and ever-demanding goal to achieve. Their dedication to continuous innovation in chip design and manufacturing processes have been fulfilling Moore's Law ever since.

Rafael

Rafael is now a successful, profitable aerospace company, with sales over \$1.6 billion in Israel and worldwide.² It is a rather small company compared to world aerospace giants. Nevertheless, it has been successful over decades in developing and marketing leading products, many of which are the first and/or the best in the world in their category.

Rafael's competitive edge is built mainly on innovations in technology and system engineering. These are the fruits of knowledge management and intellectual capital built over time. In addition to technology and R&D, Rafael has innovated in many other ways. It has reinvented itself several times over the years. The last transformation occurred in 2001, when it went from being a state-subsidized R&D unit to a profitable business returning annual dividends to its shareholder (the Israeli Treasury). The process and its success have been described in Chapter 3, and culminated in 2009 with record sales, profits, a backlog of orders, and independent R&D budget.

Such transformation requires innovations in the financial governance, marketing, and work processes of a company. Combined with continuing excellence in R&D, these types of innovations at Rafael have enabled it to develop new products in record time, among other things.

Israel

Israel as a nation has become a role model of innovation, as described in the book by Senor and Singer, *Start-Up Nation*.³ They analyze how innovations in R&D, business entrepreneurship, and other fields made a great impact on what seems impossible: A small country, with no natural resources and in a continuous state of war, has more start-ups than giants like Canada, China, and the United Kingdom!

Knowledge Management as an Innovation Enabler

In today's knowledge economy, if you don't innovate, you die. The strategic race is about finding and utilizing unorthodox ideas that create the future by changing the rules of an industry; it's about redrawing boundaries between industries, and creating entirely new industries. To understand the future and create it, companies must unlearn some of their current modes of thought and develop foresight into tomorrow's markets. Companies need to focus their innovation efforts toward creating new ideas, enabling experiments to test these ideas, and implementing the promising ideas as ventures. Top management's mission therefore becomes about creating organizational structures and processes that are capable of spawning innovation.

Defining Innovation

Innovation is the opposite of conservatism (or what we refer to as more-of-the-same). Formally, it can be defined as beginning with reuse or new use of existing knowledge, adding an invention, and then creating a new product or service that exploits this invention. These three components for innovation are all connected. If one of them is not present, innovation cannot happen. The three components of innovation, further defined, can be characterized as follows:

1. Reuse and new use of knowledge is about using your competencies in new ways or in order to invent new things. It is about using them to make money by creating products or services that people want and need.
2. Invention requires creativity.
3. Exploitation is essential if you are in a profit-driven environment looking to grow your business, employee base, and shareholder revenues.

The Second Generation of Knowledge Management Is Innovation

We have already discussed the first generation of knowledge management in previous chapters: capturing, storing, and reusing existing knowledge. Projects of pioneering organizations included systems of managing knowledge like company yellow pages, experts outlining processes they are involved in, creating learning communities where employees/customers share their knowledge, creating information systems for documenting and storing knowledge, and so on. These first-generation KM initiatives were about viewing knowledge as the foremost strategic asset, measuring it,

capturing it, storing it, and protecting it. They were about treating knowledge as an asset, recognizing how it influences strategy, and wanting to make the most of it by managing it properly.

The second generation of knowledge management shifts from managing knowledge to creating new knowledge: innovation. Behind innovation lies the awareness that old knowledge becomes obsolete. Innovation focuses on shortening lead times, accelerating new product development, and creating new organizational structures that save money.

The next section demonstrates how innovation is fostered with proper knowledge management and intellectual capital.

Focal Points of Innovation

Innovation has many facets, and a knowledge organization must excel in at least one of them to survive. The most obvious of them is the introduction of new products and services, usually associated with research and development (R&D) efforts. However, as we've said before, innovation is manifested not only in R&D, but may involve every activity of the organization—processes, human resources, and so on. We can again use the Navigator framework to classify the various focus areas of innovation.

The following discussion demonstrates how organizations are innovating in the various focal points and how some organizations are excelling in more than one.

Innovation and R&D

Product innovation based on R&D is the most visible facet of innovation. All role models in this area exhibit substantial investments in R&D to achieve major product success.

3M is a very different business from the other role models we've mentioned, yet it is still a veteran example of an innovative knowledge company. It is constantly ensuring innovation by requiring that 30 percent of its sales every year come from new products. The company sets a quantitative measurement for the achievement of future innovation and, as we shall see, invests heavily in R&D to achieve it.

Investing in R&D in order to foster innovation may seem obvious, but the real test of a company's commitment to constant innovation comes during difficult times. The story of Applied Materials during the aftermath of the high-tech bubble in the early 2000s demonstrates the difficult innovation decisions a knowledge company faces in hard times:

Example: Applied Materials—The Importance of Maintaining R&D Even During Recession

Applied Materials (AMAT) is the largest supplier of products and services to the global semiconductor industry and is one of the world's leading information infrastructure providers. Its Israeli technology center was established in 1991. The center's mission is to develop control systems integrating hardware and software for the company's automated systems. The core staff includes highly experienced, professional engineers committed to market-driven innovation.

During the early 2000s, like the rest of the high-technology world, Applied Materials had to face the economic slowdown. The following is what we wrote at the end of 2001 about the situation:⁴

Dan Vilenski, then the chairman of AMAT Israel, has been proud of AMAT's success. He has credited AMAT's careful preparation during economic upturns, its continuous investment in R&D and innovation, and its commitment to its workers. When the company was financially solid, investments in R&D as a percent of sales continued to grow. And during the 1999 crisis, AMAT invested in 300-mm technology, which directly raised 2000 sales from \$6 billion to \$10 billion.

But the continuation of the economic crisis has put AMAT's commitment to R&D and its workers to a test. AMAT began by cutting significantly in its costs and expenses, initiating plant shutdowns, employee-wide pay cuts, and raising the effectiveness of inventory management. What it did not do, however, was cut its R&D expenses or lay off workers.

"We did not—nor will we—cut R&D," was Vilenski's approach. "It is important to continue to develop new products that will fuel the business when we get out of the recession." As part of this strategy, AMAT acquired Oramir, a small Israeli company whose technology complemented AMAT and was anticipated to generate additional business during any future upturn. They planned to use the recession time to integrate the culture of the two companies. And they knew that they must continue to invest in their workers, knowing they wouldn't get far without investing in the abilities of their people.

But as 2001 came to a close and the recession continued to worsen, AMAT's strategy proved difficult to maintain. As survival consider-

ations became paramount and rose to the forefront, AMAT must have asked itself: Will we be able to continue investing in the future? Is R&D a luxury we can no longer afford?

Looking back a decade later we see that AMAT Israel, even though it continued R&D investments,⁵ was forced to make some small-scale layoffs in late 2002.⁶ However, looking at global AMAT sales, we see that although they fell from the aforementioned 2000 value of \$10 billion to about \$5 billion, they rose again to the \$8 billion to \$10 billion level in 2004 and later.⁷ Part of the recovery is obviously due to the company's continuous R&D innovation.

What we see here is a real-life situation with difficult decisions. On one hand, Applied Materials acknowledged in its declared strategy for managing during the economic crisis that continuous innovation is a must for its survival in the long run. In the knowledge market in which AMAT operates, cutting costs should never be at the expense of competency R&D, and that includes continual investment in the knowledge workers who constitute it. On the other hand, it may be necessary (or at least tempting) in such hard times to view R&D and employee development as luxuries. It seems that Applied Materials generally acted according to its declared strategy: While probably doing some cutbacks, it continued investing in R&D with good results later.

Innovation and Process

There are many facets of process innovation. The following examples demonstrate two very different facets.

EXAMPLE: ELBIT—INNOVATION USING CONTINUOUS ORGANIZATIONAL CHANGES

Some companies keep themselves alert and innovative by making continuous organizational changes. This is their way of adapting to the changes in the outside business environment and to the internal structures of their departments, managers, and workers. Elbit of Israel is a distinguished example:

Elbit Organizational Changes

Elbit, a successful privately owned Israeli defense corporation (with a \$2.5 billion market value in 2010), has made the process of continuous

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organizational changes a core competence of its innovation approach. Here, they are described by Yossi Ackerman, current Elbit CEO, in a newspaper interview in 2010:⁸

He claimed that his managers do not hang paintings in their offices because they know they will not be staying there for a long enough time. The feeling was that managers changed positions and offices so quickly, and history had proved that such changes were good for the welfare of the company and its people alike.

He discussed how Elbit was making frequent organizational changes, about twice a year, in order to adapt to two important things: the market and people. His theory was that Elbit should not adapt the people to the organization but the organization to the people.

Contrary to other organizations, Elbit was making organizational changes relatively easily because it was a well-known fact of the positions there. When making a change, they would keep employees informed along the way so as to lower the fear factor; many of the employees saw the possibility of the change as an opportunity instead of a risk.

But anyone involved in a major organizational change also knows the price of such an open attitude to change in an organizational structure. It arises at the employee level as debate, excitement/fear, and rumor mills. So we don't encourage it as an overall innovation focal point for an organization.

However, for the same reason, we must appreciate Elbit's capability to make reorganizations so frequently and so effectively, without suffering from the negative effects that are usually associated with it. It is one of their unique core competencies for innovation, and Elbit's continuous success for many years proves it works for them.

EXAMPLE: WAL-MART'S SUPPLY CHAIN Wal-Mart, the largest corporation in the United States and the world's largest retailer, owes a major part of its success to innovation in processes. Its most major innovations are in terms of giving its shoppers the lowest prices—lower than they could get anywhere else.

In order to do this, it uses the most sophisticated available technology to make its supply chain, including inventory tracking and distribution

system, the most efficient and most effective. Several examples of these innovations involve:

- Pioneering the use of the universal bar code, and fully capturing and exploiting all the information behind it.
- Introducing the use of radio frequency identification technology (RFID), which enables tags on products or pallets to hold and transmit much more data than bar codes.
- Employing a private satellite network, beginning in the 1980s, connecting all its operating units with its headquarters.

Innovation and Customers

Customer innovation is a known subject: It is the essence of most marketing efforts for businesses, and marketing is included in the curricula of business courses taught in universities worldwide. Hence there is no need to elaborate on this subject here, and the following list offers just a few examples to demonstrate it. Innovations in terms of customers use existing knowledge, usually technological, for new purposes appealing to different or additional customers:

1. *Appealing to different customers.* Hewlett-Packard Development Company (HP) established itself in the 1950s and 1960s as a leader in specialized, high-end scientific instruments. It entered the much larger market of offices and homes when it invented handheld calculators in the early 1970s, and later developed as a full provider in the market of printers.
2. *Enlarging an existing customer base.* Spreading from your home country market to markets abroad is a centuries-old practice. Because of this, one may ask, why is it that going global should be considered an innovation? However, actually making it happen is not a trivial matter, and requires lots of customer knowledge and innovation to be successful. It is sufficient to mention the different results of several popular American food chains that tried to penetrate the Israeli market during the 2000s: McDonald's knew how to adapt (i.e., new use) its products to the local tastes and prospered, while Starbucks and Dunkin' Donuts failed to adjust and ended up failing miserably overall.
3. *Entirely new services.* Dell and Amazon are customer-driven companies. Dell pioneered the service of producing personal computers on demand, to exact customer specifications. Amazon reinvented the concept of convenient online purchases, beginning with books and expanding into almost everything else.

Methods for Enabling Innovation

Because the business environment in which organizations operate is dynamic, the most important threat organizations face is getting comfortable because of past successes. Paradoxically, success can be a dangerous thing. To paraphrase Andy Grove, Intel's former CEO, you need to be paranoid in order to survive, and success makes it hard to be paranoid. Success leads to complacency and self-congratulation. Renewal means that the organization houses individuals who wake up every morning with the questions, "What will I renew today?" and "What did I renew yesterday?"

But companies cannot expect innovation to happen by itself. To renew constantly, you have to adopt innovation as a core value, and you need methods to do so. Consequently, this section is about requiring innovation in the organization and how to foster it.

Making Innovation a Requirement

The following examples demonstrate various ways of encouraging continuous innovation by making it a required activity. The first example demonstrates this basic requirement:

Example: GE—Innovation as Part of the Job

In light of the importance of innovation in knowledge companies, it makes sense that successful companies treat it as an obligation rather than an option. When Tuvya visited the General Electric subsidiary in Haifa, which develops medical equipment, he found out that GE's headquarters requires the Haifa office to demonstrate a major improvement every year. Every year they must show that they either have developed a new product or made a major improvement on an existing one.

Note that this is a smart requirement. Something new is not sufficient; innovation must have enough value to be incorporated in a product.

In some of Rafael's departments we tried to include the requirement for innovation in the formal periodic review process, with some interesting results:

Example: Rafael—Innovation as Part of the Periodic Review Process

Rafael's divisions, probably like most organizations, conduct formal quarterly or semiannual reviews of their departments' activities. The late Gadi Barak, whom we have already mentioned as a division manager, decided to focus on long-term issues in these reviews (the intellectual capital) and especially innovation. He placed less emphasis on the current operational problems, because they were discussed more frequently in different forums.

He required each department to show two or three new developments during that period. The innovations could be technological or involve work processes, but what was most important was that they were not "more of the same." At that time this type of focus on innovation was not always understood by colleagues, so the implementation was only partially successful. However, it sent the important message that success is about creating something new.

Several years later Tuvya tried to incorporate similar requirements in semiannual reviews of the departments in his R&D center. This time it seemed that there was no problem implementing the idea: Most department managers and even junior section managers liked it, and were proud to present some innovations in technology or processes. However, some of them were too enthusiastic and came up with many activities that might be new but whose real value was not clear.

Adapting GE requirement into our environment, department managers have agreed that each innovation should be accompanied by some estimate of its value: Either a hard indicator, measuring its contribution in terms of dollars, possible saving in labor resources, or shortening time to market; or a soft indicator, where relevant experts may testify it creates a major improvement in quality or performance of products. After a year, we were glad to see that the innovations accumulated to something significant.

The lessons from these two examples are obvious: demand innovation and make sure it is valuable!

Fostering Strategic Discussions on Innovation

Innovation in organizations is usually not one man's show but a team effort. In Chapter 6 we discussed the social model of communities of practice

(CoPs) as a basis for creating and sharing knowledge in groups. This model claims that learning, innovation, and collaboration are social processes that occur in the formal and informal networks of people—the CoPs. The insights from that chapter apply here as well: enabling innovation is about enabling the interactions between knowledge workers that have the potential to generate new knowledge and new directions.

In this section we present some methods of organizing productive strategic discussions on innovation.

INNOVATION REQUIRES FREQUENT DISCUSSIONS How does an organization create innovation from within? In her consulting experiences, Edna realized companies have rapidly increased the rate of their strategic discussions through the years. In 1978, for example, a company's strategic planning happened every five years. It used to be a major effort, but eventually many organizations developed five-year strategic programs only to find themselves in the same place five years later—which can be frustrating.

Consequently, a few years later, the frequency went down to three, and so on. Now, once every few months, companies are asking themselves how they can renew more quickly. Actually, many companies retain the five-year strategic program, but update it annually for the next five-year period.

INNOVATION REQUIRES MULTIPLE PERSPECTIVES Although it sounds counter-intuitive, innovation can be managed. This means creating an environment that does not suffocate but encourages innovation. Managing innovation involves establishing and formalizing multiple perspectives.

One challenge of discussions among established teams is that they all know each other well and can predict what one another will say. This predictability makes innovation difficult to create. Sometimes outsiders can help a group break out of its mold. An *outsider* may be outside the organization, like a customer or a consultant. An outsider may also come from another part of an organization, or from a different age group or a different seniority, as described in the following examples.

Skandia Three-Generation Concept

In the 1990s, Skandia utilized a three-generation (3G) concept, introduced by Leif Edvinsson.⁹ Their quarterly strategic planning sessions included three generations of workers: recent college graduates, older veterans, and middle-level managers who were connected to an ongoing operation of the company.

The Israeli Military

The same 3G concept is sometimes applied in the Israeli military. Edna describes one particular discussion session as follows:

A commanding general of a large military unit brought three young officers into an important strategic discussion about R&D in the military. They were lieutenants of the lowest levels: one college graduate, one with a little experience, and one with slightly more experience. Some of the more arrogant senior officers were dismayed to see the three inexperienced lieutenants brought into the discussion. However, the facilitator made sure that each question was first addressed to the young lieutenants. By having the senior officers listen to the younger perspectives, the discussion ended up raising interesting ideas about the research process, how it is done, and how it could change.

Overall, gaining multiple perspectives includes mixing the discussion groups so that people of different ages, backgrounds, and experience bring value to the discussion, thereby creating greater opportunity for innovation.

EXAMPLE: R&D CENTER ANNUAL WORKSHOP In his R&D center at Rafael, Tuvia tries to practice what he preaches so he conducts annual strategic discussions according to the rules previously mentioned. Their main features are:

R&D Center Annual Workshops—Main Features

The Goal: Strategic Changes

The workshops are aimed at strategic innovative changes, not just incremental gains. The main theme is usually different each year, dedicated to the main challenge at the time: “Managing human resources” at a time with major outside competition on workforce; “Doing more with the same people” when the company expected major growth and wanted to do it without major recruitments; or “Being better professionals” after some technical failures. The concept of a theme is important, because we want to concentrate on a specific subject that should affect our work for at least the entire next year.

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The Participants Represent Multiple Perspectives:

Even though the core participants are the top management of the R&D center (about 14 people), we always have guests—seniors, who are usually our internal customers (project managers, corporate managers, and outside experts or facilitators) and/or juniors (middle managers of the center). The guests present their views on the theme, and some of them stay as full-time participants. Tuvya admits that even in those cases where he initially doubted their contribution, he always found later that their perspective was constructive and innovative.

Valuable Results:

The workshops really ended in some innovative suggestions, that led to “not more of the same” action items with valuable results. For example, we discovered that most of the methods for “doing more with the same people” are not just about working harder, but about using the same technological breakthroughs that coincide with “being better professionals.” Incorporating these methods both increased quality and saved recruiting about 100 people.

Tangible Encouragement of Individual Innovation

Many organizations have methods to encourage individuals to innovate. We describe some examples, with their advantages and pitfalls, next. The first example is simple, used in Rafael and some variations of it probably exist in other organizations:

Innovation Prizes at Rafael

Rafael's methods of encouraging innovation include innovation prizes, with various levels, giving public recognition (and sometimes monetary sums) for innovative achievements. They are usually given for brilliant new ideas in technology or systems.

These prizes definitely send the message that innovation is encouraged, and they do make the recipients and the organization proud. Nevertheless, there are sometimes second thoughts. Some suggest also emphasizing successful reuse, thus preventing unnecessary invention. Others suggest encouraging recognizing innovation in processes and not just in technology.

The second example is more sophisticated, taken from 3M which is a classic role model for enabling innovation. Some of its measures are described in detail in Collins and Porras's book *Built to Last*.¹⁰ We mention just one of the more famous measures here:

3M Granting Time for Innovation

The company grants each of its knowledge workers 15 percent of their time for R&D ideas. That means that they can spend 15 percent of their time on whatever they want. The idea is that if everybody does this—work on whatever interests them—it will help the accumulation of new ideas, some of which become practical products.

This enabling method supports 3M's requirement that 30 percent of its sales will be generated from new products. The 15 percent practice encourages every knowledge worker to incorporate his own knowledge into creating value for the company.

There is an important disclaimer to make. At the risk of jeopardizing the clout of our most cherished message—that knowledge organizations should and must foster innovation—we must qualify that by stating that every organization should consider what is appropriate for its character and needs. For example, 3M's idea is great—for 3M. It might also be great for another company in which development time is short and all you need is a good idea, like 3M's Post-Its.

In other organizations, however, the 15 percent idea may not be appropriate. For instance, Rafael cannot use it since new products require the interdisciplinary knowledge of many people. Some methods were suggested at Rafael to resolve what is called “formalizing the chaos”: encouraging the ideas with the best prospects out of the myriad ones that are suggested. We must admit that in retrospect the successful ones were championed by *intra-preneurs*, who had a good idea and combined it with knowledge, while convincing top management and assembling small teams to begin the work. However, it is Rafael's generally open culture—broadly based on technical excellence and innovation—that contributed most to its large number of innovations.

Conclusion

In this chapter, we shared with you our deep belief that the most challenging of all knowledge work is creating new knowledge that adds

value (simply put, going from knowledge management to innovation management).

This chapter on innovation is the last phase, and the peak, of our KM journey. However, as we have mentioned in the preface, it is a spiral road so the end just leads to a beginning.

The next chapter concludes the book by describing a road map to start you on your own KM journey, and hopefully take you through it safely.

The Magnificent 7

1. In a dynamic environment, organizations should be continuously innovating.
2. Innovation is not the exclusive territory of R&D departments. It can happen in any business activity of an organization.
3. Innovation has three components: reusing or newly using existing knowledge, creativity or invention, and exploitation to create value for customers. A balance between these elements ensures that existing knowledge is not wasted, that the organization renews, and that innovation has a business rationale.
4. Continuous innovation on the organizational level means frequent strategic discussions in which both content and processes are examined.
5. The manager should foster a culture that requires innovation.
6. The manager should instill various mechanisms that encourage and enable workers to innovate. These mechanisms are based on interactions and multiple perspectives.
7. Investment in innovation should be continuous, even during economically difficult periods.

Implementing Knowledge Management—A Step-by-Step Process

In this book you have gained a basic understanding of knowledge management (KM) and intellectual capital (IC). You have read the prerequisites and have gained an appreciation for the strategic and cultural facets of the topic. You have read about the focal points that are most relevant to your organization, and have delved into the issues that interest you most. Finally, you have learned about innovation as the final and paramount task of a knowledge-managing manager.

Now you are ready to embark on your own journey in knowledge management. But how do you begin to practice what you have learned? This Conclusion is aimed at guiding you in the first steps toward implementation.

The Basic Principles

First, no matter how you choose to begin your journey, you must always remember to practice knowledge management (1) from a strategic point of view, (2) utilizing principles of intellectual capital, and (3) with an emphasis on innovation. Beyond these three preconditions, you should attempt those knowledge management practices that you think will be most beneficial to your organization.

Second, remember that you, the manager, must be the leader of knowledge management in your organization or unit. Even if you are a senior manager of a large organization and intend to hire a chief knowledge officer, you should still take on a leadership role. If you are a manager of

a middle-size or small organization, or if you are the manager of a unit within an organization, then you should practice knowledge management yourself.

Finally, no matter who does the actual knowledge managing, KM should become an integrated and inherent part of the culture, work processes, and information technology of your organization. Just as any successful knowledge organization engages in human resources (HR) management and in research and development (R&D) management, so it should engage in knowledge management. Recognizing the primacy of intellectual capital requires that the management of this asset become an inherent part of the way the organization functions.

The remainder of this chapter provides a few guidelines for beginning your implementation of knowledge management.

How to Do It

As we highlighted in Chapter 3, knowledge management should begin with an understanding of an organization's strategy and vision and how knowledge management can contribute to their attainment. Choosing exactly where and how to begin is a crucial decision, and it should stem from a vision of the business as an intelligent organization. Ask yourself, "What does an intelligent organization look like?" Once you have this vision, begin drafting your work plan.

The Vision

If you do not work with a vision, attempts to manage knowledge are doomed to fail. These failures are disappointing and lead to disillusionment with the topic being considered. If the knowledge management interventions do not derive from an articulated vision, as well as an understanding of the contribution of KM to the bottom line, they are not worth the time and effort they consume. Clearly knowledge management should not be practiced for its own sake.

Thus, a manager should have an in-depth understanding of the organization's identity, strategy, and culture before embarking on knowledge management. Just like any other management activity, KM must contribute to an organization's core mission. Moreover, the manager's vision should be compatible with that of other key individuals in an organization so that the manager's enthusiasm for knowledge management will be shared. Gathering support and enthusiasm from like-minded colleagues significantly improves the chances of success of any managerial intervention.

Assess Your Organization

We recommend starting with some kind of an assessment of the current organizational state of affairs with regard to knowledge management. This assessment should not be overly extensive or complicated; it should merely serve to give you an indication of your starting point. If you are a senior manager, this task can be delegated to others. If you do delegate, make sure that the assessment is not overdone. Over analysis can lead to paralysis, and in this case it is not necessary. The assessment should serve as a basis for deriving goals and objectives about where you want to go relative to where you are today.

Derive Intellectual Capital Goals

An organization's strategy is the source for deriving IC goals, for which a few simple indicators should be selected to serve as guidelines. Chapter 9 outlined how you derive IC goals and indicators. This is a very important step for the following reasons.

Committing to IC goals may be an important revolution for some organizations and managers. Usually, every manager is occupied with day-to-day operations and/or financial results. Realizing the importance of IC, and making some long-term commitments, is the first step in KM after you have defined your strategy and vision.

Hence, we recommend looking at all the various Navigator focus areas (or the relevant sections in the Balanced Scorecard) and defining at least one important indicator for each of them. This is necessary to make yourself and your organization begin thinking in terms of long-term and intangible intellectual capital. To make this change in state of mind easier, you might want to begin with some indicators that are already taken care of in some way at your organization.

Here we would like to emphasize a key point: Simplicity is golden. An overabundance of indicators creates unnecessary noise. Moreover, if you are focused in your efforts and other organizational members perceive this focus, they will appreciate your seriousness. This is particularly important, as you must carefully avoid initial failures. A few wrong steps at the beginning may lead to negative results that generate cynicism and resistance from others. An important way to ensure initial success is to be focused on the most relevant and important issues when choosing your indicators.

Begin with Pilots

Once a vision and clear objectives are in place, it is time to implement a few pilots. By recruiting a few like-minded people, you can improve the

chances of success of these pilots. When there is a vision that gets people excited, they will volunteer to participate. This becomes a self-organizing process.

You can choose your pilots from the various chapters of the book according to the needs you identified and the goals you set. You may choose pilots that promote interactions, focus on capturing, learn from customers, and so on. Those pilots that succeed should be copied and repeated throughout the organization. As for unsuccessful pilots, do not be deterred. Some setbacks are inevitable.

Start Small

In this book, we have shared with you a large repertoire of examples, problems, and solutions in knowledge management. To increase the likelihood of success, we suggest that you do not attempt to implement them all at once. There are many types of knowledge management practices, but we suggest that you start with some carefully chosen projects. It is of utmost importance that you choose the appropriate methods for your organization, based on the analysis you conduct. Remember, sometimes less is more.

Begin with changes that have the following characteristics:

1. High potential contribution.
2. High likelihood of successful implementation.

If these two guidelines are followed, then you and other members of your organization will feel the impact of the changes you implement. The benefit of the knowledge management tool will be appreciated. This will happen relatively quickly because the interventions you chose to begin with had a high likelihood of success. This initial success will engender the energy to implement more KM methods and upgrade the level of knowledge management in the organization.

The paramount guideline should be simplicity. While beginning, adopt a pilot approach; do not undertake a revolution. Stick to small interventions with a high likelihood of success, otherwise you will face an insurmountable wall of resistance. The revolution will develop after accumulation of enough small successes.

Also, be sure you do not make the common mistake of equating knowledge management with knowledge capturing. This tendency is especially tempting in light of the various software vendors that offer sophisticated products that are not necessarily practical. An overemphasis on knowledge capturing often leads to oversight of the cultural issues that enable effective knowledge capturing, as described in Chapters 4 and 7.

We are not saying that knowledge capturing is not a worthwhile knowledge management activity. In fact, knowledge capturing is important for many organizations, particularly *long-tech* organizations, such as in the aerospace and pharmaceutical industries. But overemphasizing knowledge capturing processes may come at the price of knowledge creation, renewal, and innovation. Capturing is important mainly as an enabler for innovation. Chapter 10 on innovation has emphasized this point.

Who Should Do It

The initiator of knowledge management does not have to be a senior manager. He does, however, have to be an entrepreneur, a person with initiative who knows how to create a coalition and get people excited.

The Initiator

If you are a manager of a small organization or a unit within a large organization, we suggest you begin by doing it yourself, or delegate it to someone who has proximity to the subject, such as the R&D manager. What is important is that the person you recruit to initiate knowledge management should have a passion for the topic—otherwise it is doomed to fail.

If you do delegate someone to lead the knowledge management, this does not mean that you are exempt from practicing it yourself. You, the manager, should still be the leader of knowledge management implementation in your organization. The junior manager who assumes responsibility should receive your guidance, and your joint efforts should focus on attaining small successes. These initial outcomes can be used to sell the concept of knowledge management to senior management.

Chief Knowledge Officers

The CEO of a large organization should delegate the task of initiating knowledge management to a project manager and eventually appoint a permanent chief knowledge officer (CKO). The existence of a CKO has a symbolic significance to the organization. It sends the message that knowledge is an important asset that merits a manager, just like other important resources (financial, human, information, etc.). Many organizations have chosen to begin managing knowledge in this way.

Knowledge managers can rise from various backgrounds. You should identify people with enthusiasm for the subject and nurture it:

- Knowledge managers can come from a financial background, which implies that their activities would focus on measuring the knowledge of the organization.
- They can come from the information systems field, which means that they would contribute to the organization's technological position in the knowledge community.
- They can come from human resources, which would help them recruit and motivate knowledge workers to share their knowledge with others.
- Former R&D workers may focus on developing organizational memory, since they know better than anyone the price of reinventing the wheel. Former external consultants can develop knowledge products that can be sold to smaller organizations that cannot afford a full-time knowledge manager.

Summarizing, knowledge management has the potential to be practiced in a number of different ways and can rise from a variety of organizational functions. Remember to exhibit continuous and consistent support of your CKO.

Consultants

If you choose to employ management consultants, make sure you have a clear understanding of their role. Consultants are most effective when they are catalysts, sources of additional points of view and perspectives through their familiarity with many organizations, and as the coaches of the relevant people. Management consultants should not be expected to manage your knowledge for you. Since knowledge management is one of the core processes, activities, and values of the organization, it should be embedded within its work processes.

The Final Goal

Ultimately, our final goal is to help you make knowledge management an inseparable part of the organizational culture, of the work processes, and of the information systems. Successful implementation of knowledge management implies that it becomes a self-sustaining cultural aspect of your organization.

Of course, our goal has been to advocate knowledge management and provide the basic tools for its implementation. However, we would like to

sign off by emphasizing that knowledge management should be practiced carefully. The methods should not be simultaneously applied, as it is important to begin with small steps that will lead to initial successes. Building on these successes, these steps will gradually get bigger and stronger, until you are striding confidently alongside the leading knowledge-managing companies.

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Defining Key Terms

As we stated in the Preface, this book is primarily about knowledge and intellectual capital, and we have used the terms freely without asserting exact definitions. While expecting that many readers already have a good idea of the basic definitions of these terms, we want to give a bit more context so you can comprehend the terms as you read through the chapters.

Levels of Knowledge

Knowledge is composed of several components that lie on a continuum, shown in Figure A.1. Each level is defined in the following paragraphs, in order to show you how the definitions specifically apply to knowledge management.

Data and Information

Data is the raw material of knowledge management. It is at the base of the entire process. When you process this raw material—and today it is

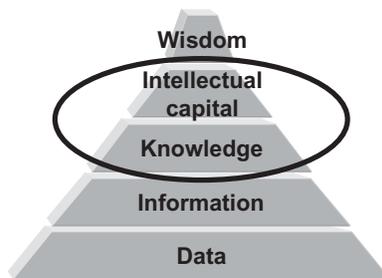


FIGURE A.1 Levels of Knowledge

possible to process it using various technological systems—it becomes *information*. Information is processed data. But the information you end up with still does not address whatever managerial problems you face.

To illustrate, think of data and information in this metaphor, regarding solving a medical problem of a patient:

The Medical Metaphor, Part I: Data and Information

A patient with a medical problem may have the data and/or information about a specific medication. The *data* about the medication is the drug's chemical composition, other characteristics discovered through its development, or some therapeutic indications. The data may be assembled as *information* in the leaflet that is packaged with the drug when you pick up your prescription.

However, neither the data nor the information (the leaflet) is usually relevant to the cure sought by the patient taking the medication. The patient simply wants to know which medication will cure his bad symptoms.

In a business environment, endless data may be assembled into abundant information about the overall status of a company, but it is not sufficient on its own to determine whether a company's management situation is bad or good, and what action to take. Coming to conclusions about the data and picking a direction to travel in to solve business issues requires additional experience and expertise.

Knowledge

To actually solve a problem backed up by data, you need to go up a level. We call this level, above data and information, *knowledge*. The existence or lack of knowledge is put to the test only through action. When there is a problem, there are those who know how to solve it and those who do not know how to solve it. They either have the knowledge or they don't.

Of course, those who have the knowledge need information to solve the problem, but the information is not enough. They need more. Solving the problem requires experience and expertise, which, when joined with the data and information, becomes knowledge. In the medical metaphor:

The Medical Metaphor, Part II: Knowledge

In our example of medication for a patient, we usually think of the physician as the one with the knowledge. Told about the symptoms and other information within the patient's medical profile, he can solve the problem and take action to suggest an appropriate medication. If the problem is complicated, the physician may consult with colleagues who can share their knowledge with him or refer him to knowledge in books or available via the Internet.

In modern times, the example becomes more sophisticated and more instructive. Nowadays the physician is not the only one with the knowledge. Intelligent patients are usually quite aware of their own body and medical history. Also, they have probably searched the Internet extensively to study their problems upon first symptoms.

So sometimes the patient may already have the knowledge to take action, and choose a specific medication in response to the problem. Other times the patient still has to seek the help of a medical professional. If the two parties are open and cooperative, their interaction will create new knowledge helpful for everyone involved, and not only in terms of that specific patient, but future patients for that doctor.

The implications for the organizational environment are many but obvious. We have already mentioned that knowledge is required to take action on the facts that data presents. This medical example demonstrates important processes of knowledge sharing, knowledge dissemination, and, most importantly, knowledge creation.

Intellectual Capital and Wisdom

But you can climb up yet another level. The next level is *intellectual capital*. Intellectual capital is the intangible asset that combines the knowledge of an organization as a whole—the knowledge the employees possess (human capital) and the ensemble of established work processes, customer knowledge, and so forth (structural capital). It complements the tangible financial capital of data and information.

In brief, we can say that it is knowledge management and intellectual capital that creates for an organization the potential for future growth, future success, and future earnings. Knowledge is the core competence of an organization that can be strategically managed for organizational success. But it is *wisdom* (the ability to identify which knowledge has the potential

to be intellectual capital) that is worth investing in and developing because there are good chances that it will generate the future's most desired outcomes.

The concept of wisdom is related to a high sensitivity in the organization to what is happening in the external environment—its opportunities and threats. The utilization of knowledge to take advantage of opportunities is what makes an organization wise. Wisdom describes an organization that renews its knowledge continuously; an organization with high intellectual capital and potential for future growth.

We conclude the medical metaphor to illustrate Intellectual Capital:

The Medication Metaphor, Part III: Intellectual Capital

In the previous medical example, intellectual capital would be associated with a medical institution, like a clinic or hospital. It obviously consists of the combined professional expertise of all its physicians, utilized for continued improvement of the medical treatment of patients (human capital). But it also entails other expertise—for example, the administrative skills and work processes of countless departments and colleagues in the efficient operation of the hospital (structural capital).

Conclusion

While this book is mainly about knowledge and intellectual capital, this Appendix aims to put various levels of knowledge into context for the reader, and also serves as an alternate approach for introducing the subject. The topics of data and information are respectable disciplines by themselves, and there is vast literature available on them if readers would like to continue their research.

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