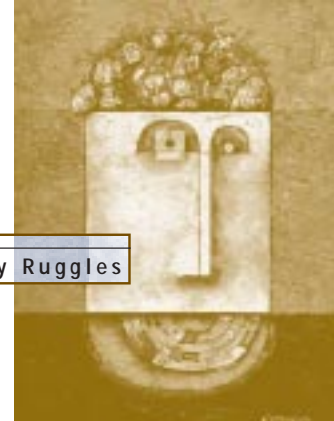


WHY KNOWLEDGE? WHY NOW?



Rudy Ruggles

About the author:

Rudy Ruggles manages the ongoing research into Organizational Knowledge Management by the Ernst & Young Center for Business Innovation.

Since 1992, the Center for Business Innovation has been at the forefront of this emerging topic. Its inquiry into effective knowledge processes, tools, and organizational structures has been pursued in cooperation with progressive firms and other leading researchers, and has yielded numerous important insights and management solutions.

Rudy recently edited *Knowledge Management Tools*, a compendium of articles published by Butterworth-Heinemann (1997). He is currently co-authoring a book designed to assist the executive embarking on a knowledge management project. Contact him at Rudy.Ruggles@ey.com.

Here's an uncontroversial thought if ever you've heard one: a firm's competitive advantage depends more than anything on its knowledge. Or, to be slightly more specific, on *what it knows*—how it *uses* what it knows—and *how fast* it can know something new.

Think about it. Product innovations are the result of a group's knowledge of unserved markets and/or new technical possibilities; efficient operations come from shared knowledge of how things work and how they could work; market share grows with better knowledge of customers and how to serve them. All of this is obvious, and if you're a business executive who's encountered competition any time in the past fifty years or so, your response might be an emphatic "so what?"

So why is it that, in three years of talking about knowledge and its role in organizations, our researchers have yet to hear that reaction? Not once has a speaker-evaluation form come back to us marked "been there, done that," or words to that effect. In fact, there is ample evidence that senior executives are just being struck with the notion that knowledge is a factor of production potentially greater than the traditional triad of land, labor, or capital.

The fact is that, while it's true that an organization's knowledge has always been critical to its competitive success, up to now it wasn't so much in need of explicit management. Yes, it was vital—so was

When was it *not* true that a firm's knowledge was the key to its competitive advantage? At first blush, that seems obvious. But just as clearly, firms up to now have not actively managed this critical asset. The new interest in knowledge management springs from the convergence of six major trends. Together, they are making it more necessary—but thankfully, also more possible—to manage what an organization knows.

The first of these trends is an accelerating rate of change in the business world. When change occurs, whether external or internal to an organization, people need new knowledge to do their work. What they knew before becomes obsolete. Of course, new learning happens naturally—up to a point. When change comes rapidly, the organization can't rely on its old, informal ways of gaining and transferring knowledge. They simply will not keep pace with the leading edge.

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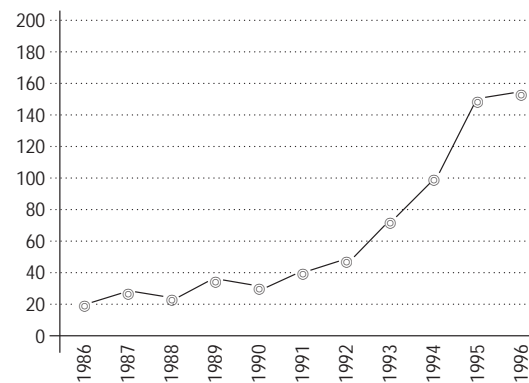
oxygen. But you no more had to manage it than you had to manage how employees breathed; knowledge flowed naturally, informally, at a level sufficient to fuel a marketplace advantage. (At least, that was the assumption.) As a result, it wasn't even a topic of discussion. Try finding many references to knowledge—or key synonyms such as insight, understanding, or judgment—in any well-regarded business text or journal in the past 25 years (always making an exception for Peter Drucker).

Things have changed. Today, the firm that leaves knowledge to its own devices puts itself in severe jeopardy. At best, this extremely valuable asset remains underleveraged, isolated in pockets of the organization, trapped in individual minds and local venues. At worst, the knowledge of executives running the firm has become obsolete, and is pushing it into a downward spiral. To avoid that fate, innovative managers in a vanguard of firms are taking positive action. Recognizing the value of knowledge, they are explicitly working to build better environments for knowledge to be created and better methods of measuring and managing its outputs.

What's Forcing the Focus on Knowledge?

When I note that things have changed, I mean specifically that six things have changed. The pace of change itself is the first. The nature of goods and services is the second. Third, the scope of the typical firm and its market. Fourth, the size and attrition rate of employee bases. Fifth, the structure of organizations.

Number of Books and Articles Published on Knowledge Management

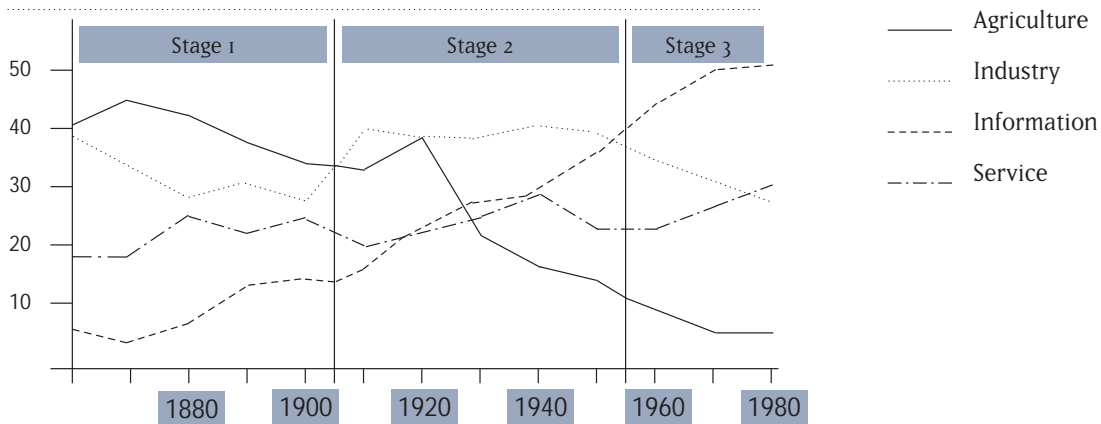


And finally, the capabilities and costs of information technology. These forces—and the numerous other wheels they set in motion—are removing any question of "why knowledge?" and sending senior management in search of *how*. A few paragraphs devoted to each will suggest their impact.

Our Accelerating World

It's become almost a cliché to talk about the accelerating pace of change in our business environment: every commentator on any business trend pays homage to it. But undeniably, today's organization seems to experience evolutionary change faster and revolutionary change more frequently. This has made it imperative for firms to manage knowledge actively.

Percentage of U.S. Labor Force in Agriculture, Industry, Information, and Services



Source: SRI International, "The Post-Industrial Society: Shift in Economic Activity Already Made," cited in Stuart Brand, *The MIT Media Lab* (Viking Penguin, New York, 1987). Reprinted with permission of SRI International, Menlo Park, California.

In a relatively stable business environment, an organization's people tend to stay put and naturally become highly knowledgeable over time. Tacitly, they absorb and socialize knowledge about the company's products and services, its markets, customers, competitors, and suppliers—and once gained, that knowledge sustains them indefinitely. Knowledge becomes embedded in the firm's routines and culture. New recruits learn from old hands purely by working alongside them, and exposure and seasoning is a far more important learning mechanism than training. In such an environment it is safe to assume that sufficient knowledge and capabilities exist in the organization, or that incremental learning occurs fast enough, to deal with contingencies. Time, logic, and experiments solve most problems.

Now, rapid change means quicker knowledge obsolescence, and a need to scale new learning curves in unnaturally compressed time frames. Every week in a typical company brings news of some emerging market, some hot technology, some unexpected form of competition—opportunities all, if only the company had the knowledge base to deal with them. Trying to keep pace, management constantly introduces internal change. New strategies, new structures, new processes, new tools—all create need for many people to learn new things at once.

Huge overhauls of knowledge bases don't happen naturally. So where they have happened, they have often brought trauma. The fastest way to change the

knowledge of an organization, after all, is to replace the people. Unfortunately, it's a stupid way, because it only means that the same type of coup will have to occur the next time major change hits the business. And meanwhile, much that was valuable in the old knowledge base—but that was captured only in organizational stories and cultural artifacts—has been lost.

Smart Products and Service Intensity

The need to manage knowledge actively becomes more obvious when what you sell is knowledge. For a research lab, a consulting firm, a software vendor not to manage knowledge would be equivalent to Wal-Mart not managing inventory, or Ford not managing production. Interestingly, though, it's not just the gurus who are selling knowledge these days. Firms from BP, which drills oil, to Senco, which makes nails, now routinely describe themselves as being "in the knowledge business."

This is because the make-up of today's products and the way in which they are delivered encapsulate an unprecedented amount of knowledge. In the extreme, this takes the form of "smart products"—things that can, for example, diagnose their own maintenance requirements or adapt to a particular owners' preference. More broadly, we are seeing a rise in R&D expense (one proxy for measuring knowledge investment) as a proportion of cost of goods sold. The price of a camcorder has fallen by about 80% in

It also becomes critical to manage knowledge more deliberately when: the products and services you sell have a greater knowledge component, as compared to the cost of the raw materials; you expand your business into other parts of the world, where much that you know now does not apply; and/or your organization has sprawled across lines of business and geography, making informal knowledge-sharing difficult. All three of these conditions are affecting sufficient numbers of firms to be characterized as major trends. There are a few others forcing managerial attention on knowledge . . .

[article abstract](#)

six years' time, yet today's models have more engineering expertise behind them than ever. Knowledge-intensity in products is also resulting from a trend toward "mass customization," which essentially builds greater knowledge of particular customers' needs into what used to be a standardized product. John Deere seeders roll efficiently off the production line, but given thousands of possible variants, each one is tailored to its individual buyer. Could anyone deny this is now a more knowledge-intensive product? (One wonders how they're going to keep them down on the farm . . .)

Finally, as firms increasingly bundle products with service in their pricing, they are increasing the knowledge component of what they sell. A seller of lighting fixtures quickly discovers that different levels of service are sought by Home Depot, Saks Fifth Avenue, and an interior design firm. The firm that is able to translate that knowledge into tailored offerings stands to increase its business with every account. And in what might otherwise be a commodity business, it will see its profit margin widened disproportionately by this knowledge component.

It's Not a Small World After All

Global integration of the economy lets more and more firms, globally run and sourced, produce more and more goods for each dollar of profit. In the US, our market share of global GDP went from 52% to 23% in just a few decades. Even though the pie has grown much bigger, our share in it is fiercely contested.

In fact, the challenges of globalization may be alerting more executives to the need for knowledge management than anything else.

As companies try to position themselves to expand within the global economy, their efforts are often stultified by clear deficiencies in knowledge. Their people simply do not know enough about how to spot global opportunities, or once an opportunity is spotted, how business is done in that part of the world. Worse yet, they may not understand the basic model by which the business succeeds, or how to replicate that success in new outposts.

The huge scope of the modern organization makes an important case for more deliberate knowledge management. Sheer numbers is one problem: at Ernst & Young, for example, a piece of intellectual capital (i.e., knowledge codified and distributed) that is important to only one-tenth of employees must still find its way into 7,000 heads! Geography brings additional challenges: if knowledge is only transferred through proximity and exposure, how long does it take for something that is known in Munich to make it to Michigan? This is the problem that inspired Hewlett-Packard's Lew Platt to say: "If only HP knew what HP knows, we could be three times more productive!"



One last point on the scope of today's organization: highly diversified or vertically integrated firms may have heightened needs for knowledge management because they do not choose to concentrate on core competencies. Where the variety of businesses and types of operations is great, the chances diminish that important knowledge will simply seep through the organization informally and naturally. As Dorothy Leonard-Barton points out, in a volatile world, core competencies can become core rigidities. It is more expedient to learn how to learn than to learn a specific subject.

Here Today, Gone Tomorrow

Even those rare firms who have not seen their knowledge needs change dramatically—who perhaps operate in mature industries or rely little on innovation—recognize an increasing need for knowledge management. This is because, while they may require the same basic knowledge base, they are typically asking a smaller number of employees to house it. Downsizing, the scourge of the nineties, is a severe strain on organizational knowledge. By removing slack from a worker's day, it makes new knowledge generation or acquisition difficult. At worst, downsizing is the intellectual capital equivalent of strip-mining, since it usually begins by early-retiring a firm's most experienced people and driving away its most talented.

Whether due to firms' disloyalty to workers or vice versa, or other forces altogether, workforce mobility is a fact of modern life. No organization can take its

knowledge base for granted—erosion occurs with every position that turns over. Recognizing this means understanding that continuous investment is necessary, and not just in the knowledge base of individuals, but in the shared knowledge base of the firm. Firms who do only the former may become exploited as training grounds: spend two years in their new management program, then cash in by taking that expertise elsewhere. Enlightened firms don't react by curtailing such development, but they do find ways to make knowledge transfer a two-way street. By setting out to manage knowledge, to represent what people know and make it accessible, they turn individual knowledge into a transferable asset.

The reduction of employee bases and growing attrition rate within them become, of course, even bigger problems when the firm does not have the luxury of stable knowledge needs, but in fact must advance rapidly in gaining new knowledge. It seems inconceivable that, without active management, a firm could hope to meet escalating knowledge needs with fluctuating—or fewer—knowledge workers.

The Coming Virtuality

Knowledge management is also being necessitated by the changing structure of organizations, and particularly the desire to integrate far-flung operations. Businesses that were once organized along geographic lines are now reorienting themselves according to markets, or products, or processes—or all of the above in complex matrices. Within

The downsizing craze has created real knowledge challenges. For firms to run “leaner and meaner” the employees who remain have to work either harder or smarter. Even firms that don’t lay off people are subject to another trend: unprecedented workforce mobility. Without a stable group of people, a knowledge base is in constant danger of erosion. Two final trends seal the case for knowledge management. The increase in “virtual” work, among far-flung teams or partnering enterprises, demands explicit knowledge-sharing. And, making it all more possible, the continuing evolution of information technology is connecting more people and information than ever before.

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organizations, people in widely dispersed locations combine efforts on “virtual” teams. At a higher level, virtual organizations are made up of complementary, allied entities. In their simplest forms, these are formerly integrated organizations which have outsourced parts of their operations. At the most abstract, there are businesses like Amazon.com, the Internet-based book store that has no physical storefronts and owns no inventory, but orchestrates promotion, selling, and delivery of over a million titles.

Any organizational structure that is not based on geography places greater demands on knowledge management. Where casual and local networks sufficed before, deliberate networks must be established. These can be formed without too much investment or top-down control; they can simply be enabled, enhanced, and allowed to self-organize. Informal communications can be augmented by creative use of multimedia technologies. The challenge is to recognize what knowledge-sharing mechanisms existed, however informally, before and need to be replaced in the new, wired world. Put another way: If the water cooler was a font of useful knowledge in the traditional firm, what constitutes a virtual one? How do we manage the need for face-time, which is essential to establishing trust, in a firm of tens of thousands? The real challenge here is to use technology in the most creative way to create the widest bandwidth for communications.

Multiplying Connections

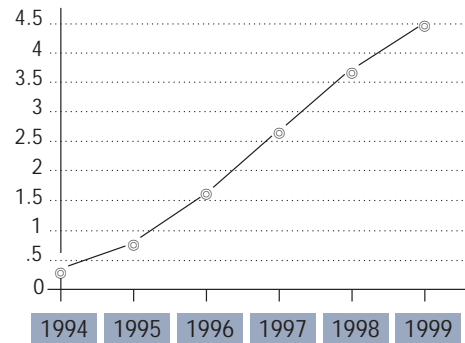
With regard to the five forces noted so far, it would be fair to say that better knowledge management is as much a driver of them as it is a resulting need. Highly dispersed operations, global expansion, continual change—none of these things would be possible if it weren’t possible to deploy knowledge formally and deliberately. What’s brought us this far has been, undeniably, the ability to capture and utilize knowledge via cheap computing.

What’s new about information technology is that it’s now transparent to the user, ubiquitous, and more capable than ever of capturing knowledge, as opposed to mere data or words. Real, interactive networks are made possible by telecommunications and technologies like groupware, and can put knowledgeable people in touch with each other who could never find one another before. And, as these technologies become richer in their means of expression (through the integration of multiple media), computers will take on an even greater role in enabling the use of knowledge as a transforming agent.

Recognition is growing that there is much to be gained through knowledge management. As well as the underlying forces outlined in this article, there are the positive examples of a vanguard of firms. Among other data points, the growing number of “CKOs” and equivalents indicates the commitment many firms are now making to a more knowledge-based future.

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Forecasted Dollars Organizations Will Spend on Knowledge Management Consulting Services



Source: DataQuest, 1996

Even Better Reasons for Managing Knowledge

The pace of change, the knowledge-intensity of goods and services, the growth in organizational scope, staff attrition, new structures, and information technology . . . All of these forces are leading executives to more formal knowledge management. There is a growing recognition of knowledge as an asset, which can be substituted for land, labor, or capital, and can be a greater force than any of those in the production of goods and services.

For those executives, however, who somehow remain untouched or unmoved by such underlying forces, there is an even more powerful argument for knowledge management: the success of the vanguard who have already taken on the challenge. Consider the team at Hoffmann-LaRoche, which worked to make the knowledge requirements of new drug approval more explicit. By substantially reducing the time to market of their next new product, they earned the company millions. Or the architects of the several initiatives underway at Hewlett-Packard, improving how knowledge is generated, captured, and transferred around the organization. Or the group at Monsanto which has constructed a knowledge base to make new and important insights instantly accessible.

Successes like these began with a recognition that knowledge management is now possible and necessary in ways it hasn't been in the past. And they are just the beginning. After all, firms have been managing, analyzing, and measuring land, labor, and capital for several hundred years. By contrast, we have only just begun to understand and analyze the workings of knowledge in organizations.

It's no wonder that most executives are struggling to understand exactly what to do with knowledge. But the few who are figuring it out are showing us the way forward. Along the way, they're making it clear why the rest of the business world is turning its attention to knowledge, and why, if your management team hasn't, it should now.