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Making a market in **knowledge**

For companies and their employees alike, knowledge is power—and profit.

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Just like people, companies in today's economy find that their primary source of competitive advantage increasingly lies in the unique proprietary knowledge they possess. Companies and individuals may have equal talent and access to public knowledge, but the special value that comes with unique understanding provides a real edge. The bond trader who is the first to understand an opportunity to arbitrage securities across two different markets can earn extraordinary returns until other traders figure out the secret. A company thoroughly familiar with how to compete in a particular geographic market—China, say—has huge advantages over competitors lacking that familiarity.

Put simply, there is great value in sharing, across a whole company, proprietary insights into customers, competitors, products, production techniques, emerging research, and the like. In practice, of course, companies find it far more difficult than do individuals to take advantage of all this knowledge. An individual's knowledge is self-contained, always available. But in companies—including small ones—it can be hard to exploit the valuable knowledge in the heads of even a few hundred employees, particularly if they are scattered in different locations. In a large, diverse company, the task expands to cover thousands of highly educated professionals and managers spread across a variety of specialties, locations, even countries.

But difficult as it may be to profit from this diffused knowledge, the power that such large-scale interaction yields can dwarf what individuals or small teams, however brilliant or effective, can accomplish.

Misguided management

Many companies have long been reasonably proficient at distributing knowledge by using technology no more advanced than the telephone and the fax machine. In the past decade, as advances in communications, software, and computers opened entirely new possibilities for sharing knowledge rapidly and efficiently, many leading companies, academics, and management consultants came to believe that the future belonged to large companies that could manage knowledge. The promise of bringing all of a company's proprietary knowledge to bear on every problem or issue it faces led executives to invest billions of dollars in what came to be called knowledge management.

Of course there was progress. But if the goal was to use a company's best proprietary knowledge to solve every problem it faced, knowledge management, as generally applied, has barely begun to fill the bill. Most companies have tried one of three approaches to managing knowledge, with mixed success. Indeed, many companies have tried all three.

1 Build it—they will use it

Some companies have relied exclusively on big investments in document-management systems, shared servers, and other technology solutions, believing this approach to be enough to let employees unlock knowledge. The result, simply, brings inefficiency. The sheer volume of documents at large companies today is overwhelming, and many such documents are out of date, poorly written, or otherwise difficult to parse. Even a diligent search by a determined knowledge seeker is likely to produce only a few valuable, easy-to-access insights.

2 Take it from the top

Companies with large corporate staffs try to push knowledge to users, often via internal Web sites. The effort can be worthwhile when the idea is, for example, to distribute top-down messages about best-practice approaches or new product features. Still, the limitations of any central-planning approach apply. Do the people writing the documents know what knowledge seekers really want, or are they guessing? Are the content producers the real experts? Do most corporate staffs even know who the experts are? The typical result: knowledge pushed out in this way is not very valuable to most frontline employees and certainly not to those with the best skills and knowledge.

3 Let a thousand Web sites bloom

A third approach has been somewhat more successful, particularly for those companies that accept decentralized technology spending. It is to let organizational units solve their own knowledge problems. What large company doesn't have pockets of a few hundred people with common interests—such as employees working in a particular product group or on a common design problem or sales professionals serving the same industry? The knowledge creators and seekers in these units usually know one another and exchange ideas easily. The units in turn use whatever technology solutions they favor in order to develop small, specialized approaches to managing knowledge. Authors earn peer recognition, motivating them to produce and share more content. Usually, a senior person in the group cares enough about the exchange to invest in the technology and staff needed to build an effective, high-quality internal Web site or portal that gives knowledge seekers easy access.

This decentralized approach works because it facilitates exchange among small groups of workers with common interests. Still, as a solution to the exchange of knowledge across a broad organization, it often produces mixed results. For every example of a small organizational unit with terrific success in sharing specialized knowledge among a narrow group of people, there are usually large numbers of outright, and often expensive, failures. The obvious flaw is that the proliferating approaches and technological tools have few common protocols or standards and typically remain useful only to small groups of workers interested in very specialized topics. For most companies, this approach will provide just a fraction of the potential benefits of exchanging knowledge on a company-wide scale.

A market problem

The truth is that the real value comes less from managing knowledge and more—a lot more—from creating and exchanging it. And the key to achieving this goal is understanding that a company's really valuable knowledge resides largely in the heads of the most talented employees. Moreover, they will be unlikely to exchange their knowledge without a fair return for the time and energy they expend in putting it into a form in which it can be exchanged. Then it must also be worth the price of seeking it.

In short, effectively exchanging knowledge on a company-wide basis is much less a technological problem than an organizational one: encouraging people who do not know each other to work together for their mutual self-interest. There is, of course, a well-known, well-tested solution to making it possible to exchange items of value among parties who don't know each other. We call it a market.

Large public markets for knowledge have long existed, of course, through books and articles and through public services such as libraries. More recently, companies such as Amazon.com, America Online, and Yahoo! have served as external markets for public knowledge. But there are no equivalent internal markets for the valuable proprietary knowledge lodged within a company's own frontline employees.

So how does a company create effective internal markets when the product is something as intangible as the valuable knowledge gained from experience and personal thinking? Working markets need, among other things, valuable objects for trading, prices, exchange mechanisms, and competition among suppliers. Often, there are also standards, protocols and regulations, and market facilitators to make markets work better.

Knowledge or information?

Effective knowledge management begins with drawing a distinction between information and knowledge, because these terms are often used interchangeably. If information is the raw material—the input—used to make decisions, knowledge is what provides the context for how people think. As people approach a traffic light that has turned red, they take in that *information* and decide to stop. They do so because they have a *knowledge* of what red, green, and yellow mean.

Companies gain a competitive advantage from information by providing the right information to the right managers at the right time. If information isn't timely, it is often useless. For most of the past several decades, corporate investments in IT provided employees with information useful to their jobs. These investments paid off, for the most part. Not so for knowledge-management investments.

In a large company, a competitive advantage from knowledge is gained through the productive internal exchange of insights that help employees think differently as they make decisions and take actions. This is a far higher bar than the one for exchanging information, because people must be persuaded by the quality of the thought, the facts, and the logic presented that the knowledge they are being asked to acquire is superior to what they already know.

Beyond personal experience, people acquire knowledge through formal training, dialogue with others, or reading, viewing, and listening to codified knowledge content. "Knowledge management" usually refers to a company's investment to improve the internal exchange of proprietary knowledge, through dialogue or codified content. McKinsey's work in building knowledge markets focuses on this latter form of knowledge exchange—particularly the electronic exchange of knowledge through codified content among managers and professional staff.¹

Knowledge by nature has a much longer shelf life than information does. Knowledge about how a competitor acts in the marketplace, for example, can be valuable to a company for years. But even the most distinctive and proprietary knowledge, such as that held by a company's best professionals, undergoes an eventual decay curve that terminates at the point where it becomes common knowledge. A professional possessing secret information on a key business issue may initially have no incentive to dilute its value by sharing it. But as others learn what once was secret, there eventually comes a point in the half-life of proprietary knowledge when it has greatest value to a company if its insights become easily and broadly available across the organization.

¹ A subject closely related to knowledge management is distance learning, which focuses on electronically assisted education and training.

A valuable object to trade

Markets will form only around items valuable enough to justify the time and effort of buyers and sellers. Common knowledge, by definition, hardly needs trading. The opportunity lies in trading distinctive knowledge (see sidebar, “Knowledge or information?”).

From a buyer’s perspective, the knowledge to be acquired from the market must be more insightful and relevant—as well as easier to find, gain access to, and assimilate—than alternative sources. Usually, knowledge available through most internal knowledge-management systems fails this test.

The trick is motivating authors to produce content that meets this standard. Almost all content produced by most companies—whether short internal memos or documents packed with charts—needs to be backed up with oral discussion. Companies must give the reader, who has no opportunity to

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talk with the expert, more insightful, more relevant, more accessible knowledge. The answer is a new internal equivalent of a signed article, in which the author is motivated to produce a high-quality document that is easily accessible to any user. Once knowledge

is in this form, it can be traded in the market. This “knowledge object” allows a “buyer” of knowledge to understand an author’s thinking without the parties having to talk to each other. The bad news for most companies is that documents generally fail to meet this standard.

Pricing knowledge

Defining the item being traded creates the conditions for pricing the exchange. Authors, who are the suppliers to the market, need something that justifies their “costs,” or effort, in return for creating the knowledge object. In internal knowledge markets, the price that authors receive is usually the enhancement of their own personal, internal reputation. Providing knowledge that catches the eye of peers and superiors and helps the author build a reputation can provide plenty of incentive. Buyers—those who seek knowledge—will have the motivation to go to the market if they believe that they will find valuable knowledge at a price, in time and effort, that is lower than, say, making numerous phone calls to locate an expert.

An exchange mechanism

The company’s role now is to provide an exchange mechanism so that authors and knowledge seekers come to the market out of mutual self-interest. Meeting this goal requires investments in a technology infrastructure and in the staff to maintain it, in order to make the exchange possible.

An internal knowledge market has special characteristics. For starters, the company is the ultimate beneficiary of the effort to form and maintain a knowledge marketplace. Therefore the company, rather than the knowledge-seeking buyer, is responsible for rewarding authors to ensure that they are motivated to produce valuable knowledge objects.

Ensuring that authors are paid appropriately for their knowledge is often the hardest part of this equation. Internal knowledge can provide an employee with a performance advantage over his or her peers. But once that knowledge is codified, others can assimilate it, thereby negating the author's advantage. The trick, therefore, is to provide incentives so that individuals who contribute their distinctive, valuable knowledge enjoy greater internal recognition and success than they would have experienced if they had kept their knowledge to themselves. Thus, the company must create a culture in which smart people are expected to contribute valuable codified knowledge. Part of this culture is a reward structure—recognition, pay, and promotion—in which distinctive performers who contribute knowledge earn more than their noncontributing peers.

This requirement also means that companies must protect individual intellectual-property rights. Those who develop knowledge—not the people they report to or those who borrow the knowledge to make presentations—must be identified and credited as the authors. This provision is important not just for equity's sake but also to provide incentives for the best thinkers, whatever their seniority or position, to produce further high-value content in the future. There is nothing more demotivating to young people seeking recognition than for some senior figure to take credit for their thinking.

Keeping up competition

Inside companies, dialogue is the preferred method for exchanging valuable proprietary knowledge. If knowledge seekers find a willing expert, they can quickly pinpoint and acquire the knowledge they need. Whether meeting with them one-on-one or in a group, the knowledge provider usually has a sense that payment will come in the form of appropriate recognition from peers and superiors.

So why can't companies rely just on dialogue? Often the expert doesn't think through the problem rigorously or convert knowledge into a form that sufficiently helps the knowledge seeker. An even larger problem is that knowledge seekers may not know how to find the right person. But the biggest problem with relying solely on dialogue is that it takes time, particularly on the part of the person with the knowledge. If topics generate



great interest, experts in a large company simply don't have the time to both do their jobs and talk to everyone interested in discussions about knowledge. By producing a knowledge object available to everyone, however, an expert is freed from that time burden. A knowledge object can at least provide a basic grounding before higher-level discussions take place.

Dialogue will always be a primary source of the knowledge exchanged in companies. But the promise of the knowledge marketplace lies in its potential to increase vastly the reach of distinctive knowledge, to the benefit of the entire company rather than just a few individuals. Since knowledge buyers can get what they need from several sources, however, a knowledge

marketplace will work only if it can deliver a satisfying product. This requirement in turn means keeping authors motivated to produce high-quality content. In practice, that stimulus will take the form of competition among authors for recognition.

All markets, including knowledge markets, thrive on competition. As with any kind of intellectual property, knowledge objects compete for attention at the level of quality and popularity. Experience shows that companies providing recognition for those who produce the highest-quality knowledge objects (as judged by experts and senior management) or the most popular ones (as measured by download volume) ensure that internal authors will be motivated to compete with each other on both dimensions.

A set of standards

The market's transaction costs—the time and effort involved in creating and seeking knowledge—must be bearable. For internal knowledge markets to pass this test, companies need to develop standards, protocols, and regulations to lower costs that act as a deterrent to both buyers and sellers. Standards can include everything from the templates used to define the content that goes into a knowledge object to the taxonomy used to define how documents are categorized so that a search process will turn up relevant content. Protocols include everything from rules determining which kinds of knowledge will be traded in the marketplace to what kind of document qualifies as a knowledge object that can be traded there. Regulations include whatever internal compliance mechanisms are put in place to reinforce these standards and protocols.

Market facilitators

To date, the bulk of corporate investment in knowledge management has gone into providing the staff to build and maintain the technology platform. But that is not enough. In a true knowledge market, people are needed to apply standards and protocols and to exercise judgment in enforcing the regulations. These people become marketplace insiders, like brokers and specialists in a stock exchange, who facilitate the market's operation through familiarity with its mechanics. They don't have to constitute a large bureaucracy; no more than two dozen facilitators are needed to run and regulate an internal knowledge market at, say, a large investment bank. The alternative—relying upon authors and knowledge seekers to follow protocols and standards and to regulate themselves—simply does not work: they lack the familiarity, the interest, or the time.

One group of market facilitators comprises the knowledge-service employees at the center of the marketplace. They can, for example, ensure that each document traded there has an attached tag to provide the information enabling the search process to be effective, as well as enough context to let readers preview a document before they download or read it. It is also helpful to have editors who, through a little dialogue with authors, are efficient at adding text to a set of exhibits in order to convert them into a knowledge object of sufficient quality.

Another group of market facilitators consists of “knowledge-domain owners.” In a large company, there can be hundreds of these domains, each representing different subsets of users with common knowledge interests. These are the kinds of decentralized units whose efforts to serve their common interests have produced the limited successes in knowledge sharing discussed earlier. Defining knowledge domains is a way of trying to replicate the conditions that have led to these decentralized successes but through

an approach that utilizes the common standards and protocols of a company-wide marketplace. The “owner” of a knowledge domain is usually a senior executive who might make specific workers from the unit respon-

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sible for content listed in the knowledge market. They determine what meets the standard as a knowledge object or what if upgraded could meet the standard. They are also responsible for stimulating the creation and codification of new content by experts who have an interest in that knowledge arena. And they usually maintain and remove obsolete content and identify any knowledge gaps that need filling.

Knowledge markets at work

The idea of rigorously applying market principles to knowledge-management activities is relatively new. As a result, there are few examples of companies that have fully adopted the concept. Among those that have, however, the potential appears to be great.

Consider the case of J. M. Huber, a large privately owned US company with three diversified business sectors. In 1995, its top management introduced an “after-action review process” to capture the lessons learned from projects and events and thus to improve its future performance. Lessons may be specific to a particular business sector when they pertain to areas such as manufacturing processes and procedures. Other lessons—for instance, those pertaining to strategy, safety, or marketing—may be useful across all three business sectors. Members of project teams conduct postproject meetings to answer three basic questions: What happened? Why did it happen? What can we do about it? At the end of the meeting, the team emerges with an action plan and a list of lessons learned to improve future performance. These findings are submitted to a common electronic-document library accessible to all employees through a portal.

Today the process has become part of Huber’s culture, and the database contains more than 8,000 reports. Why? Because managers can reach knowledge seekers interested in the same subjects while simultaneously building a reputation with colleagues in other divisions and with top management. Once the market formed, the self-interest of the knowledge creators and knowledge seekers took over. Huber’s management says that this exchange of knowledge was instrumental in improving company performance.

There is another type of situation that illustrates the appeal of knowledge markets for groups of high-talent professionals whose work is almost completely knowledge based. This type of situation can be found, for example, in the R&D units of pharmaceutical companies, in the exploration and production units of petroleum companies, in investment banks, and in professional-services organizations such as law and accounting firms.

One such firm had long used a system to share knowledge among its professional staff. As the firm undertook a rigorous effort to apply market principles to this system, content was improved and old material culled, knowledge-domain owners were named, market facilitators were introduced, and the technology platform was upgraded. Signs of productivity gains began appearing almost immediately. Within a few months, the average number of monthly downloads of documents per professional more than

doubled, from three to seven. The average number of searches per document downloaded, however, dropped from 5 to 1.2, meaning that users were now finding what they wanted with nearly every search.



A large potential

Anecdotal as this account of some of these early efforts may be, the potential for knowledge sharing and productivity gains is plainly there. Some 48 million of the 137 million workers in the United States alone can be classified as knowledge workers; a single company can employ 100,000 or more. Even small companies employing no more than a few hundred knowledge workers have the potential to create company-wide markets to facilitate the creation and exchange of knowledge. Logically, though,

the largest opportunities would appear to reside in the largest, most diverse, most geographically far-flung companies that employ significant numbers of professionals who are unlikely ever to meet—let alone to exchange relevant knowledge.

That said, the challenge of creating an effective company-wide knowledge market is daunting. It may take \$20 million to \$30 million in annual incremental spending to launch an initial-prototype knowledge market in a large company. Most of this sum would go to creating the knowledge-services staff whose members would act as market facilitators. The cost-benefit analysis for this kind of expense would face the same subjective measurement problems that executives have with efforts to assess the impact of IT expenditures. But with US companies spending trillions of dollars annually on the salaries of knowledge workers, not to mention the technology that supports them, anything that would boost their productivity by even 1 percent would justify the investment.

In practical terms, taking the first steps toward building a knowledge market requires the formation of an initial company-wide market in at least one knowledge arena. It could be strategic knowledge about the behavior of competitors, for example, or proprietary functional knowledge concerning marketing or human-resources issues.

Next comes establishing a library that has at least some high-quality knowledge objects. Without that minimum, users will not find it worth their time to go to the knowledge marketplace to search for content. The value of a knowledge marketplace depends primarily on the quantity and quality

of the content available to attract demand. Who makes use of a library with only ten poorly written books on the shelf? However, experience indicates that even as few as 750 to 1,000 high-quality documents can attract enough demand to start an effective marketplace. Usually, getting one started will involve a systemic effort to find and upgrade the best existing content in the knowledge arena, plus an effort to supply fresh content that meets the quality standard and shows the potential of scaling up. This endeavor requires top management—through visible recognition, a mandate, or both—to motivate employees with distinctive knowledge and the best communications skills to produce highly valuable showcase content voluntarily. Happily, once a vibrant knowledge market is created, it takes on a life of its own even if it starts small.

The proprietary knowledge that resides in the minds of a company's top professionals is a source of competitive advantage. An effective, efficient, company-wide knowledge market can deliver this power in ways that past efforts at knowledge management have failed to do. By creating a market mechanism for knowledge and a culture that encourages employees to share valuable knowledge with peers, companies can aggregate internal supply and demand from the many small, subscale knowledge-management systems that already exist within them. *Q*

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