Executive Insights:
Knowledge—The Source of Sustainable Competitive Advantage

ABSTRACT

Today's fast-paced business environment is characterized by chaotic markets with constantly evolving global customers, competitors, and suppliers. Product life cycles are becoming ever shorter, demanding more rapid and complex product development processes that are uniquely tuned into ever-changing customer demands. Global customers demand consistency in service and quality at globally competitive prices.

Tomorrow's winners will be determined by those few firms that create the ability to develop constant and continuous innovation and transformation. This ability will be successfully manifested by those enterprises that understand, properly harness, and exploit global learning and the use of the organization's intellectual capital.

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We are entering the "knowledge society" in which the basic economic resource is no longer capital, or natural resources, or labor, but is and will be knowledge and where knowledge workers will play a central role.

—Peter Drucker
The Post Capitalist Society

The Importance of Knowledge

In late 1996 and early 1997, a joint survey was carried out by Ernst & Young and Business Intelligence Ltd. seeking opinions on knowledge (Skyrme and Amidon 1997). Responses were received from 563 senior executives in *Fortune* 1000 firms in North America and Europe. Eighty-seven percent of the respondents reported that they worked in knowledge-intensive business.

The types of knowledge reported as "very important" or "extremely important" were:

- knowledge about customers (96%),
- knowledge about best practices/effective processes (87%),
- knowledge about our own competencies and capabilities (86%),
- knowledge about our own products and services (85%),

Submitted: February 1998
Revised March 1998

Vol. 6, No. 3, 1998, pp. 94-107
ISSN 1069-031X

- knowledge about emerging market trends (83%), and
- knowledge about competition (81%).

Five key benefits of active knowledge management were listed by more than 80% of respondents:

1. increased responsiveness to customers (83%),
2. innovation: more consistent success in designing new products/services and processes (83%),
3. efficiency: increased productivity of knowledge workers (83%),
4. improved decision making (83%), and
5. flexibility: ability to change and adapt to change more rapidly (82%).

Competition for Knowledge Workers

As global competition escalates in the years ahead, we can anticipate the growing competition for the brightest knowledge workers. Worker mobility will continue to escalate because of the changes occurring in the corporation-employee relationship. Corporations need to develop knowledge management systems that capture the intellectual capital of employees and facilitate its availability throughout the organization.

Impact of Globalization

Environmental forces have changed the competitive nature of our industries. The result has catapulted large, medium, and small firms into the global business arena. Survival and prosperity in the future will require firms to be fully knowledgeable of these forces and to learn how to respond to the challenges they present (Moran and Riesenberger 1994, p. 23).

Proactive environmental forces include the following:

- Global sourcing,
- New and evolving markets,
- Economies of scale,
- Trend toward homogeneous demand for products/services,
- Lowered global transportation costs,
- Government interaction: tariffs, nontariff barriers, customs, and taxes,
- Increased telecommunications at reduced cost, and
- Trend toward homogeneous technical standards.

Reactive environmental forces include the following:

- Increased competition from nondomestic competitors,
- Increased risks due to volatility in exchange rates,

- Trend of customers evolving from 'domestic only' to global strategies, and
- Increased pace of global technical change.

Electronic commerce capabilities are enabling customers to gather greater knowledge of the market. Customers are quickly developing mastery of suppliers of products, prices, quality, inventory, and so forth, through electronically available databases, internet technologies, and other electronic media. Corporations must continue to develop solutions to meet these rapidly evolving customer needs. We need to develop adaptive, learning organizations that can develop business processes and knowledge management systems that can override the constraints of our global organization structures.

Knowledge Types

In today's era of global competition and rapid product obsolescence, the primary value-creating capability of the firm revolves around its ability to exploit its intellectual capital.

Intellectual capital is housed in the form of two types of knowledge—explicit and tacit knowledge. *Explicit knowledge* can be defined as knowledge that can be displayed as numbers and words that can be shared easily. It includes data we compile, work processes, reports, formulas, and so forth. *Tacit knowledge* can be described as unarticulated knowledge. It is hard to formalize and difficult to express. Tacit knowledge is developed by an individual's and organization's insights, beliefs, values, and perspectives developed over time. It is our "know-how." It is the basis for our collective philosophy of how we do things. It is the foundation for how organizations make decisions and how they see the world.

Organizations must learn how these two forms of knowledge are created within their firms and how employees access and use the knowledge wisely. The rate of employee turnover and the speed of change requires us to place greater emphasis on capturing, disseminating, and reusing our precious intellectual capital assets. Access to explicit and tacit knowledge must become the foundation for our decision-making processes to enable us to excel in the new millennium.

Knowledge, unlike other assets, is not depleted when used. In fact, it actually grows when widely used within an organization.

Core Competencies

Much has been described in the recent literature of the value of focusing on core competencies for competitive advantage. Core competencies describe what organizations "know"—what they do best. A critical need is to develop processes and systems to capture, organize, and make available this knowledge to employees. Companies will need to focus not just on

"what" they know, but "how" they gain that knowledge and diffuse it throughout the enterprise.

Processes

Companies must focus on organizing around business processes and utilizing the knowledge of their workers to improve these processes. A great danger is for organizations to develop separate task teams to evaluate and analyze productivity issues. Organizational structures are a major deterrent to good processes. They create breaks in the process flow and are responsible for knowledge gaps. Holding process teams, rather than task forces, accountable for improving the processes and filling in the knowledge gaps will lead to better solutions, a feeling of ownership, and better implementation.

Caselet #1: Improving Vendor Approval Time

A *Fortune* 500 global food manufacturer was not pleased with the time it took for market companies around the world to obtain approval to use local suppliers. A second concern was ensuring the quality of the ingredients from these vendors. Using their Lotus Notes-based knowledge management system, the corporate staff was able to request and obtain copies of each local process. Representatives from each continent worked with the corporate staff to develop a consistent, global process used by all organizations. Vendor approval applications are now processed electronically through the system using one process. Approval time has been reduced from eight days to 41 minutes!

Benefits

Corporations must maximize their capability for change in an era of escalating global competition and rapidly evolving customer requirements. Knowledge management will be a key element in a company's armamentarium. An effective knowledge management system is a critical tool in the ability to innovate and outdistance competitors. It can provide the following benefits:

- Expand access to externally purchased data sources and internally generated information sources. In most companies, purchased databases reside within departments or libraries.
- Electronic availability on an enterprise-wide basis enables remote knowledge workers (in subsidiaries away from corporate headquarters) to access the information; this eliminates duplicate data purchases.
- Allow access to the Internet to enable access to customers and suppliers through electronic mail and to enable access to global data sources and the home pages of competitors and important associations.

- Identify potential new markets through knowledge of market dynamics.
- Improve the efficiency of key business processes by side-stepping the artificial barriers that corporate organizational structures create.
- Reduce costs by enabling workers to have access to the most current, correct information.
- Improve product development and manufacturing cycles by enabling workers to have access to best practices in other locations within the company.
- Embrace innovation and best practices by allowing knowledge workers with similar accountabilities to exchange ideas and experiences on a direct basis without the hinderings of organizational structure.

Caselet #2: Value of Competitive Intelligence

A leading global pharmaceutical firm was in licensing negotiation for a new therapeutic compound from a smaller firm. The rights were for the North American market. This smaller firm had licensed the compound to another firm for marketing in Europe, and sales in Europe were growing but appeared to be slowing down. The leading firm's corporate research and development (R&D) competitive intelligence group searched on-line literature databases and contacted European medical and regulatory personnel using their knowledge management system. Information came back that physicians were beginning to observe certain side effects not originally detected during preapproval clinical trials. Negotiations were terminated.

Caselet #3: Reducing Number of Global Suppliers

A leading worldwide manufacturer conducted extensive marketing research for its new products in all major markets around the world. Summaries of these study results, as well as supplier names and costs, were made available on the company's knowledge sharing system. In-country product managers and corporate marketing analyzed the quality, costs, and overlapping of studies. Input from around the globe resulted in a radically changed business practice that resulted in improved quality, elimination of duplication, reduction in the number of suppliers from 160 to approximately 20, global sharing of study results, and a significant reduction of cost.

The technological challenges to design and develop a knowledge management system are significant. A greater challenge is determining how to collect and share the organization's knowledge within its unique cultural environment.

If people have been successful and have gotten ahead by keeping knowledge to themselves, the corporation is in for a difficult time convincing them that "sharing" is the new key for personal and corporate success. Real learning and innovation occur only at the individual and team levels. Senior management cannot simply dictate that this will occur.

Cross-cultural knowledge management systems among global marketing organizations must take into account learning techniques in various cultures. A common requirement for global knowledge management systems will be that they effectively relate to employees who have been socialized in a different cultural environment and whose customs, values, lifestyles, beliefs, management practices, and other important aspects of their personal and professional lives are different (Moran and Riesenberger 1994, p. 251).

Senior management must lead the knowledge process. They must start by example. They must endorse, participate, and lead in the development of individual and team-based learning. They must recognize and reward learning behaviors before the entire organization. They must pay special attention to the unique ways in which people learn. They must also recognize and adapt the system to the culturally correct process within different geographic environments.

Caselet #4: Failure Due to Corporate Culture

A leading multinational firm developed and installed a knowledge management system in 16 countries with more than 300 users. Users were pleased with the sales and process improvements they experienced by the ability to access key secondary sources of data and the ability to exchange ideas with colleagues. The management style of the company exhibited a moderate degree of central control and a moderate degree of local autonomy. The firm merged with a firm from another continent with a very strong decentralist style. The system was abandoned, even though good quantified measures of success were evident. It was generally concluded that the system was discontinued because local general managers viewed it as a threat to their control.

New Skill Sets

Effective leaders in the new millennium will need to become better global team players—better collaborators. They will need to excel at interpersonal skills. They must have a mindset with a burning desire to share—to give away—all the knowledge they possess. At the same time, they must be obsessed with a passion for continuous learning and attention to process improvement. They must become change agents for the enterprise. Corporate organizational structures are hopelessly obsolete and pose significant obstacles for a knowledge exchange-driven enterprise. The command and control structures of both centralized and decentralized structures inherently impair transdivisional teaming and free knowledge-flow philosophies.

The New Worker

The shift to a knowledge-driven organization will require a new type of worker. Our schools today do not adequately prepare students to contribute in a knowledge-based society. Traditional schools prepare students to follow the teacher's orders, memorize, and regurgitate. They are taught to be "users" of information prepared by others. They are not schooled in the need for today's worker to be a "user" and "creator" of knowledge. They are not instructed on the importance of developing knowledge and how to use it as a member of a team focused on improving business processes to add value to the organization. Employees must learn from one another and pass along the knowledge they have gained.

Implementation Guidelines

A knowledge management system is similar to other innovative projects in terms of planning for successful implementation and usage. Key steps include:

Determine the business imperative. Clarification and agreement on the key strategic driver for such a project must be established with senior management.

Identify a project champion. Endorsement and support from a very senior executive is essential to support the change process that will evolve.

Define the scope of the system. Start small. Clearly identify the user groups, types of services, and expectations in advance, and gain consensus.

Establish the needs and goals. Conduct an internal market research survey to develop the specific needs of the user community and establish their contributions to the system.

Address cultural issues. Information is power. Changing a corporate culture to encourage the sharing of information must be addressed. Organizational structure issues must be reviewed. Creating understanding and support from management with the acceptance that information will now flow among knowledge workers

in different units, without first flowing through management, must be addressed.

Information technology architecture (*IT*). Partnering with IT is essential. Care must be taken to optimize the flow of information in a manner that meets user needs—not IT desires.

Roll-out. A roll-out plan needs to be developed that meets the needs of user groups, information technology capabilities, and the knowledge management team's capabilities.

Training. Training materials must be designed with the least knowledgeable and accessible user in mind. English may be a second language competency for many users. Training materials need to be user-friendly and field tested at remote sites to ensure maximum benefit during implementation.

Marketing System

Marketing organizations serve as corporate links between customers and their organization's manufacturing and R&D operations. Global and local customers continue to demand ever-increasing requirements for quality, price economy, service, and more rapid new product development. New product introductions in subsidiaries around the world can benefit from knowledge management systems that address the needs of best marketing practices and stimulate cross-subsidiary learning through access to information and knowledge exchange among employees.

Marketing groups must identify carefully the specific business imperative and one or two focused goals or objectives they plan to achieve. Financial and nonfinancial measurement indices must be established and monitored to ensure value creation. Senior management sponsorship and utilization of the system are essential for success. Information technology solutions must be easy to use and architecturally compliant. Senior management must be comfortable with a team-based approach that requires knowledge sharing across organizational boundaries.

Marketing/IT partnerships are increasingly moving to corporate intranets to provide a low-cost, high-security means to link marketing knowledge workers around the world. Various technologies (e.g., Lotus Notes, custom software, purchased packages) are used within the system and combined and distributed through the intranet. The user easily accesses each module of the system without having to master the uniqueness of each technology.

Because each marketing organization and corporation have different needs and different cultures, the approach and components of their knowledge systems will vary. Care should be

taken to include both explicit and tacit knowledge components. Some examples of modules that are frequently seen in marketing knowledge management systems used to link global marketing organizations with subsidiary marketing organizations include:

Internal sales performance. Enables real-time access to marketers to observe the performance of key product sales in different countries.

Competitive market share performance. Databases are available in many industries that track audited market share performance of a company's products and those of its key competitors. Sharing these data across borders will allow marketers to identify high performers and encourage them to ask what "best practices" are responsible for their success.

New product development and patent databases. Selected industries have suppliers that generate these types of databases. The information, if purchased, is traditionally bought and available only to corporate marketing staffs.

Competitive company profile databases. Commercially available databases with comprehensive reviews of competitor companies can receive enterprise distribution using intranet capabilities. This information can be helpful to all units accountable for licensing and merger activities.

Internet home page access. Knowledge modules can be established to link the intranet to carefully selected and programmed Internet home pages. These would include key societies, competitors, organizations, and information sources. Users open the module, set a "topic" or "product," and point and click from the preselected list of key external internet data sources. The preprogramming takes the user directly to the home page without the user requiring a knowledge of how to use search engines or knowing which sites will yield the information needed.

Knowledge exchange network. The development of "chat box" capabilities enables tacit knowledge exchange among product managers around the globe. Lotus Notes is the principle technology used for this purpose. This feature enables a product manager to ask all his or her peers around the globe a question on a new product's promotional plan/performance and obtain responses within minutes from those on-line at the time. New products are not routinely launched in all markets at the same time. Early market experiences can be easily transferred to markets that are preparing for launch.

Product marketing plans. A global, on-line database of all product plans in all countries can be established and made available for knowledge sharing.

Best processes. Key corporate processes and best subsidiary processes can be stored in a central on-line repository for continuous learning and process improvement in all geographic locations.

Market research studies. Corporate and local market research study design and results can be made globally available the day the findings are completed.

Advertising and promotional material database. Most global strategies for advertising and promotion allow some flexibility to meet local regulatory and cultural requirements. A global on-line database of all samples can assist in creating best ideas in other locations.

Conventions and exhibits. Global inventory of local, regional, and worldwide exhibit schedules can be made available.

Key personnel directory. An up-to-date personnel directory for all geographic locations will save untold hours of searching for the right person to contact.

News wire services. Marketing intelligence news wire services for tracking stories on issues, products, or companies are now available for enterprise-wide electronic usage.

NOTE: In most cases, utilization of external data sources on an expanded or enterprise-wide intranet requires negotiation with the supplying vendor. Additional fees are usually charged for greater distribution of the data within an organization.

Caselet #5: Improving Market Share

A major multinational manufacturer maintained a knowledge sharing system that tracked subsidiary key product sales and audited market share data. The United Kingdom product manager observed that his counterpart's market share in Australia was nearly double his. Through discussion on the system's "chat box," it was discovered that Australia was investing a significantly higher share of advertising promotion in trade journals and personal selling time to one key class of customers. Refocusing of promotional efforts in the United Kingdom has resulted in an accelerated increase in market share.

Caselet #6: Sales Promotion/Selling Feature

Sales of a major pharmaceutical product were slow in Japan, whereas market share was nearly double in France. Sales in other countries fell between these two extremes. Review of each country's marketing plan and promotional emphasis, contained in the company's knowledge management system, revealed a slightly different sales approach in France. France was stressing the compound's rapid onset of action to a higher degree than other subsidiaries. Refocus of effort to emphasize the product's rapid onset resulted in greater-than-expected increases in monthly sales.

Measurement

The creation of a knowledge management system must be directly linked to a strategically important business imperative. This business imperative must be fully endorsed and supported by senior management. Both financial and nonfinancial results must be measured and reported.

Traditional accounting practices impair the ability to properly assess the value of knowledge assets. Recent work emphasizing the "balance scorecard" approach to valuation has attempted to recognize and quantify the benefits of knowledge management. Its emphasis on monitoring (1) customer needs, (2) innovation and learning, (3) internal process, and (4) financial performance enables this management tool to link strategic goals into objectives that are measurable.

Caselet #7: Reduced Time to Prototype Testing

Time to market from concept to completed product is a key determinant in today's competitive environment. The task is even more complex when prototypes must be tested in multiple countries. The time from concept to first prototype usage is a critical component of this process. A major global pharmaceutical firm has successfully reduced the time to "first human dose" from 866 days to just 379 days in the last five years. This was achieved by knowledge sharing around the globe to improve the process by eliminating and simplifying certain steps and by conducting others in parallel rather than in sequence.

Information Technology Partnership

The ideal knowledge management system should be developed with an early partnership between marketing and information technology. The IT team needs to understand fully the business imperative and goals, and it must advise the marketing team of the feasibility, costs, and timelines of the project. Developing objectives and costs early is necessary to

ensure meeting customer expectations. Some potential desires may be postponed if they are either technologically too complex or cost prohibitive. The following are essential steps in the development process:

Create a partnership early. Bring the IT team into the initial discussion.

Communicate the business imperatives, goals, and objectives. IT needs to prioritize the project and needs a clear vision of what is expected.

IT architecture/platform. IT can best advise what technologies to use and their costs if it is involved in all discussions of needs early in the process. The knowledge management system needs to be consistent with the company's IT architecture.

Intranet/Internet. IT can provide advice on the current and planned functionality of these two technologies within the corporation.

Suppliers of data. IT can quickly evaluate which databases are potentially compatible with the technological solution chosen for a knowledge management system. Some databases may be available in multiple formats (i.e., CD-ROM, Lotus Notes, HTML, etc.), and it can advise on the best format to use.

Users of data. IT can advise you on the feasibility of connecting remote users to the system. This will influence your target audience and roll-out plans.

Home page. IT can best advise your team on the creation of intranet and Internet home pages.

Budget. Maintenance and enhancement budgets need to be as carefully developed as the initial development budget. This includes the IT costs for headcount, programming, IT overhead, remote site IT charges, and software licensing fees.

Security. Security requirements must be identified early in the project design phase. This will influence the software selection and may influence the ability to achieve certain goals within the project.

Validation/testing. Appropriate time must be allocated for proper testing and validation of the system prior to roll-out. Sufficient time for correcting budgets and other technological problems must be included in the plan.

Outsourcing. IT and the business team should discuss the benefits and drawbacks to outsourcing some or all of the IT development and maintenance of the system.

Developing the Budget

Teams developing knowledge management systems frequently underestimate the costs for development, maintenance (both business and IT), data purchases, and enhancements.

The greatest influencers of cost changes for development are evolving changes in the business requirements. Planners need to be firm in establishing a cut-off date when no new requirements will be considered for the initial roll-out of the project.

Database suppliers routinely charge extra for network versions of their products and usually charge additional fees as either the number of locations or users increase. Software license purchases and annual software maintenance fees are frequently neglected in budget planning. Training and travel expenses must be carefully calculated as well as any costs for training materials preparation.

IT hardware purchase, depreciation, and maintenance costs at all remote locations need careful evaluation. All central IT costs for support must also be calculated and agreed upon by the chief information officer before development begins.

All IT systems require maintenance and enhancements. Knowledge management systems require both a business team component as well as an IT team. Senior management must be presented with a long-range plan for the total costs of the system for five years.

Clear direction must be received prior to project initiation on who will be financially responsible for each component of the project during the next several years, and proper budget allocations need to be reserved in both annual and long-term budgets. Failure to do this is a leading cause for system abandonment after one or two years of operation. Measurement of value and return on investment must be reviewed at least annually with customers to ensure continued operation.

Key Success Factors

It is probably safe to say that a significant number of knowledge management systems in operation today have made only a modest impact on the success of their organizations. The key determinant of success is the ability to document that the system generates significant *business value*, as defined by senior management.

Developers of knowledge management systems need to properly address each of the following key success factors:

- Direct link to a key strategic business imperative.
- Focus on one or two strategic priorities or objectives.
- Senior management endorsement and participation.
- A corporate culture focused on learning and on knowledge sharing.

- Information technology partnership that adapts to worker requirements and competencies.
- Financial and nonfinancial measurement tools that identify value creation by the system.
- Emphasis on the benefits of a team-based process organization versus traditional organization structural impairments.
- Recognition and reward systems to acknowledge and support the benefits of system utilization.

Knowledge Management's Future

As we enter the new millennium, the evolution and degree of utilization of knowledge management systems within individual corporations will play a key role in their success or failure. People and corporate culture will play a more critical role than new information technology advances in that success. Corporations need to understand and develop a culture of "knowledge sharing." Employees must evolve from users of information to "users and contributors" of knowledge. Measurement systems must be developed that clearly document knowledge management systems' abilities to increase revenue, decrease costs, and improve best practices on a global basis. Corporations must take active measures to become learning organizations, including training employees and hiring only new employees with the proper attitudes toward teamwork and sharing. Senior management must not only become champions of knowledge management but must also become routine contributors and users of the system.

The Author

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