

CORPORATE KNOWLEDGE MANAGEMENT VIA INTRANET-BASED GLOBAL TECHNOLOGY WEB

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ABSTRACT

Knowledge Management has become increasingly more important as business leaders began to recognize that information, like land, labor, capital and energy, was an extremely important factor in production. As developing countries continue to shift toward “knowledge-based” economies and information technology (IT) radically changes the economic, social and organizational structures of organizations, the management of knowledge has become an important strategic business decision. IT alone cannot define an organization’s KM initiative, being merely an enabler. Several key IT infrastructure components that can be used to support KM. These may include: local area networks/wide area networks (LAN/WAN), user interfaces, messaging services, electronic knowledge repositories, and various IT applications. The key IT component that pulls this all together in a KM initiative is the corporate Intranet. This paper examines the basic concepts involved in knowledge management, the design and development of corporate Intranets, and the application of Intranet technology to KM initiatives.

Keywords: Corporate webs, intranets, knowledge management, knowledge transfer.

INTRODUCTION

As economists began to recognize that information was just as much a factor in production as traditional resources like land, labor, capital and energy, the management of intellectual capital became an important stewardship issue (7; 9). The intellectual capital movement recognized the importance of knowledge as attempted to gather, quantify, and measure it. Although the latter has proved to be quite difficult and relatively little progress was made in this direction, this movement was successful in raising the general awareness of the importance of managing an organization’s information and knowledge (7). The pursuit of KM is even greater outside the United States. Thirty-six percent of firms headquartered outside the United States had programs in existence while another 37% planned to roll them out in the near future (15). Typically, about three-fourths of companies’ market value stems from intangible assets, of which intellectual capital—patents, copyrights, trade secrets, financial records, strategies, relationships—the know-how of the organization, form the majority (6). Investors and analysts are also acknowledging the importance of managing knowledge, specifically looking for the existence of KM systems when analyzing a company’s worth and its stock value. The results of KM initiatives are often spectacular as illustrated:

- Chevron saved \$650 million plus since 1991 by sharing best practices among managers in charge of energy use at its oil refineries (4).
- Texas Instruments saved more than \$1 billion by disseminating best practices throughout its 13 semiconductor plants (4).

While knowledge is an interdisciplinary field that incorporates many disciplines: philosophy (especially epistemology and ontology), economics, management science, library

science, psychology, sociology, and more recently, information science, this paper deals primarily with organizational aspects of KM (4). Organizational KM involves:

- Step 1: The creation of *repositories of information* about best practices, organizational knowledge, and personnel directories of expertise.
- Step 2: The setting up *networks for transferring information* between employees who interact with customers, create products, or deliver services.
- Step 3: The creation of formal *KM procedures* to ensure that lessons learned in the course of a project or daily business are passed along to others doing similar tasks.

KNOWLEDGE MANAGEMENT IN ORGANIZATIONS

The cognitive sciences describe the formation of knowledge as the transformation of data into information, information into knowledge, and ultimately knowledge into wisdom. Data is the foundation and most basic level of these four categories. Next, information is transformed into knowledge when it is combined with context and experience. Context is provided by an individual's framework for viewing life. This framework includes influences like social values, religion, cultural heritage, personality, educational background, and gender as well as experiences (10).

Information and knowledge can also be understood through an application of classic communication theory. Here, information is that which *informs* another party, i.e., a message sent between a sender and a receiver. Knowledge is that which is known, requiring that one party internalizes the message that has been received through the process of informing. This internalization involves giving meaning and context to the information through structuring and classification. Wisdom is the most abstract of the four categories. Wisdom is essentially the application of knowledge in decision-making with the ability to judge correctly and follow the best course of action based on knowledge and understanding. It is demonstrated through action and gained by observation and application.

For KM to work, an organization must manage each of the four interconnected categories: data, information, knowledge, and wisdom. Each category must be managed along with the value-adding transformation processes that link them. Collaborative systems, storage mediums, and methodologies for knowledge-level activities are critical for KM. Wisdom management are used for quickly reacting to unforeseen business conditions, predicting future developments, and forecasting the results of present day decision-making (11).

Knowledge Management Strategies

Generally, KM strategies often take on either a technology-centered or people-centered approach. People who have been educated in computer science and/or information science typically approach KM through the management of technology, viewing knowledge as an object that can be identified and handled in these systems (10). Individuals who take the people-centered approach to KM typically have backgrounds in philosophy, psychology, sociology, and/or business management. Knowledge is a process supporting a complex set of dynamic skills and know-how that is constantly changing and being adaptive (10).

At the same time, consulting firms typically employ one of two distinct KM, a codification versus a personalization strategy. Codification strategies focus on using computer

systems to codify and store knowledge in electronic repositories (e.g. databases and electronic document management systems) available easily accessible to the appropriate individuals within a company for use, modification and reuse (5).

In a personalization strategy, knowledge is “closely tied to the person who developed it and is shared mainly through direct person-to-person contacts” (5). Here, computers are used to communicate knowledge, not to store it. Personalization strategies focus on generating dialogue between individuals, thus requiring the use of voice mail, e-mail, and video conferencing. Expertise directories and “people finder” databases are often developed to facilitate the interaction between individuals that is needed for the transfer of knowledge to occur. Brainstorming sessions and one-on-one conversations are used to transfer knowledge that has not, and probably could not be codified and placed in a computer system. This type of strategy is used to develop networks for linking people so that tacit knowledge can be shared (5). Personalization strategies may slow the process of the transfer of knowledge and increase costs but “expert economics” allow the company to charge higher prices for the highly customized services and products.

Complex organizations (especially ones with multiple business units) find that they require a mix of the two strategies with an emphasis placed on one over the other. Whatever the mix, an organization must take care to ensure that the correct strategy is being used to support the right types of products, markets, and knowledge. Products, markets, and knowledge mature over time and become commodities. Therefore, the KM strategy used in connection with these elements must also change with time as well. Lastly, an organization’s KM strategy be related to its business strategy since an organization’s competitive strategy must be clearly linked to its intellectual resources, technologies, capabilities and processes (16).

One of the primary requirements of KM is an environment in which knowledge is freely shared and collaboration is encouraged. However, organizations do not possess truly collaborative cultures since historically, corporate culture has not rewarded knowledge sharing. A brief review of several basic strategies for promoting knowledge sharing is mentioned below (Delio 1998):

1. *Incentives for Sharing*: To promote knowledge sharing, tangible incentives such as financial rewards, career advancement, and corporate recognition, should be tied to measurable knowledge-sharing metrics.
2. *Spotlight Team Players*: Companies should promote the link between developing an expert reputation and sharing knowledge.
3. *Open Access*: Information should be easily accessible from, and added to, the knowledge repositories of an organization to promote collaboration and innovation.
4. *Demonstrate Value*: The employees within an organization need to quickly see both the individual and group value of shared knowledge.
5. *Management Support*: In addition to modeling knowledge sharing, management should also personally track individual participation and reward their employees accordingly. To promote collaboration, managers need to learn to be mentors more than bosses.
6. *Supporting Technology*: An organization should examine how its employees work and then give them the tools required to do their work more easily. These tools must be easy to use, intuitive, and addictive.

KNOWLEDGE MANAGEMENT AND INTRANETS

The connection between KM and corporate Intranets is a logical and natural one. Intranets grew in popularity in the last half of the 1990s as corporations began realizing that Internet technology could be used within their local area networks (LANs) and wide area networks (WANs) to link their organizations together by using Internet conventions for data display and access. By using Internet technology, systems can simultaneously provide both richness and reach.

Intranet-based information systems do not require the complexity of the old centralized systems because these systems support distributed information authoring, publishing and management (12). Intranet systems can be used as a key technology enabler for KM initiatives. At a basic level, Intranets save time by enabling companies to distribute valuable periodic information to employees such as company news releases, training schedules, internal job postings, and corporate events. Employee handbooks, policy manuals, standard operating procedures, and benefits information can also be placed on the Intranet economically.

The best way “to manage an Intranet may be to have an internal vanguard team that functions as consultants and advisors to the rest of the organization on web technology (1). This team should be a cross-discipline team assembled from individuals with an understanding of information technology and business processes. The responsibilities of this team include:

- Promoting the use of web technology within the organization
- Consulting employees on the use of web technology
- Developing standards and templates for web design to promote interface
- Researching and developing content publishing and maintenance tools to provide automated content publishing and end user publishing processes
- Collecting feedback from end users (e.g. needs analysis and current application efficiency)
- Defining organizational web tools and software standards
- Advising departments on innovative web technology applications to meet KM needs
- Providing technical expertise for developing more advanced components and applications (e.g. search tools, menu systems, personalization services, and web database development)
- Analyzing the use and effectiveness of implemented web applications

Codification approaches to KM require even greater investments in Information Technology (IT), a key component of any modern KM initiative. While IT alone cannot define an organization’s KM initiative, it is an enabler. Several key IT infrastructure components can be used to support KM, including local area networks/wide area networks (LAN/WAN), user interfaces, messaging services, electronic knowledge repositories, and various IT applications. The Intranet is an ideal tool for sharing, linking, and disseminating knowledge throughout an organization. Therefore the design and implementation of web system development procedures, and the strategic application of web technology is critical to KM. A brief review of the core IT infrastructure components used in KM follows.

1. *LAN/WAN Networks:* An internal network, either a local area network (LAN) or wide area network (WAN) is typically required to “host” a corporate Intranet. These networks are built by physically connecting computers with cables, hubs AND routers.
2. *User Interface:* The user interface (UI) is the consistent cross-application operating environment in which the user sees and interacts with the knowledge components of an organization. When end users are required to learn different interfaces for each of the various applications used, productivity and satisfaction decreases. Today, most user interfaces are graphically based (e.g. Microsoft Windows) with web browsers such as Microsoft Internet Explorer and Netscape Navigator.
3. *Messaging Architecture:* The messaging architecture serves as the infrastructure for communication and information sharing among the employees of an organization. A messaging architecture provides the foundation for e-mail, collaborative activities, workflow applications, group scheduling, bulletin boards/discussion webs, and application programming interfaces (APIs).
4. *Knowledge Repositories:* Knowledge repositories hold the data, information, and knowledge of a firm; i.e., discrete data elements, e-mails, images, electronic forms, web pages, documents, voice messages, and video.
5. *Development Environment:* An integrated development environment should be used to support the development of end user solutions built with the IT component services mentioned above. End user solutions should be designed to seamlessly integrate the various knowledge repositories and messaging architecture components found within an organization.
6. *Applications:* Several generic, collaborative IT applications are usually included in an effective KM environment, including e-mail, group scheduling, threaded discussions/electronic bulletin boards, e-forms, workflow applications, knowledge directories/catalogs and electronic document management systems.

The Knowledge Life Cycle

A corporate intranet should address the various stages of the knowledge life cycle; i.e.: creation, capture, classification, valuation, access, use, improvement, and retirement. The knowledge life cycle usually progresses through all or most of these stages with different individuals throughout the organization participating in each step (2). However, if these stages are not managed effectively since missing or inconsistently captured knowledge cannot be valued, accessed or used within an organization. Workers must be given simple KM support mechanisms and processes that allow them to capture and use knowledge easily.

One way that the consistent classification of knowledge within an organization can be promoted is through the use of a controlled vocabulary or taxonomy. This vocabulary is a fundamental component used by organizations to organize knowledge and facilitate accessibility. The metadata terms identified in a controlled vocabulary are used to tag knowledge components for future retrieval and analysis. The controlled vocabulary should be reassessed and updated on a regular basis under controlled conditions, using the analysis of the usage of search engines and change requests initiated by knowledge users.

A knowledge directory or catalog can be established based on the terms identified in the controlled vocabulary. This directory will provide the users of the KM system with a powerful tool for building search queries based on combinations of the various terms located in the

directory. By using the descriptors located in the knowledge directory, user can quickly narrow their searches to the most relevant knowledge. Users can also browse through collections of knowledge components within a controlled vocabulary category.

Content-based index searches can also be used to aid accessibility. Content-based index searches “construct a content-based index based on all of the words actually contained within the knowledge components themselves. The end user can specify a word or combination of words in which he or she is interested, and the search engine retrieves all components that contain the desired word or combination of words” (2). The primary advantage of this approach is that it does not depend upon the creation and maintenance of either a controlled vocabulary or knowledge directory. The user simply submits words or word combinations to the search engine and receives a list of all components that meet the query conditions. Content-based indexes can be kept very current and are rarely out of date because their creation can be fully automated.

The last stage of the KM life cycle should also be managed carefully. Knowledge that is no longer useful or relevant to an organization should be retired appropriately. Records management policies should be defined and applied consistently throughout an organization to ensure that the essential knowledge of a firm is maintained and easily accessible to workers. Consequently, taking a holistic approach to KM in an organization would allow employees to be creative and to also grow professionally.

RECOMMENDATIONS AND CONCLUSION

KM is a strategic corporate initiative that can harness the power of an intranet to facilitate the use of information through IT. Managers must pay attention to the ways employees collaborate as well as to the ways they use web technologies. Such awareness would result in efficient as well as effective use of corporate resources. Future maturing of web technologies would facilitate greatly the dissemination of information among employees to create knowledge for the benefits of the corporation. Implicit in this maturity is the professional development of the individual employees. IT would allow the automation of the storage of corporate knowledge while customizing the support systems to the personal needs of the users.

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