Knowledge management: Practices and challenges

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KNOWLEDGE MANAGEMENT: PRACTICES AND CHALLENGES

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KNOWLEDGE MANAGEMENT: PRACTICES AND CHALLENGES

ABSTRACT

Knowledge Management (KM) is a process that deals with the development, storage, retrieval, and dissemination of information and expertise within an organization to support and improve its business performance. Organizations are realizing that knowledge is a crucial resource for organizations and it should be managed judiciously. Organizations need to harness knowledge not only to stay competitive, but also to become innovative. Knowledge Management requires a major shift in organizational culture and a commitment at all levels of a firm to make it work. Through a supportive organizational climate, ideally, through effective Knowledge Management, an organization can bring its entire organizational learning and knowledge to bear upon any problem, anywhere in the world, at anytime.

Key Words:

Knowledge; Knowledge Management; Organizational Learning; Intelligent Organization; Knowledge Mapping.

KNOWLEDGE MANAGEMENT: PRACTICES AND CHALLENGES

INTRODUCTION

Knowledge Management (KM) is a process that helps organizations find, select, organize, disseminate, and transfer important information and expertise necessary for activities such as problem solving, dynamic learning, strategic planning and decision-making. To improve the effectiveness of knowledgeable experts, information systems groups at several organizations have started creating databases for knowledge, information maps and custom-made applications.

Early in the industrial era, organizations improved their efficiency, effectiveness and hence, their competitive edge by automating manual labor and reducing redundancy. However, now, in the age of the knowledge worker, many organizations have gone through massive restructuring to eliminate redundant workers and jobs. This movement has been swept up by Business Process Re-engineering that resulted in leaner organizations. However, organizations are facing increasingly global competition and a more sophisticated consumer. To stay competitive, companies must still be innovative in reducing their costs and expanding their markets. Thus, organizations are streamlining their processes. KM enters the picture at this point. Organizations are beginning to realize that there is a vast and largely untapped asset diffused around in the organization - knowledge. KM emerged with not only the need to be cost efficient and managerially effective in problem solving, decision making, innovation and all other elements needed to maintain and develop a competitive edge, but also more specifically, to capture, catalogue, preserve, disseminate the expertise and knowledge that are part of organizational memory that typically resides within the organization in an unstructured way.

In this paper, we discuss the basic definitions of knowledge and knowledge management

followed by knowledge management events, practices, and challenges. We conclude with remarks on the future of knowledge management.

KNOWLEDGE

Knowledge can be conceptualized as *tacit knowledge* and as *explicit knowledge.* Polanyi (1958) first distinguished between tacit and explicit knowledge. Nonaka and Takeuchi (1995) point out the often-overlooked asset of companies are intangibles like insights, intuitions, hunches, gut feelings, values, images, metaphors, and analogies. Mining this intangible asset can add great value to the daily operations of a company. *Tacit knowledge* is usually in the domain of subjective, cognitive, and experiential learning, whereas *explicit knowledge* deals with more objective, rational, and technical knowledge (data, policies, procedures, software, documents, etc.). Explicit knowledge is typically both well documented and accessible. Polyani (1966), in differentiating the two types of knowledge, states "We can know more than we can tell." In essence, he suggests that it is difficult to put tacit knowledge into words. Traditionally, IT has focused on using explicit knowledge. However, organizations now understand the need to integrate both types of knowledge to perform their jobs effectively. Hence, organizations are now beginning to recognize and are developing specific methodologies to convert tacit knowledge into explicit knowledge that can be codified and therefore captured, stored, transmitted, used and be acted upon by others. This is the goal of KM, to convert tacit knowledge to explicit knowledge and disseminate it effectively. This powerful concept has fueled the development of KM methodologies, tools, and applications.

KNOWLEDGE MANAGEMENT

KM is the management of corporate knowledge that can improve a range of organizational performance characteristics by enabling an enterprise to be more "intelligent acting" (Wiig, 1993). It is not a new movement per se, as organizations have been trying to harness their internal processes and resources that have resulted in various movements over the years as

total quality management, expert systems, business processes re-engineering, the learning organization, core competencies, and strategy focus (Shukla, 1997). Good managers in organizations have been using the know-how of people they hired with skills and experience, and processes for effective management on an ad-hoc, casual basis. However, only recently have organizations begun to focus their interest on this aspect in more systematic and a formal manner.

Knowledge is a fundamental factor, whose successful application helps organization deliver creative products and services. There is a wide variety of literature about what "knowledge" and "knowing" means in epistemology, social sciences, and psychology. However, the business perspective of knowledge is much more pragmatic. There is still no one definition or consensus on what KM means. Davenport and Prusak (1998) define knowledge as ". . . a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. . ." Dr. Carla O'Dell, President of American Productivity & Quality Center state that "Knowledge is information that has value..." (Elliott, 1996).

Most organizations already have a vast reservoir of knowledge in a wide variety of organizational processes, best practices, know-how, customer trust, MIS, culture and norms. However this knowledge is diffused, and mostly unrecognized. Oftentimes, organizational culture itself prevents people from sharing and disseminating their know-how in an effort to hold onto their individual power base and viability. Determining who knows what in an organization itself could be a time consuming and daunting task. This, in itself, justifies the need for a Knowledge Management system for organizations to allow them to identify and access workers' skills and expertise.

KNOWLEDGE MANAGEMENT TRENDS

The adoption of new KM methods is also facilitated by the collapse of time/space boundaries due to innovations in telecommunications technology. These innovations have not just facilitated sharing information across an entire organization, but almost made it imperative for the continued survival and expansion of an organization. This concept is clearly supported by the emerging new organizational theories that imply that *the only competitive advantage a firm has in the 21st century is what they know and how they use it.* There are currently two major trends in Knowledge Management:

1. *Measuring the intellectual capital of an organization*: developing measurement ratios/indexes and benchmarks;
2. *Knowledge mapping:* capturing knowledge gained by individual and disseminating it throughout the organization, mainly via information technology.

KM as a discipline shares ideas and concepts from a variety of other disciplines and philosophies. In particular, much work is being done in the field of artificial intelligence, specifically expert systems, relating to knowledge engineering, tacit to explicit knowledge transfer, knowledge dispersion, etc. KM and Group Support Systems (GSS) share the concepts of working, sharing, facilitating in groups/teams. Also, KM and data mining are related as KM deals with knowledge creation that can be performed by identifying creative means to glean knowledge from existing data (in databases, data warehouses, text documents, etc.). The real essence of this approach is the development of a *knowledge core*, a smart engine that can fashion information in disparate locations and differing databases into answers-knowledge, to be used anywhere in the enterprise at anytime.

KNOWLEDGE MANAGEMENT PRACTICES

Dow Chemical Company defined their KM strategy to use intellectual capital to improve their capacity to add value to the business. Dow uses the knowledge *value chain model* starting with ideas, know-how, and other intangible intellectual capital assets transformed into measurable, tangible intellectual assets through patents (Lloyd, 1996). Siemens linked their knowledge core competencies to organizational objectives and core products. They focused on developing knowledge through R&D using Groupware to transform the knowledge into action (Lloyd, 1996). Companies often characterized as *agile companies* (Goldman, Nagel and Preiss, 1994) use the knowledge-based next generation manufacturing model to develop products that can easily be customized to the individual requirements of customers.

Organizations can realize the full value of their knowledge assets only when they can be effectively transferred between individuals. Based on the work of Nonaka and Takeuchi, Dataware Technologies, in their executive briefing, identify the following four processes that are commonly used by organizations for knowledge conversion*: socialization, capture, dissemination, and internalization*.

Socialization: sharing of experiences through observation, imitation and practice. It generally occurs through workshops, seminars, apprenticeships, and conferences, as well as at the water cooler.

Capture: the conversion of tacit knowledge (e.g., what one learned at a workshop) into explicit form (e.g., written report).

Dissemination: the copying and distribution of the explicit knowledge.

Internalization: process of experiencing knowledge through an explicit source, *i.e*., one can combine the experience of reading the workshop report with previous experiences.

Companies are moving towards new organizational models, emphasizing on radical decentralization, coupled with advanced IT that allows organization to tap into its intellectual assets. Monsanto Company uses this approach in its Knowledge Management Architecture (KMA) initiative that allows it to harness its intellectual capital to have the advantages of large global company combined with the flexibility of a small company, and addresses KM from the perspective of creating value (Lloyd, 1996). The KMA adaptation of Nonaka and Takeuchi's (1995) three-step, three-spiral model includes a learning map that identifies questions to be answered and decisions made, an information map specifies the kind of information that users need, and a knowledge map explains what users do with specific information. The knowledge map represents the conversion of information to insight or knowledge.

Once the three maps have been developed, a balanced scorecard evaluation is performed to assess what types of IT tools will be effective for leveraging the information repositories, and an information technology map is created. Monsanto's focus is on the sense-making capability of people.

KNOWLEDGE MANAGEMENT CHALLENGES

KM is more relevant to enterprises that are operating in knowledge intensive areas. Consulting firms are the ultimate example of organization selling knowledge directly. However, there are certain indicators for an organization's ability to create, disseminate and apply knowledge. Dermarest (1997) identified six key questions an organization has to answer to participate in KM effectively. In summary, they relate to:

1. The culture, actions and beliefs of managers about the value, purpose and role of knowledge;

2. The creation, dissemination and use of knowledge within the firm;

3. The kind of strategic and commercial benefits a firm can expect by the use of effective KM;

4. The maturity of knowledge systems in the firm;

5. How a firm should organize for KM; and

6. The role of information technology in the KM program.

Organizational culture is a critically important aspect for facilitating sharing, learning, and knowledge creation. An open culture with incentives built around integrating individual skills and experiences into organizational knowledge will be more successful as illustrated by Buckman Laboratories, Inc., a family owned specialty chemical company based in Memphis. Their success results because of their commitment to the individual. Buckman's values represent the flip side of the prevailing corporate mindset, where the company comes first, and employees are fortunate to have jobs. The Buckman Code of Ethics, captured on a wallet-sized laminated card and passed out to every employee, stipulates a fundamentally different operating philosophy. The first proposition is "that the company is made up of individuals - each of whom has different capabilities and potentials - all of which are necessary to the success of the company." This approach to KM facilitated by having an open organizational culture is now being benchmarked by companies like AT&T, US West, 3M and International Paper Company.

A major problem is how to convince, coerce, direct or otherwise get people within organizations to share their information. It's a major *change management problem* that poses serious leadership challenges to a Chief Information Officer (CIO) or Chief Knowledge Officer (CKO). Effective knowledge sharing and learning require cultural change within the organization, new management practices, senior management commitment and technological support. Technologies that are being used successfully range from desktop video-conferencing, Lotus Notes, multimedia mail, document management systems, Intranet-based

Webs, and artificial intelligence tools, information retrieval engines, help-desk applications, data warehousing and data mining tools. An illustrative example is in technology transfer - the articulation and codification process at Ericsson helped them transfer the telecommunication know-how globally, and subsequently resulted in firm's growth.

However, technology is secondary to a human element in the knowledge management process. Davenport (1994) argues that in most cases, managers obtain information not from IT systems but through other channels: "… managers get two-thirds of their information from face-to-face or telephone conversations; they acquire the remaining third from documents, most of which come from outside the organization and aren't on the computer system." Hence, organizations need a process of articulation and codification of tacit knowledge into explicit knowledge so that it can form a repository of corporate memory. Chaparral Steel, one of the first organizations to adopt Knowledge-focused Management, based their internal organizational structure and corporate strategy to capture technical and market leadership without the assistance of information technology practice (Wiig 1997).

Organizations need to forge linkages between its structured and unstructured information in a way to use it for a specific problem/situation/paradigm. It is important for leaders of organizations to understand who has knowledge, and develop support systems for its creation and application. Then, they can create knowledge maps that identify where knowledge resides and which knowledge needs to be shared with whom, how, and why, with built in rewards for knowledge creators and brokers.

MEASUREMENT: EFFECTIVENESS OF KM

There is still no absolute measurement matrix in the literature to measure the success of a KM effort at an organization, though there are various measures in practice. Besides the number of patents, trademarks, copyrights, trade secrets, there are other aspects of knowledge application: customer satisfaction, financial bottom line (stock prices, dividends, net present value), effectiveness of business processes, ability to sustain innovation and changes and improvement through organizational learning, and quantifying critical success factors. Traditional ways of financial measurement fall short, as *they do not consider intellectual capital as an asset* (rather they are generally considered as the debit for salaries paid to employees for their skill and experience). There is a need to develop accounting procedures for valuing intangible assets of organization as well as incorporating models of intellectual capital that in some way quantify the speed of innovation and the development of core competencies.

THE FUTURE OF KNOWLEDGE MANAGEMENT

Although specific approaches to KM vary from firm to firm, key themes and common concerns emerge. KM requires a major shift in organizational culture and a commitment at all levels of a firm to make it work. Initiatives in place at Buckman Labs, Monsanto and other companies focus on people and methods to enhance learning and improve communication, both locally and globally. A strong technological infrastructure, customized for the needs of each organization, provides the tools necessary for ensuring the success of knowledge management efforts. What emerges from the myriad of corporate experiences is that KM does not require more or better tools to gather more data and information but rather does require a new perspective to link the pieces of information that promotes understanding and accelerates action - in other words, to create knowledge. KM concerns itself with not just

tapping into corporate memory but also with corporate skills and existing intellectual capital. An intense pace of competition, global markets, informed customers, and technological innovations have made the marketplace an increasingly level-playing field. Organizations need to harness its knowledge not just to stay competitive, but also to become innovative. They need to be not just nimble, but "intelligent organizations."

As Nobel Laureate Murray Gell-Mann noted, people and computers differ in their ability to make sense of incomplete information. People can make sense (construct and interpret meaning) of fragmentary and incomplete information. Computers cannot. We learn from people what they are doing and what they need. If we can effectively record and disseminate peoples' knowledge, others can learn and use it. A supportive organizational climate, ideally, through good Knowledge Management, can bring entire organizational learning and knowledge to bear upon any problem, anywhere in the world and at any time.

There is, however, a lot of skepticism about KM. There is an urgent need to develop measures for KM for a CEO to realize if KM is working for an organization, to determine what value is being added to its processes and products, and to determine what implications there are for competition by enhanced sharing and collaboration. We conclude with a quote from Bhagvad-Gita, "The wise see knowledge and action as one." Intelligent organizations are recognizing that knowledge is an asset, perhaps the only one that grows with time, that harnessed properly can provide them with the ability to continuously compete and innovate into the next millennium.

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