Knowledge Management: FROM THEORY TO PRACTICE

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ABSTRACT

Knowledge management is a process that helps organizations to find important information, select, organize and publish them; and it's a proficiency that will be necessary for actions like solving problems, dynamic learning, decision making. Knowledge management can improve a wide range of organization performance properties by enabling company to more intelligent performance, but it's not enough alone; because knowledge management to be useful needs undertaking staff to organization and their job, that accept the knowledge management process with spirit and heart and perform it (Wiig, 1999:14).Knowledge management is the leveraging of collective wisdom to increase responsiveness and innovation. It is important that you discern from this definition three critical points. This definition implies that three criteria must be met before information can be considered knowledge. » Knowledge is connected. It exists in a collection (collective wisdom) of multiple experiences and perspectives Knowledge management is a catalyst. It is an action – leveraging. Knowledge is always relevant to environmental conditions, and stimulates action in response to these conditions. Information that does not precipitate action of some kind is not knowledge. In the words of Peter Drucker, ''Knowledge for the most part exists only in application.'' » Knowledge is applicable in un-encountered environments. Information becomes knowledge when it is used to address novel situations for which no direct precedent exists. Information that is merely ''plugged in'' to a previously encountered model is not knowledge and lacks innovation.

Keywords: *Knowledge, Knowledge Management Innovation, Collective Wisdom.*

INTRODUCTION

Technologists never evangelize without a disclaimer: ''Technology is just an enabler.'' True enough – and the disclaimer discloses part of the problem: enabling what? One flaw in knowledge management is that it often neglects to ask what knowledge to manage and toward what end. Knowledge management activities are all over the map: building databases, measuring intellectual capital, establishing corporate libraries, building intranets, sharing best practices, installing groupware, leading training programs, leading cultural change, fostering collaboration, creating virtual organizations – all of these are knowledge management, and every functional and staff leader can lay claim to it. But no one claims the big question: why? (Tom Stewart in The Case Against Knowledge Management, Business 2.0, February 2002).

Under increasing competitive pressure, many companies are examining how they can better manage their intellectual capital. As the pace of global competition quickens, executives realize that their edge lies in more efficiently transferring knowledge across the organization. The emerging field of knowledge management addresses the broad processes of locating, organizing, transferring and more efficiently using information and expertise within an organization. New market forces and infrastructure changes have prompted an interest in knowledge management. Market forces include new corporate models that emphasize corporate growth and efficiency, the need for cycle time reduction, knowledge lost from downsizing and the need to share information across the organization, which often means across the globe. Recent infrastructure changes have significant positive impact on an organization.s ability and desire to manage knowledge.

The barriers to sharing information have been dramatically lowered by intranet technologies. Now companies comprehend the extent to which knowledge can be shared across the organization; however, they also realize how many of their existing knowledge assets are accessible only to a small part of the organization. To lower these barriers to sharing knowledge, leading executives recognize the need to institute new knowledge-centric practices. Information technology plays an important role in enabling these processes across distributed enterprises. What executives want to avoid, however, is the cost and disruption of a wholesale change to the organization's information systems. The promise of technologies aimed at knowledge management is that they will help organizations use the knowledge they

have more efficiently without changing the tools they currently use to create it and process it. This is the promise, but unfortunately what many software vendors tout as knowledge management systems are only existing information retrieval engines, groupware systems or document management systems with a new marketing tagline. What executives really need are new technologies designed to implement the revolutionary changes in the way knowledge workers create, communicate and manage knowledge. To help answer that question, this white paper examines the practical aspects of knowledge management and evaluates how various new and existing technologies can be used to create a .knowledge management system. that meets the needs of the organization.

The recent summit on knowledge management (KM) at the pre-eminent ASIST conference opened on a rather upbeat note. The preface noted that KM has evolved into a mature reality from what was merely a blip on the ''good idea'' radar only a few years ago. Growing pervasiveness of KM in worldwide industries, organizations, and institutions marks a watershed event for what was called a fad just a few years ago. KM has become embedded in the policy, strategy, and implementation processes of worldwide corporations, governments, and institutions. Doubling in size from 2001, the global KM market has been projected to reach US$8.8 billion during this year. Likewise, the market for KM business application capabilities such as CRM (Malhotra, 2004a) is expected to grow to $148 billion by the next year. KM is also expected to help save $31 billion in annual re-invention costs at Fortune 500 companies. The broader application context of KM, which includes learning, education, and training industries, offers similarly sanguine forecasts. Annual public K-12 education is estimated at $373 billion dollars in US alone, with higher education accounting for $247 billion dollars. In addition, the annual corporate and government training expenditures in the US alone are projected at over $70 billion dollars.

One can see the impact of knowledge management everywhere but in the KM technology-performance statistics (Malhotra, 2003). This seems like a contradiction of sorts given the pervasive role of information and communication technologies in most KM applications. Some industry estimates have pegged the failure rate of technology implementations for business process reengineering efforts at 70 percent. Recent industry data suggest a similar failure rate of KM related technology implementations and related applications (Darrell et al., 2002). Significant failure rates persist despite tremendous improvements in sophistication of technologies and major gains in related price-performance ratios. At the time of writing, technology executives are facing a renewed credibility crisis resulting from cost overruns and performance problems for major implementations (Anthes and Hoffman, 2003). In a recent survey by Hackett Group, 45 percent CIOs attribute these problems to technology implementations being too slow and too expensive. Interestingly, just a few months ago, some research studies had found negative correlation between tech investments and business performance (Alinean, 2002; Hoffman, 2002). Financial performance analysis of 7,500 companies relative to their IT spending and individual surveys of more than 200 companies had revealed that:

companies with best-performing IT investments are often most frugal IT spenders; top 25 performers invested 0.8 percent of their revenues on IT in contrast to overall average of 3.7 percent; and highest IT spenders typically under-performed by up to 50 percent compared with best-in-class peers.

Based upon multi-year macroeconomic analysis of hundreds of corporations, Strassmann (1997) had emphasized that it is not computers but what people do with them that matters.

He had further emphasized the role of users' motivation and commitment in IT performance[1]. Relatively recent research on implementation of enterprise level KMS (Malhotra, 1998a; Malhotra and Galletta, 1999; Malhotra and Galletta, 2003; Malhotra and

Galletta, n.d. a; Malhotra and Galletta, n.d. b) has found empirical support for such socio-psychological factors in determining IT and KMS performance. An earlier study by Forrester Research had similarly determined that the top-performing companies in terms of revenue, return on assets, and cash-flow growth spend less on IT on average than other companies. Surprisingly, some of these high performance ''benchmark'' companies have the lowest tech investments and are recognized laggards in adoption of leading-edge technologies. Research on best performing US companies over the last 30 years (Collins, 2001) has discovered similar ''findings''. The above findings may seem contrarian given persistent and long-term depiction of technology as enabler of business productivity (cf. Brynjolfsson, 1993; Brynjolfsson and Hitt, 1996; Brynjolfsson and Hitt, 1998; Kraemer, 2001). Despite increasing sophistication of KM technologies, we are observing increasing failures of KM technology implementations (Malhotra, 2004b). The following sections discuss how such failures result from the knowledge gaps between technology inputs, knowledge processes, and business performance. Drawing upon theory, prior research, and industry case studies, we also explain why some companies that spend less on technology and are

not leaders in adoption of most hyped RTE technologies succeed where others fail. The specific focus of our analyses is on the application of KM technologies in organizational business processes for enabling real time enterprise business models. The RTE enterprise is considered the epitome of the agile adaptive and responsive enterprise capable of anticipating surprise; hence our attempt to reconcile its sense making and information processing capabilities is all the more interesting. However, our theoretical generalizations and their practical implications are relevant to IT and KM systems in most enterprises traversing through changing business environments.

KNOWLEDGE MANAGEMENT

In the early 1990, knowledge management seriously entered topics of organization, although discussion and negotiation about knowledge had started from a long time ago; in 1965 Marshall claims that a major part of capital includes knowledge. Also, he believe that knowledge is the most powerful engine of generation, so the organizations should increasingly focus on its management. Kohn (1970) insists that knowledge is per se the capital of a group. In 1972, Hubremass points to this matter that knowledge should not beconsidered as a abstract existence, but it's a product based on volition and sometimes non conscious activities of human. (Radding,1998:41) . Complexity and breadth of the concept of knowledge management has led that the same attitudes about knowledge management don't be formed. Therefore, different experts have seen that from different angles and paid to define it. Despite this fact, some of the most common definitions of knowledge management is expressed here:

Knowledge management refers to a series of regular and systematic activities of organization that is performed to obtain the larger value trough the available knowledge. The available knowledge includes all experiences and learning of organization persons and all documents and reports inside an organization(Marwick, 2001;2). Knowledge management includes behaviors of human, attitudes and capabilities of human, philosophies of business, patterns, operations, procedures and complex technologies(Wiig, 2002:1). In another definition, knowledge management is considered as a commercial process with two basic aspects(Future Development consults, 2007) :

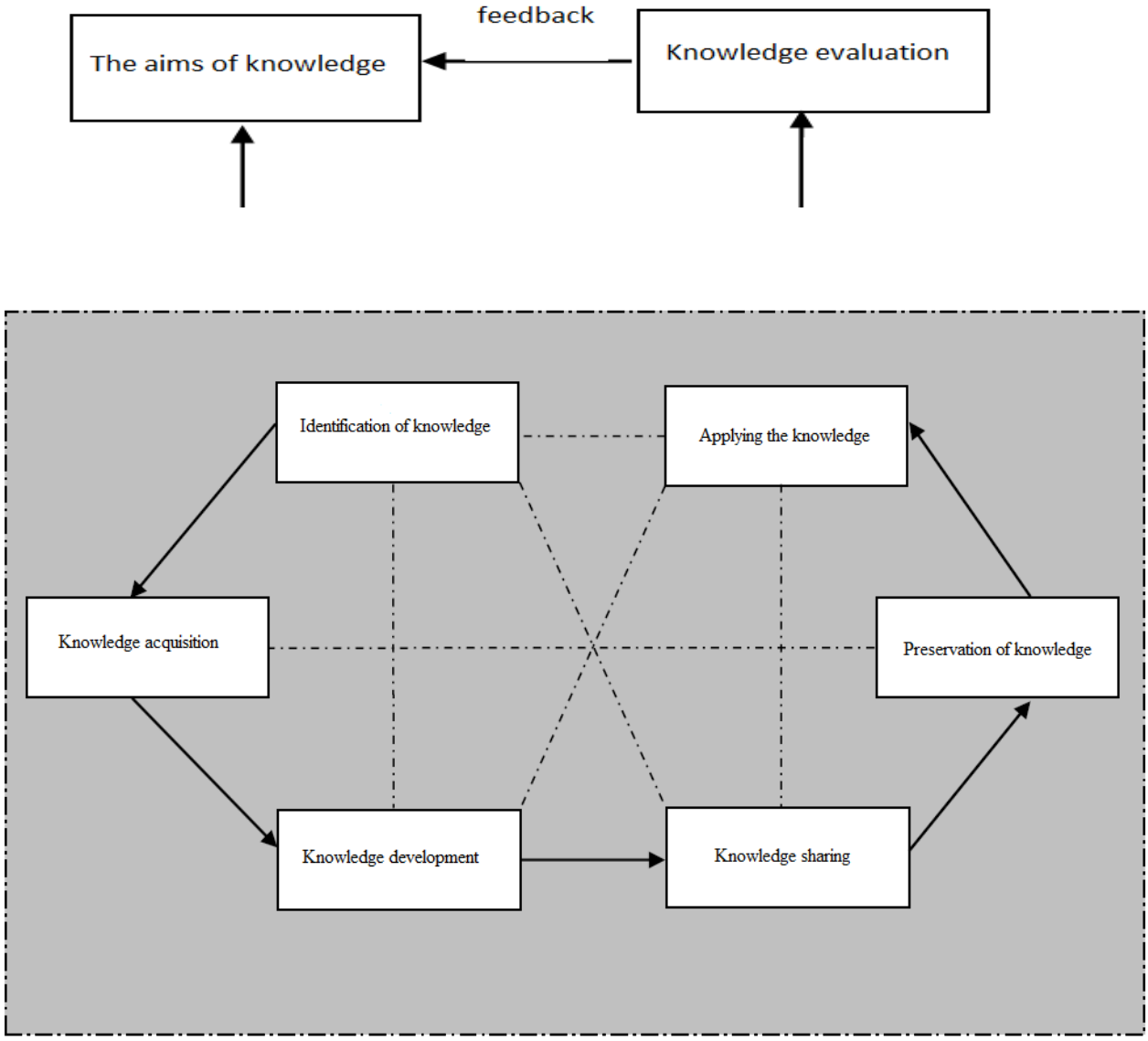
- Considering of the element of knowledge in commercial processes: so that the element of knowledge displays prominently itself in all of strategies, lines and employing these principles.
- Creation of intellectual capitals of organization: that includes both explicit capitals(registered) and implicit capitals(individual knowledge) and it takes positive results of that.
- In practice, knowledge management is proposed to identify and characterize intellectual capitals and creating new knowledge to prefer competitive in the global scene outside the organization and to facilitate data availability, share appropriate processes, and obtain information and communication technology inside the organization(Barclay& Murray, 2000).
- Knowledge management is knowledge creating and sharing, transferring and retention process so that it can effectively apply it in the organization(Hoffman, Holster, Sheriff, 2005: 178)
- Knowledge management means improving knowledge word processes. Improving knowledge word requires reduction of top-down interferences. Staff should have freedom and necessary independence in their work until they can utilize their knowledge in problem solving and decision making.
- Perost and Rebb and Romhard(2000) designed a model called " The model of cornerstones of knowledge management building" for knowledge management. The designers of this model see knowledge as a dynamic cycle that it is in constant rotation. The steps of this model includes eight subsets consisting of two outer and inner cycles.
  a) Outer cycle:
  1. Determination of knowledge aims: the aims of knowledge management should rise the main aims of organization and should be characterize in two strategic and operational levels.
  2. Knowledge evaluation: the method to achieve specific aims and use of its results as feedback, to aim determination or modification, relates to this section.
  b) Inner cycle:
  1. Identification of knowledge: outer knowledge is analyzing and explaining of environmental knowledge. Lack of transparency, leads to effectiveness of decisions and cause errors to be repeated.
  2. Knowledge acquisition: many companies import a significant part of their knowledge from external resources. Communication with customers, suppliers, competitors and partners in cooperative and collaborative work is a considerable potential for providing knowledge.
  3. Knowledge development: How to create a new specialty? Knowledge development is a cornerstone that it is the processor of process of knowledge acquisition. Its main focus is on developing new skills, new products, and better ideas and more efficient processes.
  4. Knowledge sharing and distribution: How knowledge can be put in place right? Fundamental requirement for data conversion and individual experiences is something that organization will be able to use it. In this stage. the necessary preconditions are:

-Everyone should know how much and with what level of knowledge about a problem and be able to do it.
-How to facilitate knowledge sharing?

It's not necessary that everyone know everything. Therefore, the principle of dividing the people capability in the range of distribution and sharing of knowledge should be defined as significant. Here, the most important step is analysis of how knowledge transfer from individual to group and organization.

5. Applying the knowledge: How can we ensure that knowledge is used? Concept of knowledge management is to ensure that current knowledge in an organization be used to benefit the entire organization effectively and productively.
6. Preservation of knowledge: How can we ensure that we do not lose knowledge? Obtained abilities will not be forever available. Preservation and selection of information, documents and experiences require management. Organization have often complained of the fact that reorganization has caused them to lose a part of their memory, hence the selection process, the processes of storing and updating the knowledge that will be valuable in future should be organized with complete accuracy. If this is not done, valuable expertise will be unintentionallyabandoned , (Probst,Raub&Romhardt, 2000: 30).

Fig1. The model of cornerstones of knowledge management



Source:*(*Probst, Raub&Romhardt, 200*0*)

Technologies for Enabling Knowledge Management

Vendors of information-oriented products are rushing to introduce new knowledge management products and re-label their existing products as knowledge management products in an effort to quickly gain mindshare and marketshare in a potentially enormous market. But computer applications have addressed aspects of knowledge management for years. No single technology fills all the criteria required of a knowledge management system, because knowledge management is not solely about technology. It is a multi-disciplinary field that draws on aspects of information science, interpersonal communications, organizational learning, cognitive science, motivation, training, publishing and business process analysis. The following sections look at the roles specific technologies play in an enterprise-wide knowledge management environment.

Intranet

Intranets have sprung up across corporations at a rate that challenges any previous introduction of new technology. They are ideal environments for sharing information that is both dynamic and richly linked. However, most large organizations quickly reach a point where so much information exists on the intranet that it begins to suffer the same problems that exist on the World Wide Web; no one knows where everything is, so no one can quickly find what he or she is looking for. Although some evangelists profess that all of an organization.s knowledge should be transferred to the intranet, many others take a modified view of what it is best suited to do. The intranet can be broken down into two distinct areas: the technology infrastructure (IP networks, universal web browser, thin client and the HTML format), and the web server as a content repository. These recent changes.the web browser and the web server being the most visible.have enabled greater access to information for broader groups of knowledge workers and increased the speed of integration for application developers. Allowing users to access all corporate knowledge through a web browser is not equivalent to forcing all knowledge assets onto the web server. Applications, specialized repositories and various other knowledge silos will always exist because they have capabilities that are distinct from those of a generalized knowledge management system. Web sites are best used for hosting and managing content that is constantly changing and linked in a complex manner. But to the organization as a whole, each intranet site is just another type of knowledge silo, the content of which must be integrated in the organization.s knowledge
management system along with the other silos that exist across the enterprise.

D O C U M E N T M A N A G E M E N T S Y S T E M S

Document management systems are repositories of important corporate documents and are therefore important stores of explicit knowledge. They are also valuable tools for creating and processing complex documents, such as new drug applications in pharmaceutical companies. Document management systems excel at controlling the process of document creation, processing and review. Some companies are approaching enterprise knowledge management based on document management. However, many have found that the bulk of knowledge workers resist using highly structured document management processes for all of their document creation and management tasks. Most users do not participate directly in complex document creation and therefore do not realize enough value from those systems to make an investment in learning how to use them. Therefore, document management systems are important knowledge silos that must be integrated into the corporate knowledge infrastructure, but are not used by most organizations as the basis for a complete knowledge management system.

I N F O R M A T I O N R E T R I E V A L E N G I N E S

Information retrieval technology, whether it be in the form of corporate text repositories or intranet search facilities, exists in many organizations as a knowledge silo containing legacy information. Information retrieval vendors continue to be concerned with satisfying the needs of information seekers and have added features such as relevancy ranking, natural language querying, summarization and others that have increased the speed and precision of finding information.

R O U P W A R E A N D W O R K F L O W S Y S T E M S

Organizations use groupware systems when users in workgroups or departments need to communicate and collaborate. Groupware allows formal and ad hoc conversations in cases when the participants can not communicate in real time. This makes groupware an important technology for enhancing the exchange of tacit information. However, like other applications, groupware databases become knowledge silos that must be integrated into the enterprise knowledge architecture. Knowledge transfer processes often occur on an ad hoc basis when the need for specific knowledge arises somewhere in the organization, but organizations also have a large number of formalized processes that regulate the flow of information.

Workflow systems enable users to codify knowledge transfer processes when they require a more rigid method of dissemination. For example, proposal generation processes often require the proposal writer to collect prior

knowledge assets, create new information and gain approval on the entire proposal. This process necessitates structured and ordered information
preparation and review, which is what a workflow system facilitates.

PUSH TECHNOLOGIES AND AGENTS

Technologies that automate the transfer of information to end users have received considerable attention recently. Although e-mail served this purpose for over a decade, new web-based technologies have added better presentation, real-time updates and the ability to push applications as well as content. Content push is a dynamic form of electronic publishing and is therefore an important feature of a knowledge management system.

Agents are a specialized form of push technology. Agents are controlled by the end user, who can specify the type of knowledge he or she wants to receive. Agent capabilities are extremely valuable in knowledge-intensive environments, where knowledge workers do not have the time to continually monitor discreet information resources. Knowledge management systems should provide the means for users to easily capture the particular kinds of knowledge assets they need to monitor without requiring them to learn a complex search syntax.

HELP-DESK APPLICATIONS

Many organizations use help-desk technology to respond to both internal and external requests for information. However, the knowledge accumulated in help-desk systems can have much broader applications than answering specific questions. For example, service request logs are valuable tools to assist in product design and improving services. To tap this potentially valuable information, companies will want to integrate their help-desk applications into the knowledge management system.

BRAINSTORMING APPLICATIONS

Brainstorming tools help inspire creative thinking and convert tacit into explicit knowledge. These end user applications help categorize, organize and identify knowledge resources and are therefore useful knowledge creation tools. While it should not try to replicate their functionality, an organization.s knowledge management system must provide an easy way for users or these applications to identify, capture and share the results of these activities with others across the enterprise.

DATA WAREHOUSES AND DATA MINING TOOLS

Organizations are creating data warehouses and arming their business managers with data mining tools to optimize existing relationships and discover new ones between customers, suppliers and internal processes. Used primarily by business managers, leading organizations are now broadening their use since everyone in a knowledge-based organization needs to make decisions based on increasingly complex sets of data. Knowledge management systems must provide meaningful access to data warehouses by supporting standard protocols such as Open Database Connectivity (ODBC) and Structured Query Language (SQL). Knowledge management systems also need to provide a way to describe and provide access to common reports so that users not intimately familiar with data mining tools and techniques can find and access current reports on subject areas they are investigating.

THE KNOWLEDGE WAREHOUSE

First RDBMSs, then document management/groupware systems and now web servers. All of these systems have aimed to replace the organization.s knowledge silos with a single application. However, stand-alone applications are too feature rich to make this practical or even desirable. The goal of a knowledge warehouse.the core component of the knowledge management system.is to preserve the creation and processing functionality inherent in knowledge silos, while offering all users access to the knowledge contained in the silos. In addition, a knowledge warehouse allows users to submit valuable knowledge even when they are not frequent contributors and therefore do not work through an established knowledge silo.This eliminates the need for all end users in the organization to install and maintain complex client software for all of the application silos.

KNOWLEDGE CONTRIBUTION & COLLECTION

End users should be able to easily add content to a knowledge warehouse through their web browsers. The knowledge warehouse must support all of the various desktop document formats as well as graphics, video clips, sound clips and others.

Some knowledge assets benefit from a more structured approach than that provided by a simple document. For example, if all an organization.s knowledge workers were asked to contribute skill profiles as word processor documents, they will probably produce thousands of variations in format. However, if they fill out a web-based form instead, they will submit this information in a consistently organized way. Administrators should be able to

easily create such forms to allow users to enter such structured knowledge. This not only allows the user to perform fielded searches on the class of knowledge assets, but also enforces a uniform presentation of the resulting information.

To enable or increase the accuracy and speed of information retrieval, knowledge assets need to be associated with categories from the corporate taxonomy or knowledge map. This categorization can be accomplished by the end user on submission or by a content manager. The knowledge warehouse must incorporate categorization into the submission process, yet be flexible enough to adapt to each organization.s processes,

K N O W L E D G E R E T R I E V A L

The other half of a knowledge management system concerns itself with access to the organization.s knowledge assets regardless of whether they were contributed to the knowledge warehouse by end users, or to a knowledge silo linked to the knowledge warehouse by the administrator. This section discusses some of the knowledge retrieval features that make it easier for end users to find the specific knowledge assets they require.

Search Knowledge workers now demand searching tools that are sophisticated yet easy to use. Some of the more useful advanced searching features for a knowledge warehouse include: Natural language searching; Boolean searching; Automatic root expansion; Proximity searching; Numeric searching; Term weighted searching;Thesaurus integrationSearch by object type (e.g., PowerPoint files, internal documents, etc.). Search by metadata fields (e.g., knowledge map (taxonomy) categories, author, date, location, etc.) Concept searching (e.g., find .more like this.)

K N O W L E D G E M A N A G E M E N T R O L E S

Knowledge management has brought with it new corporate roles and titles. The most visible of these is the Chief Knowledge Officer, or CKO. As Tom Davenport, professor and director of the Information Management Program at the University of Texas at Austin, describes it, .CKOs have two critical responsibilities: creating a knowledge management infrastructure and building a knowledge culture. Most organizations that have successfully implemented knowledge management have created a corporate level knowledge management team led by a high level executive (often the CKO, CIO or a line-of-business head). These teams usually consist of a small group (under a dozen) of employees dedicated to coordinating and evangelizing knowledge management principles. In many cases they are responsible for designing, piloting and implementing a knowledge management system.

This small knowledge management group cannot effect enterprise-wide changes by itself. Content managers or knowledge editors are needed to manage the capture and classification of knowledge to guard against information pollution. They are typically spread throughout an organization and spend some part of their job framing and structuring knowledge. Tom Davenport has remarked that: In the rosy future I envision, categorization and organization of knowledge will be a core competence for every firm.

This will require strategic thinking about what knowledge is important; development of a knowledge vocabulary (and a thesaurus to accommodate near misses); prolific creation of indices, search tools and navigation aids; and constant refinement and pruning of knowledge categories. Knowledge editors will have to combine sources and add context to transform information into knowledge.

CONCLUSIONS

The current period of human life is associated withamazing developments and changes. Organizations as a subset of human life, should be ready to deal with these major developments (Druker, 2002). Knowledge management is a process which helps organizations to find important information, select, organize and publish them and it is a proficiency which is necessary for activities such as problem solving, dynamic learning and decision making. Knowledge management can improve a range of organizational performance features with enabling the company to function more intelligently (Wiig, 1999:14‹). technology have observed that real knowledge is created and applied in the processes ofsocialization, externalization, combination, and internalization (Nonaka and Takeuchi, 1995) and outside the realm of KM technologies. Practitioners' inability to harness relevant knowledge despite KM technologies and offices of the CKOs caused the backlash and KM was temporarily branded as a fad. Scholarly research on latest information systems and technologies, or lack thereof, has further contributed to the confusion between data management, information management, and knowledge management. The outcomes-driven paradigm of KM has its primary focus on business performance. Key emphasis is on strategic execution for driving selection and adaptation of processes and activities, and carefully selected technologies. For instance, if collaborative community activities do not contribute to the key customer value propositions or business value propositions of the enterprise, such activities are replaced with

others that are more directly relevant to business performance (Malhotra, 2002a). If these activities are indeed relevant to business performance, then appropriate business models, processes, and culture are grown (Brooks, 1987) as a precursor to acceleration of their performance with the aid of KM technologies. Accordingly, emphasis on business performance outcomes as the key driver ensures that relevant processes and activities, as well as, related technologies are adopted, modified, rejected, replaced, or enhanced in service of business performance.

REFERENCES

1. Ackoff, R. (1979), ''The future of operations research is past'', Journal of the Operations Research Society, Vol. 30, p. 93.
2. Argyris, C. (1990), Integrating the Individual and the Organization, Transaction, New Brunswick, NJ. Argyris, C. (1994), ''Good communication that blocks learning'', Harvard Business Review, Vol. 72 No. 4, pp. 77-85.
3. Alavi, M. and Leidner, D. (2001), ''Review: knowledge management and knowledge management systems: conceptual foundations and research issues'', MIS Quarterly, Vol. 25 No. 1, pp. 107-36.
4. Alinean (2002), ''Alinean identifies why certain companies achieve higher ROI from IT investments'', available at: www.alinean.com
5. Arthur, B. (1996), ''Increasing returns and the new world of business'', Harvard Business Review, Vol. 74 No. 4, pp. 100-9.
6. Barth, S. (2000), ''KM horror stories'', Knowledge Management, Vol. 3 No. 10, pp. 36-40.
7. Brynjolfsson, E. (1993), ''The productivity paradox of information technology'', Communications of the ACM, Vol. 36 No. 12, pp. 66-77.
8. Charles, S.K. (2002), ''Knowledge management lessons from the document trenches'', Online, Vol. 26 No. 1, pp. 22-9.
9. Churchman, C.W. (1971), The Design of Inquiring Systems, Basic Books, New York, NY.
10. Collins, J. (2001), Good to Great: Why Some Companies Make the Leap and Others Don't,
11. Harper-Business, New York, NY.
12. Conway, S. (2002), ''Knowledge searching and services'', in Holsapple, C.W. (Ed.), Handbook on
13. Darrell, R., Reichheld, F.F. and Schefter, P. (2002), ''Avoid the four perils of CRM'', Harvard Business Review, February, pp. 101-9.
14. Dragoon, A. (1995), ''Knowledge management: Rx for success'', CIO Magazine, Vol. 8 No. 18, pp. 48-56.
15. Drucker, P.F. (1994), ''The theory of business'', Harvard Business Review, September-October, pp. 95-104.
16. eMarketer (2001), ''Knowledge management: executive brief'', available at: www.info-edge.com/ samples/EM-2001free.pdf
17. Emery, F.E. and Trist, E.L. (1965), ''The causal texture of organizational environments'', Human Relations, Vol. 18, pp. 21-32.
18. Gartner, Inc. (2002), ''The real time enterprise'', available at: http://rte.gartner.com/
19. Greenemeier, L. (2003a), ''HP looks to utility computing for growth'', Information Week, May 12, available at: www.informationweek.com/story/showArticle.jhtml?articleID ¼ 9800052
20. Grover, V. and Davenport, T.H. (2001), ''General perspectives on knowledge management: fostering a research agenda'', Journal of Management Information Systems, Vol. 18 No. 1, pp. 5-21.
21. Hammer, M. (1990), ''Reengineering work: don't automate'', Harvard Business Review, July, pp. 104-12.
22. Hansen, M.T. and Nohria, N. (1999), ''What's your strategy for managing knowledge?'', Harvard Business Review, March-April, pp. 106-16.
23. Hapgood, F. (2003), ''Plug and pay'', CIO Magazine, April 15, available at: www.cio.com/ archive/ 041503/plug.html
24. Hildebrand, C. (1999), ''Intellectual capitalism: does KM ¼ IT?'', CIO Magazine, September 15, available at: www.cio.com/archive/enterprise/091599_ic_content.html
25. Hoffman, T. (2003), ''Survey points to continuing friction between business, IT'', Computerworld, May 12,p. 10.
26. Holsapple, C.W. (2002), ''Knowledge and its attributes'', in Holsapple, C.W. (Ed.), Handbook on Knowledge Management 1: Knowledge Matters, Springer-Verlag, Heidelberg, pp. 165-88.
27. Jackson, C. (2001), ''Process to product: creating tools in knowledge management'', in Malhotra, Y.(Ed.), Knowledge Management for Business Model Innovation, Idea Group Publishing, Hershey, PA,pp. 402-13.
28. Khosla, V. and Pal, M. (2002), ''Real time enterprises: a continuous migration approach'', March, available at: www.asera.com/technology/pdf/RTE-WHITEPAPER-PDF-VERSION.pdf

29. Malhotra, Y. (1997), ‘‘Knowledge management in inquiring organizations’’, Proceedings of 3rd Americas Conference on Information Systems (Philosophy of Information Systems Mini-track), Indianapolis, IN, August 15-17, pp. 293-5, available at: www.kmnetwork.com/km.htm
30. Malhotra, Y. (1998a), ‘‘Role of social influence, self-determination, and quality of use in information technology acceptance and utilization: a theoretical framework and empirical field study’’, PhD thesis, Katz Graduate School of Business, University of Pittsburgh, Pittsburgh, PA.
31. Nonaka, I. and Takeuchi, H. (1995), The Knowledge-Creating Company, Oxford University Press, New York, NY.
32. Porter, M.E. and Millar, V.E. (1985), ‘‘How information technology gives you competitive advantage’’, Harvard Business Review, Vol. 63 No. 4, pp. 149-60.
33. Rayport, J.F. and Sviokla, J.J. (1995), ‘‘Exploiting the virtual value chain’’, Harvard Business Review, Vol. 73 No. 6, pp. 75-99.
34. Sawhney, M. (2003), ‘‘Reality check’’, CIO Magazine, March 1, available at: www.cio.com/
35. archive/030103/netgains.html
36. Schrage, M. (2002), ‘‘Wal-Mart trumps Moore’s law’’, Technology Review, Vol. 105 No. 2, p. 21.
37. Schultze, U. and Leidner, D. (2002), ‘‘Studying knowledge management in information systems resarch: discourses and theoretical assumptions’’, MIS Quarterly, Vol. 26 No. 3, pp. 213-42.
38. Siegele, L. (2002), ‘‘The real-time economy: how about now?’’, CFO (The Economist), February 1, available at: www.cfo.com/printarticle/0,5317,6651%7C,00.html
39. Sliwa, C. (2003), ‘‘Event-driven architecture poised for wide adoption’’, Computerworld, May 12, p. 8.
40. Stewart, T.A. (2000), ‘‘How Cisco and Alcoa make real time work’’, Fortune, May 29.
41. Strassmann, P. (1997), The Squandered Computer: Evaluating the Business Alignment of Information Technologies, Information Economics Press, New Canaan, CT.
42. Tsui, E. (2002), ‘‘Tracking the role and evolution of commercial knowledge management software’’, in Holsapple, C.W. (Ed.), Handbook on Knowledge Management 1: Knowledge Directions, Springer-Verlag, Heidelberg, pp. 5-27.