Chapter I

Knowledge Management for E-Business Performance: Advancing Information Strategy to 'Internet Time'

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Within the last few years, the topic of knowledge management has gathered a lot of interest in the corporate sectors. Although there is no commonly agreed upon definition of knowledge management, companies, governments, institutions and organizations are demonstrating an increasing interest in the topic. The key argument of this article is that most current interpretations of knowledge management are relevant to the industrial world of business of the past era. Given their origin in the 'old world' of business, many such interpretations of knowledge management may have serious and adverse implications for information strategy of enterprises, governments and institutions.

The discussion surfaces the key assumptions about information strategy and how they need to be considered afresh given the changing assumptions about business strategy and competitive business environment. Based on this discussion a new perspective of knowledge management is proposed followed by suggestions for the managers to effectively deploy it in the 'new world' of e-business. For the purpose of this article, the focus of discussion is on e-business enterprises as most observations are already evident in such organizations. However, most of the arguments, observations and conclusions are also relevant to executives interested in information strategy and business transformation for other post-industrial organizations in the twenty first century.

DISCONNECT BETWEEN IT EXPENDITURES AND ORGANIZATIONAL PERFORMANCE

Information strategy executives observed some significant transitions over the last quarter of the twentieth century: information technology (IT) as a lever of competitive advantage; the IT outsourcing bandwagon effect characterized by consideration of information as a 'utility' just like electric power or phone connection; and more recently the e-everything phenomena with the emergence of Internet and electronic commerce as key factors in business and IT strategy.

While some researchers suggested that same investments in information systems would yield different benefits in competitive advantage, others, such as the IT-economist Paul Strassmann, concluded that there is no relationship whatsoever between computer expenditures and company performance. John Seely Brown, director of Xerox Parc observed that despite investments of over $1 trillion in technology over two decades of this era, U.S. industry had realized little improvement in the efficiency and effectiveness of its knowledge workers. The confusion between knowledge and information has caused managers to sink billions of dollars in information technology investments that have often yielded marginal results.

The disconnect between IT expenditures and the firms' organizational performance could be attributed to an economic transition from an era of competitive advantage based on information to one based on knowledge creation. The earlier era was characterized by relatively slow and predictable change that could be deciphered and 'controlled' by most formal information systems. During this period, information systems based on programmable *recipes for success* were able to deliver their promises of efficiency based on optimization for given business contexts. Discussing the case of organizations that were slow to adapt their strategy to changing business environment, Peter Drucker has argued that such organizations were hobbled by their past recipes of success. Archetypes of such organizations have included IBM and GM that have created historical records in terms of annual corporate losses.

Another way to understand the prevailing disconnect between information technology investments and organizational performance is to reflect upon the difference between *knowledge* and *information*. The intent of this article is not to offer another definition in terms of semantics, but to offer a more pragmatic perspective. More specifically, *knowledge* is interpreted in terms of *potential for action* and distinguished in the following discussion from *information* in terms of its more immediate link with performance. This interpretation is consistent with what the information systems philosopher and professor Charles West Churchman had observed three decades ago in his pioneering work *The Design of Inquiring Systems*: "knowledge resides in the user and not in the collection of information… it is how the user reacts to a collection of information that matters." More recently, Nonaka and Takeuchi, the authors of the best seller *The Knowledge-Creating Company* have re-emphasized that only human beings can take the central role in knowledge creation. They argue that computers are merely tools, however great their information- processing capabilities may be. While information generated by computer systems is not a very rich carrier of human interpretation for potential action, knowledge resides in the user's subjective context of action based on that information.

FROM CONTINUOUS IMPROVEMENT TO RADICAL REDESIGN

In between the transitions mentioned earlier, information strategy executives participated in another significant transition over the last few years: that from Total Quality Management to Business Process Reengineering (BPR) as illustrated in Figure 1. In contrast to the traditional emphasis on continuous marginal improvements in existing processes, the proponents of BPR emphasized IT-intensive radical redesign of business processes. They proposed a clean-slate approach to re-build the company's information architecture and information strategy by rethinking the company's business in terms of business processes rather than discrete functions and hierarchies. An overemphasis on information technology at the cost of human involvement and commitment resulted in major implementation failures of BPR initiatives to the tune of 70%.

However, there were some problems with the proposed paradigm of BPR as it couldn't scale to the later shift to the networked paradigm enabled by the Internet and WWW. The ERP systems developed by the BPR-vendors such as SAP were expected to provide lock-step regimented sharing of data across various business functions. These systems were based on top-down model of information strategy implementation and execution, and primarily focused on coordination of companies' internal functions. While providing for unprecedented level of data sharing across internal functions, they straitjacketed the flexibility of information processing for each of the locked-in functions. The price for the high level of integration of data related to business processes was paid in terms of agility and flexibility required for adaptation. Earlier enterprise resource planning (ERP) models – developed by companies such as SAP — are still evolving to develop better external information flow linkages in terms of Customer Relationship Management (CRM) and Supply Chain Management (SCM). Meanwhile, new startups, such as Siebel and Ariba are offering needed external information flow functionality and information interfaces in terms of CRM and SCM. The ERP functionality, with its *internal* focus, complements the *external* focus of CRM and SCM to provide a base for creating seamless e-business applications. The continued challenge remains in terms of ensuring adaptability and flexibility of information interfaces and information flows — both *internally* and *externally* — required for coping with dynamically changing

Figure 1. Transition from Incremental to Radical Change

	TQM	**BPR**
Level of Change	• Incremental	• Radical
Start From	• Existing Process	• Clean Slate
Frequency	• One-time/Continuous	• One-time
Time Required	• Short	• Long
Participation	• Bottom-Up	• Top-Down
Typical Scope	• Narrow [within]	• Cross-functional
Risk	• Moderate	• High
Primary Enabler	• Statistical Control	• I.T.
Type of Change	• Cultural	• Cultural/Structural

business and competitive environments. The more recent development of e-business architectures based on software components – self-contained packages of functionality that can be snapped together to create complete business applications – seems to hold some promise for alleviating this problem.

The evolution of the information-processing paradigm over the last four decades to build intelligence and manage change in business functions and processes has generally progressed over three phases:

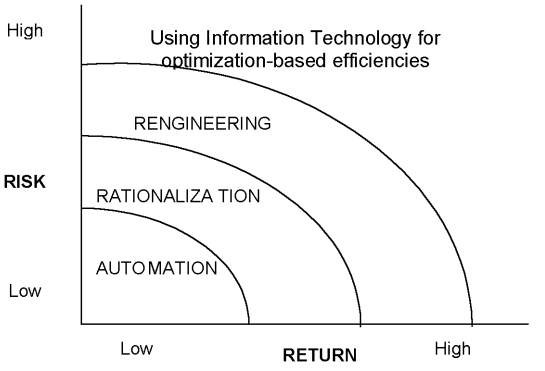
1. *Automation*: increased efficiency of operations;
2. *Rationalization of procedures*: streamlining of procedures and eliminating obvious bottlenecks that are revealed by automation for enhanced efficiency of operations; and,
3. *Re-engineering*: radical redesign of business processes that depends upon information technology intensive radical redesign of workflows and work processes.

The deployment of information technologies in all the three phases was based on a relatively predictable view of products and services as well as contributory organizational and industrial structures. Despite increase in risks and corresponding returns relevant to the three kinds of information technology enabled organizational change, there was little, if any, emphasis on business model innovation – 'rethinking the business' — as illustrated in Figure 2.

As demand for a company's products becomes more fickle with increasing role of customers, suppliers and intermediaries in dynamic pricing models such as eBay, mysimon.com, priceline.com and a host of other 'vertical' portals, *external* market information plays greater role in determining the *internal* logistics of the product and service lines. Ongoing shift from the 'economy of atoms' to 'economy of bits', coupled with competition encountered by *brick-and-mortar* stores (such as Toys R Us) from *click-and-mortar* stores (such as eToys) has resulted in reassessment of traditional economic factors of production. Renewed emphasis on information assets, or more correctly, knowledge assets, intangible assets and intellectual capital has fed the IPO-frenzy in which virtual companies have often achieved valuation many times over their brick-and-mortar analogues.

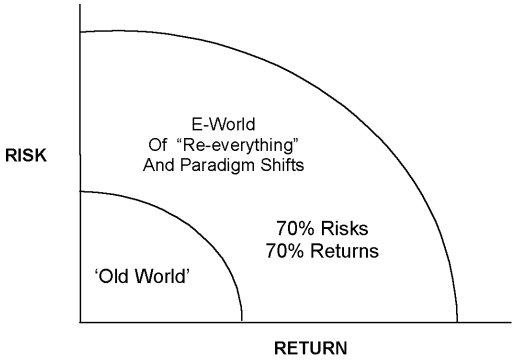
Most Net-based startups have realized that although technology is important, however business model innovation is the key lever for global market share. Examples of such new business models include Amazon.com and e-Toys, relatively new entrants that are threatening traditional business models embodied in organizations such as Barnes and Noble and Toys R Us. It is not that traditional brick-and-mortar companies were not leading users of informa-

Figure 2. Risk and Return in the "Old World of Business"



tion technologies, however, the new Net-based companies have fundamentally redefined the value equations related to their internal value chains and supply chains. Such business model innovations represent 'paradigm shifts' that characterize not only transformation at the level of business processes and process workflows, but radical rethinking of the overall business model as well as the information flows between organizations and industries. Not surprisingly, many brick-and-mortar companies that are playing catch-up to the e-business game are encountering serious challenges in integrating their *physical* and *virtual* value chains and supply chains.

Figure 3. Risk and Return in the E-World of Business



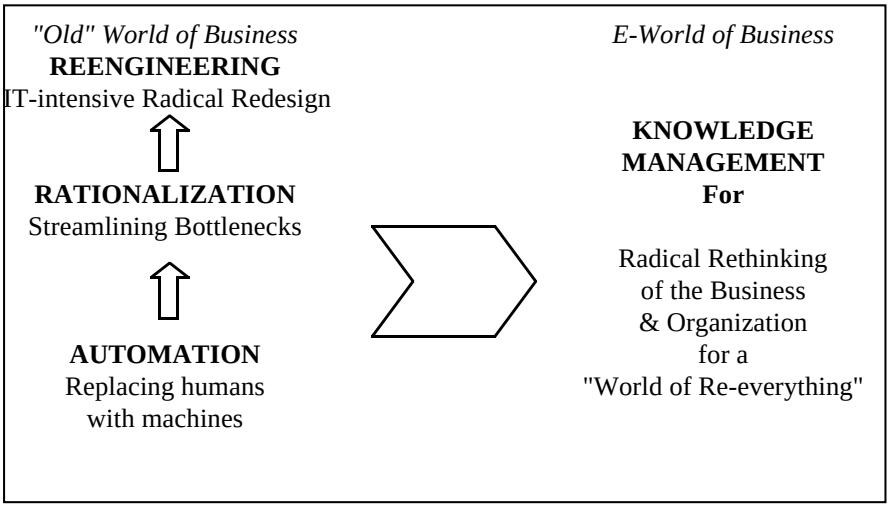
As noted by the business strategist Gary Hamel at an *Academy of Management* international meeting, the paradigm shifts characterizing the transition from the old world of business to e-world of business could account for as much as seventy percent of the *known* competitive players for many established companies. Taking this figure as a rough approximation in terms of risks and returns, one may speculate that more than 70% of risks and returns will depend upon companies' e-business model innovation strategy compared with 30% that will depend upon use of less radical measures.

BUSINESS PROCESS REDESIGN TO E-BUSINESS MODEL INNOVATION

Brian Arthur, the proponent of 'increasing returns' working with the Santa Fe Institute, has described the new world of information-enabled business enterprises as a 'world of re-everything.' In this new world of business, success or failure for most enterprises depends upon their ability to incessantly question and adapt their programmed logic of the way things are done. Such reality check of the company's ways of doing business is necessary to keep up with the sustained dynamic and radical changes in the business environment. The 'old world' of pre-determined and pre-defined *recipes of success* would still exist side-by-side with the world of re-everything in most business enterprises. However, companies' competitive survival and ongoing sustenance would primarily depend on their ability to continuously redefine and adapt organizational goals, purposes, and the organization's "way of doing things." Steve Kerr has described the state of business strategy for the new world in *Planning Review*: "The future is moving so quickly that you can't [predict] it...We have put a tremendous emphasis on quick response instead of planning. We will continue to be surprised, but we won't be surprised that we are surprised. We will anticipate the surprise."

Figure 4 provides a synopsis of the transition from the 'old' world of business to the e-world of business.

Figure 4. From "Old World" to E-World of Business: Knowledge Management for "Paradigm Shifts"



The new world of business puts less premium on playing by pre-defined rules and more on understanding and adapting as the rules of the game-as well as the game itself-keep changing. Examples of such changing business rules, conventions, and assumptions are evident in the emergence of virtual corporations and business ecosystems, and are most prominently visible in dot-com enterprises living in 'Internet time'. The essence of the discussion is that corporate world is now encountering not only unprecedented pace of change but also radical discontinuities in such change that make yesterday's *best practices* tomorrow's *core rigidities*. In the new world of e-business, literally "everything is up for grabs" including traditional concepts of industries, organizations, products, services and channels of marketing, sales and distribution. The new world imposes a greater need for ongoing questioning of the programmed logic, very high level of adaptability to incorporate dynamic changes into the business and information architecture and grow systems that can be readily adapted for the dynamically changing business environment. Organizations operating in the new business environment therefore need to be adept at creation and application of new knowledge as well as ongoing renewal of existing knowledge archived in company databases.

FROM INFORMATION PROCESSING TO KNOWLEDGE CREATION

The information processing view, evident in scores of definitions of knowledge management in the trade press and academic texts, has often considered organizational memory of the past as a reliable predictor of the dynamically and discontinuously changing business environment. Most such interpretations have also made simplistic assumptions about storing *past* knowledge of individuals in the form of routinized programmable logic, rules-of-thumb and archived best practices in data

bases for guiding *future* action. However, there are major problems that are attributable to the information-processing view of information systems. These problems are described below as three key myths about knowledge management as relevant to the new world of e-business.

Myth 1: ***Knowledge management technologies can deliver the right information to the right person at the right time.*** This idea applies to an outdated business model. Information systems in the old industrial model mirror the notion that businesses will change incrementally in an inherently stable market, and executives can foresee change by examining historical data and trends. The new business model of the Information Age, however, is marked by fundamental, not incremental, change. Businesses can't plan long-term; instead, they must shift to a more flexible "anticipation-of-surprise" model. Thus, for most significant decisions, it's impossible to build a system that can pre-define and predict who is the *right person*, what is the *right time*, and what constitutes the *right information.*

Myth 2: ***Knowledge management technologies can store human intelligence and experience*.** Technologies such as databases and groupware applications store bits and pixels of data, but they can't store the rich schemas embedded in human minds that are used for making sense of bits and pixels. Moreover, information is context-sensitive. The same assemblage of data can evoke different responses from different people at different points in time or in a different context. in terms of decisions, action and performance. Hence, storing a static representation of the explicit representation of a person's knowledge in a technology database or a computer algorithm — assuming one has the willingness and the ability to part with it – is not tantamount to storing human intelligence and experience.

Myth 3: ***Knowledge management technologies can distribute human intelligence***. Again, this assertion presupposes that companies can predict the *right information* to distribute and the *right people* to distribute it to. As noted earlier, for most important business decisions, technologies cannot communicate the meaning embedded in complex data as it is constructed by human minds. This does not preclude the use of information technologies for rich exchange between humans to make sense about bits and pixels. However, dialog that surfaces meaning embedded in information is an intrinsic human property, not the property of the technology that may facilitate the process. Often it is assumed that compilation of data in a central repository would somehow ensure that everyone who has access to that repository is *capable* and *willing* to utilize the information stored therein. Past research on this issue has shown that despite availability of comprehensive reports and databases, most executives take decisions based on their interactions with others who they think are knowledgeable about the issues. Furthermore, the assumption of singular meaning of information, though desirable for seeking efficiencies, precludes *creative abrasion* and *creative conflict* that is necessary for business model innovation. In contrast, data archived in technological 'knowledge repositories' does not allow for *renewal of existing knowledge* and *creation of new knowledge*.

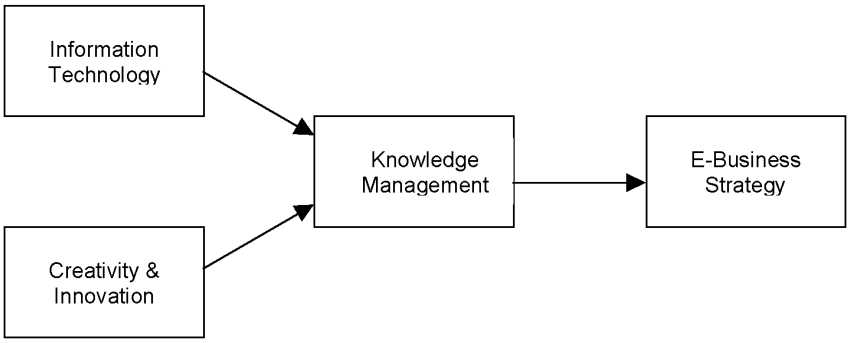
TOWARD KNOWLEDGE MANAGEMENT THAT MAKES SENSE

Given the dangerous perception about knowledge management as seamlessly entwined with technology, "its true critical success factors will be lost in the pleasing hum of servers, software and pipes" as observed in a recent *CIO Magazine* interview. A few years ago, technologies such as intranets, Lotus Notes, MS-Exchange were being considered as enablers of knowledge management. The more recent interest is in technologies related to knowledge portals, artificial agents and push-based technologies. Despite significant advancement in technologies and substantial investment by companies in such technologies, most organizations are still trying to find answers to simple questions such as: How to capture, store and transfer knowledge? How to ensure that knowledge workers share their knowledge? Given the quest for answers to such questions, it becomes imperative for organizations to clearly understand the above *strategic* distinction between *knowledge* and *information*. This *strategic* difference is not a matter of semantics, rather it has critical implications for managing and surviving in an economy of information overabundance and information overload. As most new media and Net executives competing for 'eyeballs', 'mindshare', and virtual communities, would realize, in the new world of e-business, the scarce resource is *not* information, *but* human attention.

Based on the above arguments, it seems logical to account for human attention, innovation and creativity needed for renewal of archived knowledge, creation of new knowledge and innovative applications of knowledge in new products and services that build market share. In the context of enabling e-business strategy, the proposed conceptualization of knowledge management is depicted in Figure 5.

Related to the preceding schematic, a working definition of knowledge management is proposed here: ***Knowledge management caters to the critical issues of organizational adaptation, survival, and competence in face of increasingly discontinuous environmental change. Essentially, it embodies organizational processes that seek synergistic combination of data and information-processing capacity of information technologies, and the creative and innovative capacity of human beings.***

Figure 5. Knowledge Management & E-Business Strategy



Unlike most conceptions of knowledge management proposed in information systems research and in trade press, the above conception is better related to the new model of business strategy and business model innovation. Its primary focus is on the outcomes in terms of performance rather than the specification of inputs. With rapid advancements and availability of technologies there would be multiple choices in terms of technologies that could facilitate a specific e-Business strategy such as customer relationship management (CRM), supply chain management (SCM) or selling chain management. However, the agility of the organization in being able to mesh the evolving business model with technological and structural changes on an ongoing basis will put a premium on creativity and innovation. This view relates more closely to the dynamic view of business strategy as driver of corporate information strategy. The *strategic distinction* between *knowledge* and *information* explained earlier is relevant to the key emphasis on performance and outcomes.

RECONCILING KNOWLEDGE MANAGEMENT AND E-BUSINESS STRATEGY

It was suggested that many current interpretations of knowledge management are based upon an outdated model of business strategy and may have adverse implications for e-business performance. The following discussion provides a more detailed explanation of the fundamental changes or 'paradigm shifts' that have driven their underlying business model to obsolescence.

The arguments made in the discussion also made a case for re-analyzing key assumptions based upon the new perspective of knowledge management that is better suited to the 'new world' of e-business. These transitions are labeled as 'paradigm shifts' as they represent changes of unprecedented proportions that are turning the 'tried and tested' management theories and assumptions on their head. As depicted in Figure 6, these shifts are explained in terms of business strategy, information technology, role of senior management, organizational knowledge processes, corporate assets and organizational design. These are interrelated issues, as each of them has implication for other issues.

Paradigm Shift in Business Strategy

The new world of business imposes the need for variety and complexity of interpretations of information outputs generated by computer systems. Instead of long-term prediction, the emphasis is on understanding the multiple future world-views by using techniques such as scenario planning. An example is the strategic

Figure 6. Transitions to the World of E-Business

	Industrial Business	*E-Business*
Strategy	Prediction	'Anticipation of Surprise'
Technology	Convergence	Divergence
Management	Compliance	Self-Control
Knowledge	Utilization	Creation & Renewal
Assets	Tangibles	Intangibles
Organizations	Structure	Edge of Chaos

planning process facilitated by Arie de Geus, the author of *Living Company*, while he was the strategy chief at Royal Dutch/Shell. He facilitated strategy sessions that were not driven toward finding common ground for a shared strategy; rather the emphasis was on understanding the differences in perspectives of various managers so that there was appreciation of the multiple world-views of the future. As evident,

in this perspective, organizational planning activities are not eliminated. However, instead of embodying a set of instructions for what should be done, such activities are used as ideological devices for building constituency and defining the limits of responsible opinion. The organization plans for its futures, but does not rely on its plans! This observation is more representative of several Internet-based startups that question their business logic everyday while competing in Internet time. Acute attention and response to market needs is a key determinant for most business organizations, however for Net enterprises such as Yahoo!, ivillage.com and etoys.com it resulted in market leadership, stellar business performance and multi-billion dollar IPOs.

The process of creative abrasion illustrated above enables a faster cycle of knowledge-creation and application through detection and correction of any discrepancies between the 'theory of business' and the dynamically changing business environment. In this model, access to organizational information base, authority to take decisive action, and the requisite skills are embedded at the frontlines where real action takes place so that strategy is devised and implemented in real time.

Paradigm Shift in Design and Use of Technology

With increasing computerization in organizations, organizational routines originally embedded in standard operating procedures and policies often become embedded in the firm's programmed logic. Often, they take the form of *congealed* 'best practices' embedded in computer programs and databases. Resulting information systems tend to be inflexible as they store a static representation of a dynamically changing business environment. With increasingly rapid, dynamic and non-linear changes in the business environment, static assumptions embedded in such systems become vulnerable. Growing realization of such vulnerabilities is behind increasing interest in designing information systems that can take dynamically changing information into account. Dynamic pricing models, and comparison-shopping agents such as mysimon.com (recently acquired by c|net) do take into consideration dynamically changing market data. However, such systems are still based on concrete representations of data and relatively routine and structured information. Regardless of the decision to 'build or buy', the challenge of walking the tightrope between adoption of latest technologies and remaining up to speed with ongoing business and technology developments is becoming more acute in the e-world of business.

Brook Manville, while with McKinsey, viewed implementation of these issues in terms of the shift from the traditional emphasis on transaction processing, integrated logistics, and work flows to systems that support competencies for communication building, people networks, and on-the-job learning. He had suggested that such competencies are based on flexible technologies and systems that support and enable *communities of practice* — informal and semi-informal networks

of internal employees and external individuals based on shared concerns and interests. Not surprisingly, developing virtual communities of consumers and users is among key priorities of vertical portals and specialized industry portals such as those being developed by companies like Ford and General Motors.

Paradigm Shift in the Role of Senior Management

Scholars and practitioners are de-emphasizing the adherence to the "way things have *always* been done" so that prevailing practices may be continuously assessed from multiple perspectives. As noted by Chris Argyris, the explicit bias of *command and control* systems for seeking compliance makes such systems inadequate for motivating divergence-oriented interpretations necessary for ill-structured and complex environments. Knowledge management systems designed to ensure compliance might ensure obedience to given rules, however they do not facilitate detection and correction of errors. Hence, it has been suggested that the role of the senior management needs to change from *command and control* to *sense and respond*. Furthermore, if knowledge, unlike information, is about *beliefs* and *commitment*, as noted by Nonaka and Takeuchi, the new emphasis should be on building *commitment* to organizational vision rather than *compliance* to rules and pre-specified best practices.

Senior managers need to view the organization as a human community capable of providing diverse meanings to information outputs generated by technological systems. They also need to make the organizational information base accessible to organization members. This is important given the increasingly fast-paced and dynamic business environment that creates disconnects between the process of decision-making at the top and implementation of such decisions at the grassroots. Emphasis on multiple and diverse interpretations of information also helps in development of a large repertoire of responses needed for deciphering the complexity inherent in dynamic changes of the business environment.

Paradigm Shift in Organizational Knowledge Processes

Institutionalization of 'best practices' by embedding them in IT might facilitate efficient handling of routine and predictable situations. However, greater proactive involvement of human imagination and creativity is needed to facilitate greater internal diversity to match the variety and complexity of the 'wicked environment'. Often, effective knowledge management in such environment may need imaginative suggestions more than it does concrete, documented answers. While the earlier emphasis of information systems was in defining the optimal programmed logic and then executing that logic to squeeze the highest efficiencies. However, increasing dynamics of the business environment mandate greater emphasis on ensuring *doing the right thing* than on *doing the thing right*. With ongoing reassessment of key assumptions, the emphasis is more on ongoing renewal of existing knowledge, creation of new knowledge and its application in business practices. This contrasts with the 'old world' model of archiving the knowledge in organizational databases devoid of human re-interpretation of its context.

The traditional information-processing model for the 'old world of business' assumes a problem as given and the solution based upon pre-specified understanding

of business environment. In contrast, the proposed model constructs the definition of the problem from the knowledge available at a certain point in time based upon its context. While individual autonomy in the proposed model facilitates divergence of meaning, the organizational vision facilitates the various views to converge in a given direction. This process avoids premature closure or convergence to surface multiple possibilities, opportunities and threats that could lie within the fog of unknowingness enveloping the company's future.

The two interpretations of knowledge management may be highlighted by the contrast between two US companies covered in the trade press. One of them, a US-based global communications company had indicated its preference for the information-processing model of knowledge management. Their knowledge management strategy could be summed up in the following words of a top executive: *What's important is to find useful knowledge, bottle it, and pass it around.* The other firm, a US-based global pharmaceutical firm, in contrast focused more on empowering the individuals to create and share knowledge: *There's a great big river of data out there. Rather than building dams to try and bottle it all up into discrete little entities, we just give people canoes and compasses.* As evident from the above discussion, their approach matches the knowledge management model proposed in this article.

Paradigm Shift in Economics of Organizational Assets

Peter Drucker has argued that in the emerging economy, knowledge is the primary resource for individuals and for the economy overall; land, labor, and capital - the economist's traditional factors of production - do not disappear, but they become secondary. The astronomical market caps of several Net-based companies have resulted in reassessment of traditional valuation models of business organizations. In recent history of the Net, companies born in virtual forms on the Net, such as etoys and amazon.com, have gained valuation of multiple times compared with their brick-and-mortar counterparts despite limited investments in 'hard assets'.

Similar observations are unraveling traditional accounting procedures that cannot account for new factors of production such as knowledge capital, intellectual capital and intangible assets. [A detailed account of these concepts is available in Tom Stewart's *Intellectual Capital.*] Success of Net companies and other information-centric companies such as Microsoft are attributed by some to 'increasing returns.' Traditional factors of production are limited by threshold of scale and scope as every marginal increase in land, labor or capital results in diminishing returns on the production outcomes. In contrast, information assets and knowledge capital seem to be governed by a different law of economic returns: investment in every additional unit of information or knowledge created and utilized results in a higher return. This is often attributed to *externalities*: as more people become members of the network and use its services, it adds greater value to the network.

Paradigm Shift in Organization Design

The information-processing model of knowledge management is constrained by its overemphasis on consistency institutionalized in the form of 'best practices.' The proposed model of knowledge management is expected to break this cycle of reinforcement of institutionalized knowledge. While the traditional business logic

was based on a high level of structure and control, the dynamics of the new business environment demand a different model of organization design. Often characterized as 'living on the edge of chaos', this model is characterized by relative lack of structure and lack of external controls as described by Kevin Kelly in *Out of Control*. It is based upon existence of only a few rules, some specific information and a lot of freedom. In the proposed model, designers of organizational knowledge management systems can, at best, facilitate the organization's 'self-designing'. Not only do the organization's members define problems for themselves and generate their own solutions, they would also evaluate and revise their solution-generating processes. By explicitly encouraging experimentation and rethinking of premises, this process promotes reflection-in-action and creation of new knowledge.

It is being increasingly realized that differences in perspectives may have a very positive role in innovation needed for new product and service definitions. Characterized by some management thinkers as 'creative abrasion', this view encourages promotion of individual autonomy in experimentation and learning. Going beyond the NIH ('not invented here') and the 'NIH yet I did it' syndromes, it encourages questioning of all given assumptions — regardless of their legitimacy — for their ongoing and continual reassessment. Instead of emphasizing 'best practices' archived in databases, this model encourages continuous pursuit of *better* practices that are aligned with the dynamically changing business environment.

CONCLUSION

Over the last few years, the corporate world has seen the emergence of interest in knowledge management and adoption of the term by information technology vendors and industry solution providers. However, despite the popularity of the buzzword, most such implementations have been based on an outdated business model and related information-processing view. It may be even argued that in several cases, it is difficult to justify why specific information technology solutions fall in the realm of 'knowledge management' rather than within the scope of good old 'information management' or 'data management'. This ambiguity has led some consultants to even remark that knowledge management is a fad.

As argued in this article, the news of the death of knowledge management is highly exaggerated. There is need for developing better and more accurate understanding of knowledge management as enabler of information strategy for the e-world of business. Departing from the information-processing perspective that was relevant to the industrial world of business, a new perspective of knowledge management was explained and discussed. The proposed conceptualization is based on the need for synergy between the capabilities of advanced information technologies and human creativity and innovation to realize agility demanded by emerging business environment. A clear explanation of the 'strategic' notion of *knowledge* and *knowledge management* is offered to distinguish the proposed model from the outdated perspective.

A number of examples from the world of Net businesses and more traditional companies were presented to illustrate the key arguments of the article. The discussion explained the transition from the old world of business to the new world of e-business in terms of fundamental transitions or paradigm shifts. It was also

explained how and why information executives should rethink fundamental assumptions about business strategy, design and use of information technology, the role of senior management, organizational knowledge processes, economics of organizational assets, and organization design for business model innovation. Better and accurate understanding of the *strategic* relevance of *knowledge* and *knowledge management* is expected to contribute to more effective e-business strategies that result in sustained business performance.

REFERENCES

Arthur, W. B. "Increasing Returns and the New World of Business." *Harvard Business Review*, July-August 1996, 74(4), pp. 100-109.

Drucker, P.F. "The Theory of Business," *Harvard Business Review*, September/October 1994, pp. 95-104.

Hagel, J. and Armstrong, A.G. *Net Gain: Expanding Markets Through Virtual Communities*, Harvard Business School Press, Boston, MA, 1997.

Hildebrand, C. "Does KM=IT?" *CIO Enterprise*, Sep. 15, 1999. [URL: http://www.cio.com/archive/enterprise/091599_ic.html].

Kalakota, R. & Robinson, M. *e-Business: Roadmap for Success*, Addison Wesley, Reading, MA, 1999.

Malhotra, Y. (forthcoming). Information Ecology and Knowledge Management: Toward Knowledge Ecology for Hyperturbulent Organizational Environments. In Kiel, Douglas L. (Ed.), *UNESCO Encyclopedia of Life Support Systems* (EOLSS) theme Knowledge management, *Organizational Intelligence and Learning, and Complexity*, 2000.

Malhotra, Y. (forthcoming). Knowledge Assets in the Global Economy: Assessment of National Intellectual Capital, *Journal of Global Information Management* (Special issue on 'Global Knowledge Management'), 2000.

Malhotra, Y. (in press). Role of Organizational Controls in Knowledge Management: Is Knowledge Management Really an Oxymoron? In Malhotra, Y. (Ed.), *Knowledge Management and Virtual Organizations*, Idea Group Publishing, Hershey, PA, 2000, pp. 245-257.

Malhotra, Y. Knowledge Management and New Organization Forms: A Framework for Business Model Innovation, *Information Resources Management Journal* (Special issue on 'Knowledge Management and Virtual Organizations'), Jan-Mar, 2000, 13(1), pp. 5-14.

Malhotra, Y. "From Information Management to Knowledge Management: Beyond the 'Hi-Tech Hidebound' Systems," in K. Srikantaiah and M.E.D. Koenig (Eds.), *Knowledge Management for the Information Professional*, Information Today, Inc., Medford, NJ, 2000, pp. 37-61.

Malhotra, Y. (Ed). *WWW Virtual Library on Knowledge Management*, @Brint.com, 2000. URL: http://www.brint.com/km/.

Malhotra, Y. "Deciphering the Knowledge Management Hype", *Journal for Quality & Participation*, July/August 1998, pp. 58-60. URL: http://www.brint.com/km/whatis.htm.

Malhotra, Y. Business Process Redesign: An Overview. *IEEE Engineering Management Review*, 26(3), 27-31, Fall, 1998.

Malhotra, Y. "Knowledge Management in Inquiring Organizations," in the Proceedings of 3rd Americas Conference on Information Systems (Philosophy of Information Systems Minitrack), Indianapolis, IN, August 15-17, 1997. URL: http://www.brint.com/km/km.htm.

Nonaka, I. and Takeuchi, H. *The Knowledge-Creating Company*, Oxford University Press, New York, NY, 1995.

Strassmann, P.A. *The Squandered Computer: Evaluating the Business Alignment of Information Technologies*, 1997, Information Economics Press, New Canaan, CT.

Tapscott, D., Lowy, A., Ticoll, D. (Eds.), Blueprint to the Digital Economy: Wealth Creation in the Era of E-Business, McGraw-Hill, 1998.