B2B Enterprise Technology Story

Web Summary:
Knowledge Management
by Leon A. Enriquez

Reading Time:
28 minutes

Reader Benefit:
♦ Understanding what knowledge management is all about;
♦ Things to consider before embarking on the knowledge management route;
♦ Knowledge management and you – What can you do on a self-help basis?

Long before the pervasive deployment of IT, the celebrated writer who lived in 17th century, Sir Francis Bacon aptly defined that *"knowledge is power."* Three centuries later, that eloquent, three-word exhortation is even more relevant. And simply because we tend to be overwhelmed today by a vast jungle of information, much more than we can handle – and not much sensible knowledge!

One of the latest buzzwords impacting the IT industry today is the term knowledge management. The objective of knowledge management is to deliver the organisational intellectual capacity – to the individuals who make the daily decisions that collectively determine the business success or failure. Knowledge management represents a dynamic perspective on the next big wave in business networking: to understand and to retain your customers by developing better intimacy on a one-to-one basis.

Imagine a precious pool of information about customers, work processes and daily routines lying somewhere within the organisation – unknown and therefore unavailable for use by unrelated members – to gain a competitive advantage. Unfortunately, this is happening more frequently now, and a commonplace situation where many organisations are unaware of their most powerful yet intangible asset – "knowledge."

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Knowledge Management

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Imagine a precious pool of information about customers, work processes and daily routines lying somewhere within the organisation – unknown and therefore unavailable for use by unrelated members – to gain a competitive advantage. Unfortunately, this is happening more frequently now, and the situation is a familiar scenario where many organisations are unaware of their most powerful yet intangible asset. In one word, it's called "knowledge."

Before we can begin to understand the significance of knowledge management, we need to ask a fundamental question: What is knowledge? According to the Webster's dictionary, knowledge is defined as: "The understanding gained by actual experience. For example, a knowledge of computer science; the act of understanding with a clear perception of truth; something learned and kept in the mind; and the state of being aware of something or information awareness."

Consider a simple illustration – customer information. Frequently, customer information – that could give a boost to the company's competitive advantage to transform the market – lies buried deep inside myriad reports.

For instance, insights into ways to generate customer value hide within inscrutable data – insights that can make a big difference to the bottomline, e.g., by recombining products and services in innovative ways. To make matters worse, such critical "know-how" walks right out the door when key employees leave the company. The problems are not the result of oversight but more because of the changing business environment. It follows therefore that in a knowledge-based economy, new ways of thinking are required if we are to manage knowledge.

Seen in another perspective, knowledge is intelligence derived from experience – and yields productive returns – when it is exploited and put to actionable use or integrated into a task. "Knowledge is information that has value," states an Accenture whitepaper.

Knowledge also refers to an organisation's ability to create new responses to new circumstances, based not on its memory of the past, but on its ability to understand the causes of current circumstances, and to use its insight and reason in generating the most effective response to them.

While memory of past experiences may help guide the decision-making process of the future, it is the ability to create and use new ideas that will help guide thinking in new circumstances. Thus, as the business environment changes more frequently and rapidly, the organisation's reliance on its knowledge storehouse increases.

So, how do some organisations handle change more effectively than others? The secret lies in applying the most innovative responses to the rapidly changing business environment.

The so-called new economy of the new millennium will see greater emphasis on gathering, processing, storing and interpreting information to meet competition. It follows then, that only those organisations which quickly adopt and acquire the "knowledge mindset", and who can juggle and share the knowledge base that they either already own or are gathering, will hold the basis of power in the next millennium.

Yet, because knowledge assumes many different forms, managing it represents a very big challenge to organisations.

It is not surprising that many people view knowledge management as another powerful business trend that will have a significant global impact. Evidently, the definition of knowledge management is even now becoming a necessary and integral part of any business plan if the enterprise aims to be successful in the longer term. Why? Because to think "on its feet", an organisation must have not just a rich information source, but a well-oiled and well-structured information system on which to build its knowledge management system.

A 1998 report by research firm International Data Corporation predicted that spending on knowledge management consulting services in the U.S. alone would reach US$3.4 billion by 2002. This huge amount of investment underlines the importance companies are attaching to knowledge management.

Tacit and Explicit Knowledge
Making personal knowledge available to others is the central activity of the knowledge-creating company. This takes place continuously and at all levels of the organisation. We need to note that there are different types of knowledge. These can be divided into two aspects, namely *tacit knowledge*, and *explicit knowledge*.

The creative innovation of products and services clearly illustrates that there is a "pull-and-push effect" or a movement between the two different types of knowledge. For example, consider how a team (which comprise different individuals) working on a project, moves in a spiral of knowledge that evolves from, say a brainstorming session and eventually creates new knowledge. It follows then that the new knowledge must be actionable if it is to yield the desired benefits to the organisation.

It is also important to clarify the difference between tacit knowledge and explicit knowledge, as follows:

♦ *Tacit knowledge:* At one end of the rainbow, tacit knowledge, because of its personal nature, is not easily captured or expressed. Because tacit knowledge is often composed of intuition, unanalysed experiences, values, skills and habits, it is difficult to qualify and quantify. Ownership of tacit knowledge can be either in the possession of an individual, or otherwise gathered by a workgroup.

♦ *Explicit knowledge:* Spanning the other end of the knowledge spectrum, explicit knowledge is more easily expressed by hard data, words, numbers and reports. Explicit knowledge is often more systematic, and codified because it is derived by formal methods. Explicit knowledge is therefore easily transmitted and learned as it is more easily captured from e-mail, groupware, databases, HTML files, and so forth.

♦ *Tacit-and-Explicit knowledge combination:* It is really the creative combination of both tacit and explicit knowledge that gives birth to new knowledge that can be counted on to come up with innovative solutions to new problems. Obviously, the development of a sound knowledge management strategy by an organisation hinges on its ability to effectively draw upon both its tacit and explicit knowledge as essential components of the knowledge infrastructure.

Knowledge Management?

The reality is not so obvious. Apart from the hype, the term knowledge management, by itself is nothing new. For instance, organisations have been doing the following for quite some time now, namely education, apprenticeship, on-the-job training, SOP (standard operating procedures) manuals, and a host of other approaches, to capture and commercialise best practices and core skills.

The big difference between success and failure in today's information-based economy is measured by how well an organisation utilises its available knowledge assets. In other words, how management views knowledge as a strategic weapon. This idea has rapidly become a critical element and is the key issue between winning or losing the business edge.

"Knowledge management emphasises human interactions as the focal point surrounding the collection, distribution and re-use of information," stated a GartnerGroup study in 1997. "In contrast, information management emphasises technology as the focal point for information collection, distribution and re-use."

Therefore, it is clear to see that knowledge management involves the distribution, access and retrieval of human experiences and relevant information between related individuals or workgroups. Human knowledge and interaction is the key: sharing ideas, solutions and relevant information in an effort to create innovative solutions to new problems that emerge.

When an industry or a company begins to experience change, one of the early warning signs is that the age-old rules which have ensured success for so long, seem insufficient to stop the gradual slide in profitability. Thus, the past becomes less and less of a mirror for the future, and corporate memory as an approach to dealing with the business environment begins to lose its effectiveness. In fact, it may even inhibit an open-minded willingness to consider alternative approaches.

Thus, knowledge management is the term given to this decision-making approach, which emphasises the re-use of previous experiences and practices, with dynamic modifications to meet present, changing circumstances.

Knowledge management is truly the force behind the current popularity of "knowledge-bases" which are central repositories for an organisation's knowledge of the past. But it also implies that this information must constantly be contrasted with that derived from present, changing circumstances, and the "gaps" filled in by organisational intelligence.

This intelligence has enabled companies to respond to the present scenarios by making decisions based partly on the knowledge of the past, and partly on a rational analysis of the future. The de-centralising of this knowledge allows its entire force to be drawn upon by nimble teams tasked with meeting a particular challenge. Corporate instinct is the only approach which combines intelligence and speed with enough vigour to ensure survival and success.

At the centre of all successful knowledge management strategies resides a powerful application. It enables the organisation to capture, access, browse, search, retrieve and share what is already known or possessed. Any organisation that can begin to disseminate their information assets quickly and easily across their enterprise infrastructure can start managing their knowledge assets. Relevant information can include any type of knowledge asset.

Examples of such assets include paper-based and workgroup documents, text, relational database management systems (RDBMS), e-mail, Adobe Acrobat portable document format (PDF) files, images or video, etc. collected from virtually any location in the organisation.

To ensure success in today's fast-paced IT environment, organisations must use and re-use the knowledge stored in their repositories efficiently and effectively – in a timely manner for prompt execution or meaningful action.

The key to knowledge management is to get the relevant knowledge to the necessary persons within a specified workgroup across the company infrastructure. Very few business processes take place on an enterprise-wide level. This means that the relevant knowledge distribution need not be a general enterprise-wide exercise but be channelled to the specific project workgroup. That is where action is planned and implemented through real or virtual workgroups, departments or separate groups of people working together on a common project. The goal of knowledge management, then, is simply to help those people work better together by using and managing increasing amounts of information.

The net result of a successful knowledge management implementation is – a knowing, learning and growing enterprise that has a clear understanding of how to exploit the knowledge assets to produce the required results. In other words, exploiting knowledge to achieve objective action.

Three Essential Components
Knowledge management is made of three essential components which are:
1. *People:* People need to relay past experiences and generate new ideas through innovation;
2. *Processes:* Processes for sharing and distributing that information consisting of explicit and tacit knowledge; and
3. *Technologies:* Technologies (IT) to make it all work in a fast and efficient manner.

People, processes and technology are the new building blocks for corporate success in today's information-rich markets.

People are necessary for brainpower, innovation, creativity, and the experiential knowledge to solve technical problems. People working together multiply an organisation's wealth of knowledge, and potential for success.

Effective and efficient business processes incorporated into an organisation's workflow help to create a sharing, collective and thriving atmosphere. Otherwise, all the best solutions in the world would stagnate if they were not distributed for updating, revision and execution. In reality, work happens in ad-hoc workgroups with a common set of people working to solve a common problem or challenge.

A basic technological infrastructure must be installed to help leverage collective brainpower and corporate knowledge, and thus, deliver new ideas and solutions quickly and practically so as to support human innovation and progress.

People
Tacit knowledge sharing means the free, unprompted sharing of knowledge and experiences among fellow workers and employees. This happens every day in the elevator, at the water cooler, even over cups of coffee. This human interaction and ad-hoc bumping into one another is often taken for granted. Yet, such unplanned human encounters form a critical component of any knowledge management system.

It is crucial for IT managers to convince individual employees to grant their respective workgroups access to exclusive information. By exclusive information we mean information that had previously added value to his or her job security and the individual's uniqueness. Obviously, any manager's goal is to help people work better together with increasing amounts of information. At the same time, it is necessary to generate new knowledge to pre-empt and solve new problems that arise.

Once an idea is created by an individual and put into practice, it goes through a period of evaluation and refinement. The idea or solution is then stored for future use by that individual or others, at which time that knowledge can be accessed and retrieved. Using the collaborative efforts of everyone involved in the new project, innovation leads to new ideas, new solutions and new products. This pattern illustrates what is known as the knowledge process. Both tacit and explicit knowledge is needed to produce new knowledge.

A knowledge-rich organisation emerges as the result of this knowledge process which actively and creatively uses and re-uses the knowledge and experiences of its people. Like it or not, it is inevitable that we live and work in an economy that is intensively knowledge-based.

The merits are clear: Finding, annotating, refining and re-using knowledge helps an organisation increase its efficiency, improve its effectiveness, gain a competitive advantage and enhance productivity.

Processes
A Meta Group study in 1997 stated that "While all business processes can benefit from better knowledge management techniques, organisations that re-define specific core processes to exploit knowledge management opportunities will become the 21st century market leaders."

It is worthwhile today for organisations to implement processes and technology that help facilitate knowledge sharing. But because the idea of knowledge management is still somewhat vague and overwhelming, IT managers often don't know where to start.

First of all, an organisation must encourage and accelerate the flow of information from people to people, and from individuals to the enterprise. The mutual sharing of both personal knowledge (i.e., knowledge held by an individual) and organisational knowledge (i.e., knowledge collected by an organisation) fuels innovation and adds value.

Obviously, there is a major challenge to all of this. The question is simple. How do you change the culture of an organisation from one of "knowledge is power" to "knowledge *sharing* is power"? This is going against the grain – of individual knowledge ownership – and that is where conflict occurs.

Consider the familiar illustration of knowledge and how it is acquired. In school as individuals, each one of us had learned to protect our own knowledge. For example, sharing knowledge in a test would instantly result in punishment because it was considered the wrong thing to do. From that experience, we quickly became aware and convinced that the more knowledge we keep to ourselves the more "valuable" our individual intelligence will become.

Therefore, it's easy to see why, in our corporate business world, we still tend to hoard knowledge believing that the more knowledge we have, the better off we expect to be. And that mentality seemed to serve us well until now!

Herein lies what is known as the "knowledge management dilemma". Can the old way of knowledge possession be changed to face the confusion brought about by the information revolution?

The burden and responsibility falls on the knowledge-creating organisations to sort out this mess and confusion. How? By implementing and facilitating sweeping cultural changes to encourage knowledge-sharing rather than knowledge-hoarding as we move into a knowledge-based economy.

To achieve this goal of changing the mindset of the knowledge-worker to knowledge-sharing, organisations must implement the appropriate processes and technologies quickly and with a sense of urgency. Once a knowledge-sharing process has been established, an intelligent process for filtering the inevitable glut of information into applicable knowledge is required. This leads us to the concept of knowledge retrieval, as well as other IT tools such as data-mining, etc.

Knowledge retrieval is a higher form of information search and retrieval because it has the ability to search all data formats and, in turn, use the information it finds to make each query as relevant as possible.

If you conduct a query or search today, you will immediately notice that the low-end, Boolean-based search engines dominate the personal search market on the Internet. These are increasingly frustrating to use, and time-consuming. Yet, the end-results are not very helpful because you are directed to a glut (overload) of information but not much of intelligent knowledge – and which may not even come close to the logical and intelligent answers that you require!

To address the issue at hand, it is important to note the differences between the following terms – data retrieval, information retrieval, and knowledge retrieval.

- ♦ ***Data retrieval*** is the province of many low-end, Boolean search engines on the market today. Rather than solving the problem of knowledge drought, they contribute to "info-glut" by forcing users to wade through oceans of raw, frequently irrelevant bits of information.
- ♦ ***Information retrieval*** goes a bit farther by returning information in some sort of organised manner. But information retrieval lacks context and an understanding of the concepts underpinning the query, leaving knowledge workers floundering in a sea of ambiguous results. Consider for instance, the difference between a financial "bank" and a river "bank".
- ♦ ***Knowledge retrieval*** is only attained when high-end searches deliver information genuinely relevant to users' needs, information that resonates with the original intent of the query. Moreover, for a knowledge retrieval system to operate effectively in today's information rich environments, it must be accurate, scalable, secure, extensible, transparent and simple-to-use.

Technology and Knowledge Retrieval

Knowledge management is not just technology alone but it is truly a combination of people, processes and technology. It follows that knowledge management is not an out-of-the-box application or simply an application that you can download. Fundamentally it is important to note that knowledge management consists of many things such as business plans, human interaction and more.

Note that knowledge management requires a technological spine, supported by a powerful knowledge retrieval system. Knowledge retrieval is one of the key enabling technology of knowledge management. It is impossible to manage and effectively use the continuously growing intellectual capital within an organisation, if it cannot be quickly and easily accessed.

Knowledge retrieval returns information that is accurate and relevant to the query so it can be immediately applied to the problem. Implementing a knowledge retrieval solution helps an organisation take the first step towards breaking the massive knowledge management puzzle into manageable and understandable pieces.

"High-end knowledge retrieval is the ability to retrieve the most accurate and relevant information from the broadest number of sources in a variety of source types – will be a critical success factor, not just today, but in preparing for the global marketplace of the coming millennium," states Carl Frappaolo of Delphi Consulting.

In addition to the power of knowledge retrieval technology, an organisation must have an enterprise-wide infrastructure for sharing explicit knowledge as well as tacit knowledge. This means that workgroups must be able to rapidly distribute necessary information back and forth to one another over a client/server system.

Finally, an organisation must possess and use its repositories of information containing the collective knowledge of the enterprise. There needs to be a place where employees can access information in all forms. This includes paper, e-mail, notes, PDF files, and other visual images and video, as well as other forms of shared experiences.

In addition, having the ability to acquire new intelligence is crucial to an organisation's survival. This is best represented by the ability to search networks outside of the organisation (e.g., the Internet) quickly, safely and accurately, without adding significant time and labour to the search process.

Knowledge Management Puzzle

Knowledge management must be seen in the context of continuous renewal. There are three steps to establishing a knowledge management system:
1. Knowledge capture;
2. Knowledge inventory; and
3. Knowledge transfer.

The implication of this hierarchy is that knowledge management does not really exist until a great deal has been done to support it.

Knowledge Capture: Far too many organisations focus their efforts on how to get knowledge out of their knowledge management systems and too little effort getting it in. It requires constant replenishment. The capture and collection of knowledge occurs in every organisation without regard to formal mechanisms.

There are three obstacles to capturing knowledge and these are:
- *Mobility* – Mobility makes the task of conveying tacit knowledge to the organisational knowledge difficult because people are always moving in and out;
- *Half-life* – Because tacit knowledge has a limited lifespan, people who use it should constantly re-evaluate the validity of the tacit knowledge on which they base their decisions; and
- *Threat to specialists* – Many individuals who have become specialists in their areas of expertise are obviously reluctant to part with their knowledge for fear that it will make their skills less valuable or less in demand.

Knowledge Inventory: Once an organisation has mastered the ability to replace knowledge on an ongoing basis, it must find a means of cataloguing the knowledge. But because we are so accustomed to indexing information e.g., in documents, databases and structured forms, we tend to revert to the same techniques of knowledge. But there are other non-traditional structured forms such as elaborate HTML links, etc. which we may choose to ignore at a detrimental cost.

Knowledge Transfer: Information needs linkages to be considered knowledge. Yet both links and the information needed to follow rules in order to convey knowledge. This means that providing a document and a link to two or more documents is necessary but not sufficient in conveying knowledge. It is also crucial to convey the processes or business rules that govern the use of knowledge, in order for the information to be transferable to people in the organisation.

For instance, knowledge transfer means transferring the implicit nature of not only what, but also how work is to be done. The real challenge is the "how" part is a difficult thing to transfer in knowledge work.

Transforming Work
Knowledge management makes businesses work better. But how does that happen in practice? It comes from structuring every part of the business to support knowledge creation and knowledge sharing. This goes beyond databases and involves a completely new methodology: a culture and mindset change!

The first practical step is looking at the essential, core business through a strategic knowledge management lens. From this point, you can answer the following questions:
- What do we need to know?
- Where does insight and knowledge get created?
- How can we best capture it?
- How can it get us to our destination?

With the "map of the knowledge landscape" in hand, you can then shape the organisation structure, the business process, how people are rewarded, the customer promise, and the technology infrastructure to take create and take advantage of knowledge throughout the organisation.

But design alone is not enough. Everyone must change how they work. This must effectively start at the level of the individual person – assumptions, habits, and connections with other people. This is not a small task!

In practice, this truly requires an integrated, full-scale mobilisation campaign throughout the organisation. And knowledge management needs top management support in order to overcome the formidable obstacles to this mindset change – and achieve success. This fact must be clearly understood ahead of the knowledge management implementation process.

Strategic Value
Contrary to popular belief, knowledge strategies actually begin with strategy, and not knowledge. Consider that apart from the vast attention given to it, e.g., intellectual discussions, the contrast is that the concept of knowledge management remains vague.

For instance, the fashionable definitions of the day can range from implementing IT systems, to improving product-development processes, to focusing on enterprise-wide transformation, to corporate cultural change. But there is a light emerging at the end of the tunnel.

The best examples of successful knowledge management deal with specifics – the strategic issues at stake – as opposed to merely the massive raw data that needs to be deciphered and organised. What is the key issue? Rightly, it is the business impact of knowledge assets that brings value to the company. Consider the analogy that the only persuasive evidence – that your organisation has put in place a successful knowledge management programme – is when your action is smarter!

Essentially, knowledge management enables a company to capture, apply and generate value from the creativity and expertise of the human resource. This mean that people are empowered to collaborate and share knowledge from past experiences, as well as to make use of the knowledge of others. In essence, this enables people to gain, and then, put to good advantage useful insights about your customers, suppliers and competitors.

Why Now?

Knowledge management is in vogue simply because there is a dramatic need for it. There are three critical reasons that impact today's business climate, and these are new to the business environment. These critical aspects impacting businesses are:

♦ Competitive environment: The increase of global competitive pressures;
♦ Knowledge economy: The birth of the so-called knowledge economy; and
♦ New technologies: The technological advances of the digital age. In this business climate, decision-makers are asking simple yet fundamental questions such as: What makes my company unique? How do we sustain this uniqueness?

Competitive environment: (The increase of global competitive pressures)
It is increasingly difficult to rely on traditional methods of knowledge sharing as a result of down-sizing, time pressures, and an increasingly mobile workforce. Simultaneously, structural barriers are falling rapidly even as high-quality, low-cost manufacturing becomes ubiquitous in the global, outsourced economy.

Service, flexibility and intelligent interactions are becoming more important. Add to this the rapid pace of change together with an increase in competitive pressures. With this backdrop, your company is forced to ask better questions, and develop answers, and deploy solutions faster than your competitors.

Knowledge economy: (The birth of the so-called knowledge economy)
Today, people and information are scarce compared to say manufacturing plants, equipment and land. A good example are the banks which competed on the close proximity of the branch locations to potential customers. In addition, banks competed on their ability to execute transactions in more cost-effective ways.

Nowadays, the primary competitiveness of such financial institutions depends on their resourcefulness to use knowledge about their customers and especially the individual customer's preferences to extend their service offerings.

New technologies: (The technological advances of the digital age)
Time and distance used to be barriers to real-time information access. But this is no longer the case as technological advances have collapsed time and distance, thus enabling faster ways to communicate and collaborate.

Technology also enables more efficient ways of accessing, structuring, integrating and using knowledge in business processes.

Creating Strategic Advantage

To develop an appropriate knowledge management system for a given company requires a clear understanding of the company's strategy and core processes. How a company hopes to gain and maintain a competitive advantage will completely determine the information it needs. For instance, is your company competing on speed of innovation, operational efficiency, or customer service techniques?

Consider the following example. A manufacturing company specialising in electronic components invested a considerable sum of money and years in an ERP system. In the process, they realised that they had created an extremely valuable operating information resource. So the company decided to develop an intranet to capitalise on the available information database, and disseminate the data to users throughout the firm. Despite the workshops held to accelerate data transfer into the new electronic channel, the company was unable to prioritise the mountains of data.

However, when the company's managers shifted the conversation away from the new technology (and the information available to feed it) towards specific business issues, only then was progress achieved.

What happened? Once the company's managers agreed on the knowledge needed to address the key issues – the quantity of data that needed to be analysed was drastically reduced and the true value of the information disseminated increased proportionately.

Knowledge management can be thought of a simple cycle involving four key steps as follows:
1. Structuring;
2. Disseminating;
3. Absorbing; and
4. Scanning.

It is vital to note that all four steps must work if the cycle is to generate real benefits. Relative to the emphasis the company places on each step will be the differentiating factor and whether its knowledge strategy is focused on efficiency or innovation.

The efficiency or innovation route?

In the first wave of the knowledge management deployments, companies that did so typically implemented knowledge management systems to drive cost efficiencies. Consider some of the well-known success stories that focus on efficiency gains. According to a report by EDS, Chevron saved US$150 million by sharing expertise in energy use and management. Similarly, British Petroleum saved US$80 million by disseminating its best practices in exploratory drilling.

The examples cited indicate how these companies used efficiency-driven knowledge management to focus on ways to use information more effectively. Companies realise that knowledge can drive value compared to say, properly managed inventory control. According to EDS, some estimated US$4.5 billion was spent by companies in the U.S. in the year 2000, to create data warehouse and other knowledge infrastructures.

The aim of efficiency-driven knowledge management is to classify and retrieve "documented objects" such as operating procedures, business information and patents. A knowledge management team then identifies information assets, and uses an intranet (or document management warehouse) to facilitate information storage and retrieval.

Efficiency-driven knowledge management relies on:
♦ Structuring information; and
♦ Disseminating information.

The next generation of knowledge management is now emerging. It focuses on learning and strategic innovation. Here, the approach will be paradoxical as illustrated by the statements: "Solving problems is reactive. Seeking opportunities is proactive. Being proactive is better than being reactive." The idea is simple – innovation-focused knowledge management can help create new value propositions and re-define the company's business model.

Thus, second generation knowledge management has some clear advantages such as:
1. It enables a better understanding of competitive positioning;
2. It helps bring superior products to market faster; and
3. It can be used to anticipate and meet customer needs.

This is achieved by enhancing capture and transfer of "new knowledge", which requires fundamentally different processes and infrastructures.

Innovation-driven knowledge management depend on:
1. Absorbing (or learning) information; and
2. Scanning (or insights for new approaches) information.

In Summary
Businesses today are looking for a new strategy which can revive the basic spirit that created them in the first place – the entrepreneurial type. Can your knowledge management deliver the promises? How can you tell if your knowledge management strategy measures up?

The following distinctive characteristics can be found in an organisation that develops successful knowledge management because the company:
♦ Possesses, or has access to, stores of codified knowledge that helps the company attain its strategic goals;
♦ Is an active contributor to its portfolio of codified knowledge;
♦ Is adept at codifying knowledge quickly and effectively;
♦ Is adept at disseminating codified knowledge quickly and effectively;

♦ Gives people permission to experiment with how each person applies knowledge in the day-to-day business activities because it recognises that innovation can develop when codified knowledge is re-interpreted;

♦ Encourages people to be alert to new ideas, and provides plenty of space for each person to be creative; and

♦ Acts to remove the 'blind spots' that prevent the acceptance of new data and information.

To avoid the pitfalls, any company or organisation that endeavours to utilise knowledge management should be aware of and understand the paradoxes that exist in this space.

Knowledge management – like any other management approach – can truly be a source of significant competitive advantage provided it is unleashed in a strategically astute way and implemented well. Otherwise, it may turn out to be momentary fad that fails to deliver the significant results that you expect.

Box Story 1:
The Knowledge-Creating Company

The following paragraphs are excerpts from the paper: The Knowledge-Creating Company by Ikujiro Nonaka, professor in Knowledge, Haas School of Business, UCLA at Berkeley.

The more holistic approach to knowledge at many Japanese companies is also founded on another fundamental insight. A company is not a machine but a living organism. Much like an individual, it can have a collective sense of identity and fundamental purpose. This is the organisational equivalent of self-knowledge – a shared understanding of what the company stands for, where it is going, what kind of world it wants to live in, and, most important, how to make that world a reality.

The knowledge-creating company is as much about ideals as it is about ideas. And that fact fuels innovation. The essence of innovation is to recreate the world according to a particular vision or ideal. To create new knowledge means to literally recreate the company and everyone in it in a non-stop process of personal and organisational self-renewal.

In the knowledge-creating company, inventing new knowledge is not a specialised activity – the province of the R&D department or marketing or strategic planning. It is a way of behaving, indeed a way of being, in which everyone is a knowledge worker – that is to say, an entrepreneur.

The reasons why Japanese companies seem especially good at this kind of continuous innovation and self-renewal are complicated. But the key lesson for managers is quite simple: much as manufacturers around the world have learned from Japanese manufacturing techniques, any company that wants to compete on knowledge must also learn from Japanese techniques of knowledge creation.

The experiences of Japanese companies suggest a fresh way to think about managerial roles and responsibilities, organisational design, and business practices in the knowledge creating company. It is an approach that puts knowledge creation exactly where it belongs: at the very centre of a company's human resources strategy.

<u>Box Story 2:</u>
Insights About Knowledge

♦ New knowledge always begins with the individual. For instance, a brilliant researcher has an insight that leads to a new patent. Or take the case of the middle manager's intuitive sense of market trends becomes a catalyst for an important new product concept. Or the situation where a shopfloor worker draws upon years of experience to come up with a new process innovation. In each case cited, an individual's personal knowledge is transformed into organisational knowledge, and becomes valuable to the company.

♦ Making personal knowledge available to others is the central activity of the knowledge-creating company. This takes place continuously and at all levels of the organisation.

♦ Creative innovation illustrates a movement between two different types of knowledge, namely tacit knowledge, and explicit knowledge.

♦ The starting point of knowledge begins with the individual, and is called tacit knowledge. It is not easily expressible because tacit knowledge is highly personal, is hard to formalise, and is difficult to communicate to others. It is also deeply rooted in action and in an individual's commitment to a specific context – a craft or profession, a particular technology or product market, or the activities of a workgroup or team. Tacit knowledge consists partly of technical skills – the kind of informal, hard-to-pin-down skills captured in the term "know-how". For example, a master craftsman after years of experience develops a wealth of expertise "at his fingertips". But he is often unable to articulate the scientific or technical principles behind what he knows. At the same time, tacit knowledge has an important cognitive dimension. It consists of mental models, beliefs, and perspectives so ingrained that we take them for granted, and therefore cannot articulate them.

♦ The ending point of knowledge evolves with the organisation, and is known as "explicit knowledge". It is formal and systematic. For this reason, explicit knowledge can be easily communicated and shared in specific ways such as product specifications, or scientific formula, or a computer program.

♦ The distinction between tacit and explicit knowledge suggests four basic patterns for creating knowledge in any organisation. These are:

1. *From tacit to tacit.* For instance, consider the situation when one individual shares tacit knowledge with another person who learns or acquires the new tacit knowledge skills through observation, imitation, and practice. This becomes the tacit knowledge passed on to the other person, who is "socialised" into the craft.

2. ***From explicit to explicit.*** Consider an individual who can also combine discrete pieces of explicit knowledge into a new whole. A good example is the case of a financial controller of a company who collects information from throughout the organisation, and puts it together in a financial report. The report represents new knowledge in the sense that it synthesises information from many different sources.
3. ***From tacit to explicit.*** When tacit and explicit knowledge interact, something powerful happens. An observation indicates that Japanese companies are especially good at developing the exchange between tacit and explicit knowledge. When a person is able to articulate the foundations of his tacit knowledge and converts it into explicit knowledge so that it can be shared with say, the project development team. Consider the example of the financial controller who, instead of compiling a conventional financial plan for his company, develops an innovative and new approach to budgetary control based on his own tacit knowledge developed over years of experience on the job.
4. ***From explicit to tacit.*** As new explicit knowledge is shared throughout the organisation, other employees begin to internalise it -- that is, they use it to broaden, extend, and reframe their own tacit knowledge. Citing the example of the financial controller's proposal which causes a revision of the company's financial control system. other employees use the innovation and eventually come to take it for granted as part of the background of tools and resources necessary to do their jobs.

Box Story 3:
The Spiral of Knowledge

Dialogue and Discussion
Teams play a central role in the knowledge-creating company because they provide a shared context where individuals can interact with one another and engage in the constant dialogue on which effective reflection depends. Team members create new points of view through dialogue and discussion. They pool their information and examine it from various angles. Eventually, they integrate their diverse individual perspectives into a new collective perspective.

In the knowledge-creating company, all four patterns of combining tacit and explicit knowledge exist in dynamic interaction, a kind of spiral of knowledge. The dynamic interaction process can be summarised as follows:

Step 1: *Socialisation:* Learn or acquire the secret "know-how" of new tacit knowledge.

Step 2: *Articulation:* Translate the secret "know-how" into explicit knowledge so that it can be communicated and shared with project team or others.

Step 3: *Combination:* Standardise the new explicit knowledge by putting it together into a manual or workbook, or embody it in a product.

Step 4: *Internalisation:* Through the experience of creating a new explicit knowledge, the individuals enrich each of their own tacit knowledge base by learning and understanding in an extremely intuitive way.

Once the cycle is completed, this starts the spiral of knowledge all over again, but this time at a higher level of competence, or new tacit insight. Synthesising the tacit knowledge from frontline employees and team members, and making it explicit knowledge enables the new knowledge to be incorporated into new technologies and products. In the process, they become the true "knowledge engineers" of the knowledge-creating company.

♦ Articulation (converting tacit knowledge into explicit knowledge) and internalisation (using explicit knowledge to extend your own tacit knowledge base) are the critical steps in this spiral of knowledge. The primary reason is that both, articulation and internalisation, require the active involvement of the self – which means a personal commitment, decision and personal identity.

♦ Because tacit knowledge includes mental models and beliefs in addition to know-how, moving from tacit to explicit is really a process of articulating your vision of the world – what it is and what it ought to be. When workers invent new knowledge, they are also reinventing themselves, the company, and even the world. Once you grasp this, you realise that the appropriate tools for managing the knowledge-creating company requires a personal commitment and innovative approach.

♦ To convert tacit knowledge into explicit knowledge means finding a way to express the inexpressible. Unfortunately, one of the most powerful management tools for doing so is also among the most frequently overlooked: the store of figurative language and symbolism that managers can draw from to articulate their intuitions and insights. Consider the case in Japanese companies where this evocative and sometimes very poetic language figures prominently in product development.

Box Story 4:
Defining the Learning Organisation?

Consider the following definition. "A learning organisation is an organisation skilled at creating, acquiring, and transferring knowledge, and at modifying its behaviour to reflect new knowledge and insights," states Professor David Garvin of Harvard Business School.

The truth of the matter is this: New ideas are essential if learning is to take place. Sometimes new ideas are created through flashes of insight or creativity. At other times, new ideas arrive from outside of the organisation; or are communicated by knowledgeable insiders. These ideas trigger organisational improvement despite their source. But these new ideas cannot by themselves create a learning organisation. Only the potential for improvement exists. What's really required is the accompanying changes in the way work gets done.

Learning organisations are skilled at five main activities:
1. Systematic problem solving;
2. Experimentation (with new approaches);
3. Learning from experience (their own experience and past history);
4. Learning from others (the experiences and best practices of others); and
5. Transferring knowledge (quickly and efficiently throughout the organisation).

Each is accomplished by a distinctive mindset, tool kit, and pattern of behaviour.

Systematic problem solving: This activity is based on the ideas of the quality movement. The methodology includes:
1. Relying on the scientific method for diagnosing problems rather than guesswork (e.g., The Plan-Do-Check-Action adopted by quality circles);
2. Relying and insisting on data as the background for decision making rather than mere assumptions;
3. Using simple statistical tools to organise data and draw references (e.g., Histograms, Pareto charts, correlations, cause-and-effect diagrams).

Experimentation: This activity involves the systematic searching for and testing of new knowledge. This usually is usually motivated by opportunity and expanding horizons, and not by current difficulties. Experimentation takes two main forms: Ongoing programmes; and Demonstration projects.
♦ *Ongoing programs* normally involve a continuing series of small experiments, designed to produce incremental gains in knowledge. A prime example is the continuous improvement programmes that are implemented at a shopfloor. Successful ongoing programmes also require an incentive system that favours risk-taking.

♦ *Demonstration projects* are usually larger and more complex than ongoing experiments. They involve holistic, systemwide changes, introduced at a single site, and are often undertaken with the goal of developing new organisational capabilities. Because these projects represent a sharp break from the past, they are usually designed from scratch using a "clean slate" approach, and involve considerable "learning by doing" and mid-course correction is quite normal. When successful, the demonstration project is adopted for large scale implementation.

Learning from experience: Organisations must review their successes and failures, assess them systematically, and record the lessons in a form that employees find open and accessible. For instance, in a study of more than 150 new products by Madique and Zirger (Research Policy, 1985) concluded that "the knowledge gained from failures is often instrumental in achieving subsequent successes… In the simplest terms, failure is the ultimate teacher." In such cases, as in many others, learning occurred by chance than by careful planning.

Learning from others: Not all learning comes from reflection and self-analysis. Sometimes the most powerful insights come from looking outside one's immediate environment to gain a new perspective. Such is the case for benchmarking which is actually an ongoing investigation and learning experience that ensures that the best industry practices are uncovered, analysed, adopted and implemented. The best way is to see the benefits that come from studying practices, the way work gets done, rather than results alone.

Transferring knowledge: For learning to be pervasive, knowledge must spread quickly and efficiently throughout the organisation. Ideas carry maximum impact when they are shared broadly rather than held in the hands of a few. Examples of how this can be achieved include a variety of mechanisms such as written, oral, and visual reports, site visits and tours, personal rotation programmes, education and training programs, and standardisation programmes.

Box Story 5:
Stages of Knowledge

Scholars have suggested that production and operating knowledge can be classified systematically by level or stage of understanding. For instance, at the lowest levels of manufacturing knowledge, little is known other than the characteristics of a good product. By contrast, at the highest levels of manufacturing knowledge, all aspects of production are known and understood. All materials and processing variations are articulated and accounted for, with rules and procedures for every contingency.

Jaikumar and Bohn (Research on Technological Innovation Management and Policy, 1986) outlined that: In total, the framework for classifying and specifying the stages of knowledge from the lowest to highest can be summarised as follows:

1. Recognising prototypes: What is a good product?
2. Recognising attributes within prototypes: Ability to define some conditions under which process gives good output.
3. Discriminating among attributes: Which attributes are important? e.g. new employees are often trained through apprenticeships.
4. Measuring attributes: Some key attributes are measured; measures may be qualitative and relative.
5. Locally controlling attributes: Repeatable performance; e.g. process designed by expert, but technicians can perform it.
6. Recognising and discriminating between contingencies: Production process can be mechanised and monitored manually.
7. Controlling contingencies: Process can be automated.
8. Understanding procedures and controlling contingencies: Process is completely understood.

Box Story 6:
What Constitutes Knowledge?

Knowledge can be said to comprise five distinct elements:

1. ***Know-How:*** Tested, proven procedures to get things done.

2. ***Know-Who:*** Those individuals who possess appropriate experience or resources.

3. ***Know-What:*** The ability to discern and pick out key patterns and relevant action.

4. ***Know-Why:*** An understanding of an experience in the larger context or vision.

5. ***Know-When:*** A connecting sense of timing, rhythm and realism.

For example, it is a critical determinant before someone begins work on a project (Know-What), that they should be made aware and know who else in the organisation has valuable information to contribute (Know-Who), and how that information can benefit his or her specific project (Know-How). Add to this broad understanding of the vision (Know-Why), and a sense of timeliness (Know-When) and the knowledge innovation begins to take shape.

Box Story 7:
The Knowledge Management Cycle

Knowledge management can be thought of a simple cycle involving four key steps as follows:
1. Structuring;
2. Disseminating;
3. Absorbing; and
4. Scanning.

Structuring: Most companies start here: by capturing and distilling knowledge into structured frameworks. More creative approaches to knowledge structuring include rich information and contextual data. For example, structuring voluminous data into easily digestible pieces of intellectual capital enables a company to disseminate know-how – in context – throughout the firm. One such case is where a company captures employees' experience and interest through personal Web pages.

Disseminating: Sharing insights with a target population is how disseminating works. This may be through a one-to-one basis through communities of interest; or it may involve a more formal and structured one-to-many process. For example, the instance of codified knowledge being made available using intranets and databases. The key idea is that knowledge must be used to create commercial value. Illustrations include Lotus Notes and Xerox's DocuShare. Note that creating, capturing and disseminating knowledge in isolation does not create value. It only becomes valuable when it is put into action.

Absorbing: This involves generating new insights in the process of applying and using knowledge. Put another way, this is an iterative process called learning. For example, the ability to tailor an offering to meet a customer's needs improves each time it is done. Consider the case of a software that helps a developer to gain insights through extensive observation of consumers, e.g., Intuit's Quicken software. Thus, in ways such as the cited example, a company can integrate learning into core business activities, and drive innovation and growth.

Scanning: Systematically identifying and capturing both internal and external knowledge, discovering patterns in the information, and then distilling insights can help create new approaches, products and services. An illustration is to stop a problem before it escalates into a more serious outbreak.

Box Story 8:

Six Myths of Knowledge Management

Knowledge, when poorly managed will result not only in increased costs but wasted investments. Execution is the key – and the obstacles to be overcome is truly a daunting challenge. According to an A.T. Keary article, the following are the six primary myths surrounding knowledge management:

Myth #1: *Codification will solve our problems – if we could just document what we know.*
The process of codification is costly, and the tangible results are not guaranteed if your focus is merely collecting knowledge. For instance, knowledge workers can collect the wrong data or discard valuable data that provides the context for decision making. Start with the strategy, and track the business value of what you gather. If it doesn't generate value, drop it.

Myth #2: *Technology is the saviour – if only we had a world-class intranet, we would know what we know.*
Merely buying technology simply because it is available out there, and assuming that it will do some good is a fallacy. Remember that technology solutions produce results only when their underpinning is sound strategic thinking. Otherwise your intranet will simply clog up with worthless, unauthenticated data and fall into disuse.

Myth #3: *We already manage knowledge – we have great systems for capturing documents.*
Strategic knowledge management requires more than maintaining a document management system, building a data warehouse, and operating an intranet site. Each of these is a tool and not much more. Utilising any one of these does not constitute a knowledge management solution.

Myth #4: *Provide knowledge – and users will come.*
One thing is certain – unless knowledge capture starts at the frontline and focuses on what people need to know to do their jobs better, knowledge systems will simply not be used.

Myth #5: *All knowledge is good knowledge – we will probably need it at some point so we had better capture it now.*
Merely collecting knowledge with no business objective in mind is futile. Start with what people need to know to do their jobs better, and then the rest will quickly follow.

Myth #6: *So long as we provide the tools, people will use them.*
Knowledge management will not work without a cultural change. Don't underestimate the power of knowledge hoarding, and the inertia of the "not-invented-here" syndrome.

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Words Impact Business Success
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About the Author
Leon A. Enriquez is managing editor and business manager of Editorial Thoughtscapes – a professional writing firm. Leon can be reached at leonenriquez@et-writer.com.

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