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Challenges and Strategies to Knowledge Management: Case Studies of Selected Companies

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Abstract

We are in a knowledge economy. Individuals compete with people all over the world. In the private sector, it is no longer necessary to belong to any particular race, caste or creed. To impact the bottom-line of an organization and an individual's goals and aspirations, the very basic necessity is to provide them with the basic requirements. And yes, knowledge management is as important as food, water and air.

There is no one size fits all way to effectively tap a firm's intellectual capital. To create value, companies must focus on how knowledge is used to build critical capabilities.

Knowledge management is complex and multifaceted; it encompasses everything the organisation does to make knowledge available to the business, such as embedding key information in systems and processes, applying incentives to motivate employees and forging alliances to infuse the business with new knowledge. Effective knowledge management requires a combination of many organisational elements – people, process and technology – in order to ensure that the right knowledge is brought to bear at the right time. As Peter Drucker put it, “*Knowledge is and will be the basic economic resource.*” In simple words, the key function of management is to engineer and manage knowledge. Management must encourage new knowledge to come forward. Everyone's knowledge must be tapped. Knowledge that one doesn't understand must be managed and people must be encouraged to learn.

The present paper examines the issues and challenges confronted the knowledge management and try to find out the strategies to knowledge management. The paper assesses the initiatives taken by Indian companies on the front of knowledge management.

Key Words: Knowledge Management, Knowledge Centre, Organisation, Information, Managing Knowledge

Introduction

1. Knowledge Management - An Overview

Effective Knowledge Management is a catalyst for economic growth. The more knowledge is allowed to flow, the more it grows. Sixty per cent of India's GDP is generated by the service industry, and for those professionals, knowledge is key. Knowledge management involves “knowledge” and “information”. Both of these concepts lie at the heart of human resource development (HRD) practice in the workplace. In fact, knowledge management strongly supports both paradigms of HRD—learning and performance. Quality management, on the other hand, applies knowledge management as one of its core components. However, the problem is that knowledge management and quality management are viewed as unrelated fields and their interaction has not been fully explored. Understanding these two vital organizational processes will enable HRD practitioners to develop and design effective programs and services that fully utilize both processes in the organization. Considering knowledge management as a key element in the quality management process can help increase knowledge creation and utilization within the organization.

Over the past several years there have been intensive discussions about the importance of knowledge management within our society and in particular within the organisation. The management of knowledge is promoted as an important and necessary factor for organisational survival and maintenance of competitive strength. To remain at the forefront organisations need a good capacity to retain, develop, organise, and utilise their employees' capabilities. Knowledge and the management of knowledge appear to be regarded as increasingly important features for organisational survival. With ongoing globalisation, organisations are increasingly confronted with worldwide competition. In order to build and sustain their competitive advantage, the knowledge and expertise of an organization's staff needs to be seen as a critical strategic resource.

As Indian organisations go global, it becomes imperative for Indian CIOs to look at a knowledge management practice to capture knowledge beyond local boundaries. Knowledge management will go beyond the boundaries of individual corporations to provide a global rather than a local picture. For companies like TCS and Infosys that operate in dozens of countries, knowledge management can give them an edge in the competitive software services market.

Knowledge management is more about best practices and procedures rather than pure technology. Consequently, it requires support from employees and effective use can happen only when all of them are actively involved. Therefore, a big bang approach will not work.

The objective of knowledge management is to capture tacit knowledge of different stakeholders of the organization as customers, shareholders, employees, suppliers etc. and make it explicit so that other employees can take advantage of it. Such sharing of information will enable improved and quicker decision making and benefit the organization.

2. Knowledge Management - Introduction

Knowledge management can be understood as a business activity with two crucial aspects:

- Treating the knowledge component of business activities as an obvious concern of business reflected in strategy, policy, and practice at all levels of the organization.
- Making a direct connection between an organization's intellectual assets— both explicit [recorded] and tacit [personal know-how] — and positive business results.

In practice, knowledge management often encompasses identifying and mapping intellectual assets within the organization, generating new knowledge for competitive advantage within the organization, making vast amounts of corporate information accessible, sharing of best practices, and technology that enables all of the above — including groupware and intranets.

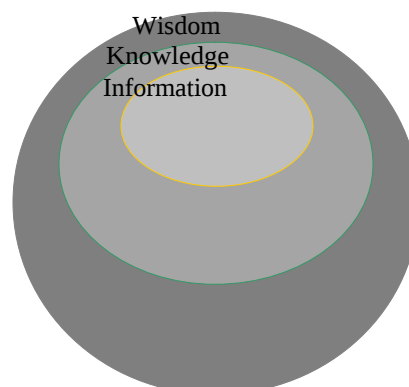
It has been said that:

- A gathering of data is not information.
- A gathering of information is not knowledge.
- A gathering of knowledge is not wisdom.
- A gathering of wisdom is not truth.

The idea is that information, knowledge, and wisdom are more than simply gatherings. Rather, the whole represents more than the sum of its parts and has a synergy of its own.

Knowledge is commonly distinguished from data and information. Data represent observations or facts out of context, and therefore not directly meaningful. Information results from placing data within some meaningful context, often in the form of a message. Knowledge is that which we come to believe and value based on the meaningfully organized accumulation of information (messages) through experience, communication or inference. Knowledge can be viewed both as a thing to be stored and manipulated and as a process of simultaneously knowing and acting - that is, applying expertise.

Fig 1 Relation between Information, Knowledge and Wisdom



So, we can say that:

- **Information** relates to description, definition, or perspective (what, who, when, where).
- **Knowledge** comprises strategy, practice, method, or approach (how).
- **Wisdom** embodies principle, insight, moral, or archetype (why).

As a practical matter, organizations need to manage knowledge both as object and process. Knowledge management is a practice that addresses the need for information that is required for making effective decisions. If this information is structured, the same can be translated into knowledge by applying a set of predefined rules.

Knowledge management is a set of processes and tools which give us the ability to leverage and combine the collective abilities of our knowledge workers. Simply put, a knowledge management practice should let an organisation provide relevant information to each and every user. Knowledge management is nothing but having customized information tailored to the needs of each user. As a knowledge management practice provides a structured way of capturing knowledge that exists within the organisation, it gives an organisation the ability to improve the productivity and knowledge of its employees by means of knowledge sharing.

A knowledge management practice that encompasses end-to-end processes owned by a department can go a long way toward boosting productivity. Knowledge management can be a highly effective tool for organisations that have geographically dispersed teams. They can derive great value from a common knowledge-sharing platform. Knowledge management can also prove effective in organisations suffering from high employee turnover. In such cases, a knowledge management practice can help bring new inductees up to speed with the history of ongoing projects. For example, in software companies such as Patni Computer Systems Limited, where development teams are spread across the world, knowledge management is an efficient method for every employee to develop upon existing ideas rather than reinvent the wheel.

A proper flow of information is essential for the growth of every organisation. In this situation, knowledge management will play an essential role, and those organisations that deploy it early on will have an edge. An example can be taken of Tata Steel that initiated a pilot implementation of knowledge management. The knowledge management practice proved so useful that the company is now considering incorporating the best practices of the knowledge management implementation in the Tata Business Excellence Model (a model that governs the way every Tata enterprise should function). Knowledge Management is the explicit and systematic management of vital knowledge - and its associated processes of creation, organization, diffusion, use and exploitation - in pursuit of business objectives.

There are many definitions of knowledge management but this definition identifies some critical aspects of any successful knowledge management programme:

- **Explicit** - Surfacing assumptions; codifying that which is known
- **Systematic** - Leaving things to serendipity will not achieve the benefits
- **Vital Knowledge** - You need to focus; you don't have unlimited resources
- **Processes** - Knowledge management is a set of activities with its own tools and techniques

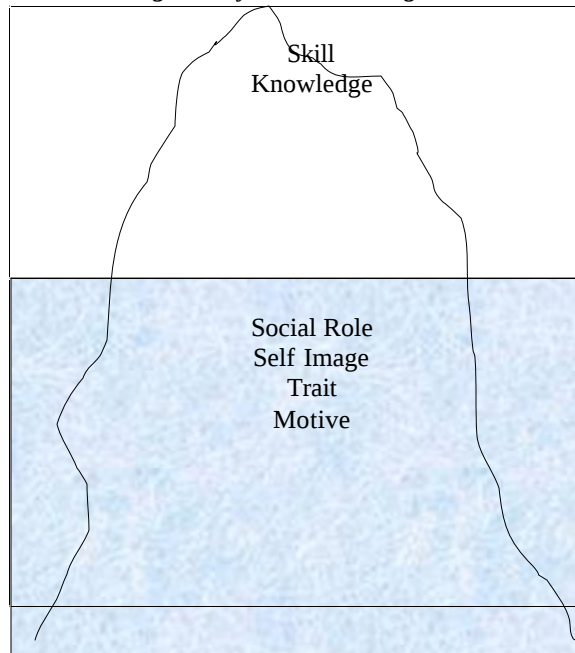
It is important to note that knowledge encompasses both tacit knowledge (in people's heads) and explicit knowledge (codified and expressed as information in databases, documents etc.). A good knowledge programme will address the processes of knowledge development and transfer for both these basic forms. The last phrase in the definition is important. If you cannot link the activities to the achievement of business goals, then it is not real knowledge management

3. Review of the Literature

Stanford economist, Romer (1990), published the first quantitatively rigorous treatment of how the use of knowledge affects economic growth. Management guru, Peter Drucker (1993), provided a historical perspective of how recent economic changes could be framed within a business context.

Managing employee competencies is a key dimension of this, as well as linking corporate knowledge assets that are both codified (written) and personalized (unwritten, social). Hay/McBer, a leading UK management consultancy firm and inventors of competency management, define a managerial competency as an "underlying characteristic of a person that enables them to deliver superior performance in a given job, role or situation." Their iceberg model of managerial competencies places knowledge and skills at the tip, with the underlying yet conscious elements being social role and self-image; traits and motives are at a subconscious level. The social role reflects values (what you see as important) while the self-image reflects identity (whether you see yourself as an expert). The traits are the habitual behaviors that we recognize in each other while the motives are the thoughts and preferences that drive behavior and satisfaction.

Fig 2: Hay/Mcber Iceberg Model



A number of management theorists have contributed to the evolution of knowledge management, among them such notables as Peter Drucker, Paul Strassmann, and Peter Senge in the United States. Drucker and Strassmann have stressed the growing importance of information and explicit knowledge as organizational resources, and Senge has focused on the "learning organization," a cultural dimension of managing knowledge. Chris Argyris, Christopher Bartlett, and Dorothy Leonard-Barton of Harvard Business School have examined various facets of managing knowledge. In fact, Leonard-Barton's well-known case study of Chaparral Steel, a company which has had an effective knowledge management strategy in place since the mid-1970s, inspired the research documented in her *Wellsprings of Knowledge — Building and Sustaining Sources of Innovation* (Harvard Business School Press, 1995).

4. Research Methodology

Research in common parlance refers to a search for knowledge. One can also define research as a scientific and systematic search for pertinent information on a specific topic. The present study has been undertaken to examine the issues and challenges to be addressed by means of knowledge management.

The present paper aims to achieve the following objectives:

- To examine the issues and challenges confronted the knowledge management;
- To find out the strategies to knowledge management
- To assess the initiatives taken by Indian companies on the front of knowledge management.

5. Issues and Challenges to Knowledge Management

The paper is not confined to any particular area; on the other hand it is applicable to whole India. However, opinion of officers/managers of various companies in Jaipur and Moradabad district of Rajasthan and Uttar Pradesh respectively, has been taken about the growth, roadblocks and benefits of knowledge management. Their views have been incorporated in this paper. The paper also takes the references of various articles written by various experts on knowledge management.

We have used qualitative research techniques as focus group discussion with respect to implementation of knowledge management in various companies. Our focus group discussion was based on some companies in region of Jaipur and Moradabad district. And we had covered people from different types of industries such as chemicals, electronics, casting, fabrication, bottling plants, machining and processing industry. The discussions were based on key management initiatives with emphasis on knowledge management.

Knowledge Management plays a key role in mapping, recording, evaluating, stewarding, marketing and growing intellectual capital and knowledge assets of an organization. Hence adequate focus has

been given to knowledge management for managing knowledge by supporting creation, capture, storage and dissemination of expertise in the form of information.

The key focus areas in knowledge management are highlighted herein below:

- Managing the proliferation of data and information in complex business environments and allowing employees rapidly to access useful and relevant knowledge resources and best practice guidelines;
- Leverage the expertise of people across the organization and transformation of Information into Knowledge.
- Technology enhancement and knowledge sharing & growth;
- Content Management;
- Engineering Drawing Management

5.1 Need for Knowledge Management

The need to manage knowledge arises due to following specific business factors such as:

Marketplaces are becoming increasingly competitive and the rate of innovation is increasing.

- Competitive pressures reduce the size of the work force that holds valuable business knowledge.
- Early retirements and increasing mobility of the work force lead to thrashing of knowledge.
- Reductions in staffing generate a need to substitute informal knowledge with formal methods.
- There is a need to manage increasing complexity as small operating companies are global sourcing operations.
- The amount of time available to experience and acquire knowledge has diminished.

On the basis we can add that:

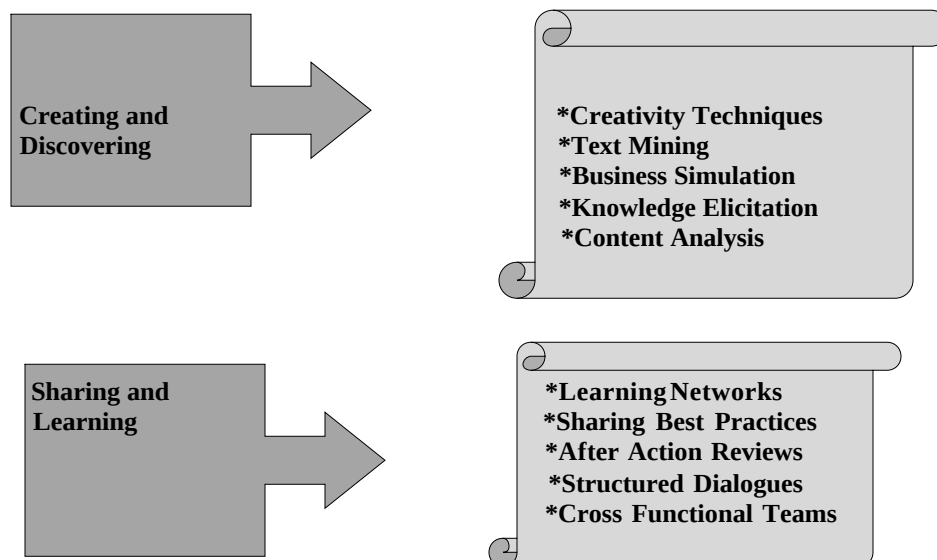
- Organizations compete on the basis of knowledge.
- The need for life-long learning is an unavoidable reality.
- Most of our work is based on information;
- Products and services are becoming ever more complex, endowing them with a considerable information component.
- Changes in strategic course may result in the thrashing of knowledge in a specific area.

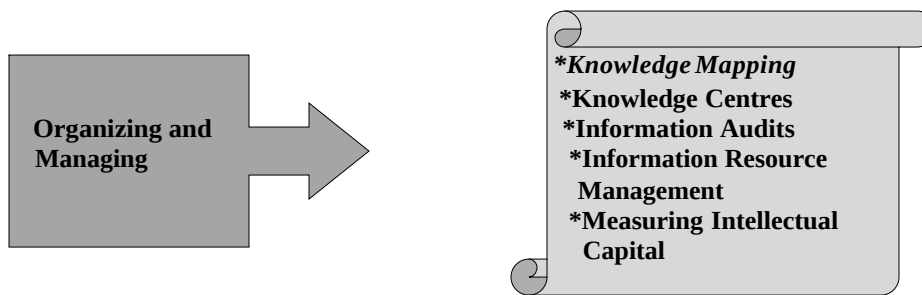
In brief, knowledge and information have become the medium in which business problems occur. As a result, managing knowledge represents the primary opportunity for achieving substantial savings, significant improvements in human performance, and competitive advantage.

It's not just a Fortune 500 business problem. Small companies need formal approaches to knowledge management even more, because they don't have the market leverage, inertia, and resources that big companies do. They have to be much more flexible, more responsive, and more "right" (make better decisions) — because even small mistakes can be fatal to them.

5.1 Practices and Processes Used in Knowledge Management

A wide variety of practices and processes are used in knowledge management. Some of the common ones are depicted herein below:





5.3 Process of Knowledge Management

The process of knowledge management can be described in six phases. These are:

- 1) **Development Phase:** Under this phase the data and idea generation is done by brainstorming and other ways.
- 2) **Judging Phase:** Here the data or ideas relevant to the concerned topic are identified and selected
- 3) **Creativity Phase:** The creativity over the idea is done to represent and then distribute the achieved knowledge.
- 4) **Showing Phase:** The next phase is to represent the creative idea.
- 5) **Messaging Phase:** Here the achieved knowledge is distributed to the concerned personnel.
- 6) **Goal Achieved:** When the knowledge is distributed the goal of knowledge management is achieved.

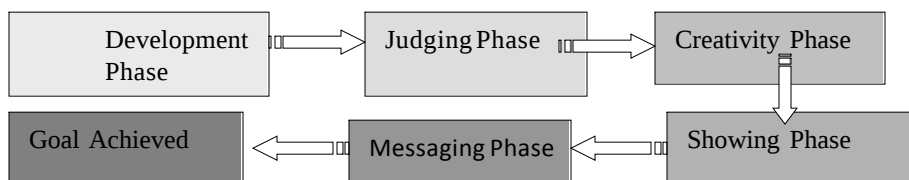


Fig 3 Phases of Knowledge Management

5.4 New Trends in Knowledge Management

Several trends will shape the field of knowledge management in the not-too distant future:

- Emerging technology solutions
- The convergence of knowledge management with e-business
- The movement from limited knowledge management projects to more enterprise wide projects
- Increasing use of knowledge management to enhance innovation
- Increasing use of tacit knowledge (rather than explicit knowledge)

5.5 Knowledge Management Maturity Model

The states of knowledge maturity can be achieved by systematically addressing the three basic pillars of knowledge management – people, process and technology. These three pillars are the key foundation areas:

- 1) **People:** People and culture – these address the ‘mindset’ and relate to attributes of assessing people and culture.
- 2) **Technology:** Technology and infrastructure – these are the enablers that help people harness the maximum out of the knowledge management initiative.
- 3) **Process:** Process, policy and strategy – these facilitate and guide the efforts of the people to capture and use the knowledge in the organisation to achieve business benefits.

The path to maturity is of continuous improvement and must be governed by a strong maturity framework which has the ability to assess and benchmark the various aspects of People, Process and Technology in a holistic manner.

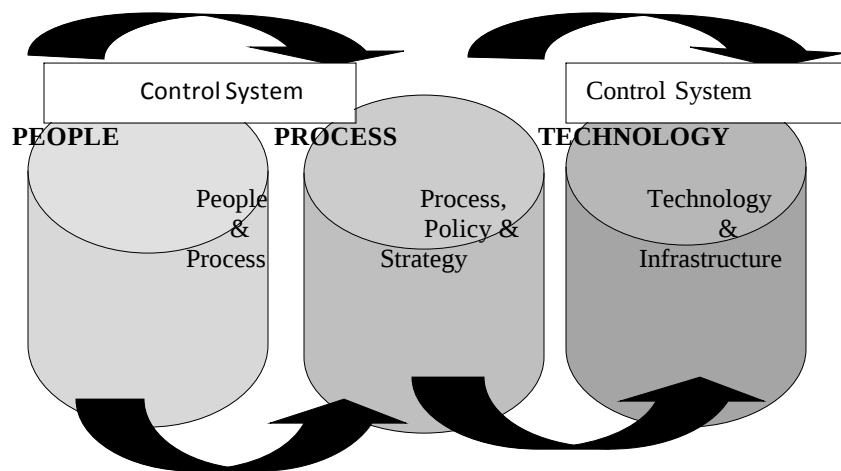


Fig 4 Three Pillars of Knowledge Management

To bench mark knowledge management maturity, five states of maturity have been identified:

1) **Initial:** Organisation has no formal processes for using organisational knowledge effectively for business delivery.

Organisation speaks: - "We may have lots of knowledge but we do not know how to harness it in a structured manner for business benefits."

2) **Intent:** Organisation realizes the potential in harnessing its organisational knowledge for business benefits.

Organisation speaks: - "We know we have lots of knowledge and we are moving in the direction of harnessing the same."

3) **Initiative:** Organisations have knowledge – enabled their business processes and are observing its benefits and business impacts.

Organisation speaks: - "We need to leverage knowledge from all the touch points and we have made a start, however we are cautious."

4) **Intelligent:** Organisation has matured collaboration and sharing throughout the business processes that result into collective and collaborative organisational intelligence.

Organisation speaks: - "We are able to harness knowledge from all the touch points in the organisation and realizing the business benefits out of it."

5) **Innovative:** Organisational knowledge leads to consistent and continuous process optimization giving it a business edge.

Organisation Speak: - "We have institutionalized the knowledge and are able to innovate and optimize the business processes."

These states of knowledge management maturity can be achieved through consistent and concentrated efforts. To sustain continuous growth, one needs to progress step by step to attain the higher levels of knowledge maturity. Further, there cannot be a short cut to reach the highest maturity state-innovative.

5.6 Approaches to Knowledge Management

We have classified the approaches to knowledge management into three groups namely:

- Mechanistic approaches,
- Cultural/ approaches, and
- Systematic approaches

(1) Mechanistic approaches to knowledge management

Mechanistic approaches to knowledge management are characterized by the application of technology and resources to do more of the same better. The main assumptions of the mechanistic approach include:

- Better ease of access to information is a key, including superior methods of access and reuse of documents (full-text search, databases, etc.)
- The key solutions will be networking technology in general (especially intranets), and groupware in particular.
- In general, technology and sheer volume of information will make it work.

Such approaches are relatively easy to implement for corporate “political” reasons, because the technologies and techniques - although sometimes advanced in particular areas - are familiar and easily understood. There is a modicum of good sense here, because enhanced access to corporate intellectual assets is vital.

(2) Cultural approaches to knowledge management

Cultural or we can say the behaviouristic approaches, with substantial roots in process re engineering and change management, tend to view the “knowledge problem” as a management issue. Technology though ultimately essential for managing explicit knowledge resources is not the solution. These approaches tend to focus more on innovation and creativity than on leveraging existing explicit resources or making working knowledge explicit. The main assumptions of cultural or behavioristic approaches are:

- Organizational behaviors and culture need to be changed dramatically. In our information-intensive environments, organizations become dysfunctional relative to business objectives.
- Organizational behaviors and culture can be changed, but traditional technology and methods of attempting to solve the “knowledge problem” have reached their limits of effectiveness. A “holistic” view is required. Theories of behavior of large-scale systems are often invoked.
- It’s the processes that matter, not the technology.
- Nothing happens or changes unless a manager makes it happen.

The cultural factors affecting organizational change have almost certainly been undervalued, and cultural/behaviouristic implementations have shown some benefits. Positive results achieved by cultural/behaviouristic strategies may not be sustainable, measurable, cumulative, or replicable and employees thoroughly

(3) Systematic approaches to knowledge management

Systematic approaches to knowledge management retain the traditional faith in rational analysis of the knowledge problem: the problem can be solved, but new thinking of many kinds is required. Some basic assumptions of this approach are:

- Its sustainable results that matter, not the processes or technology
- A resource cannot be managed unless it is modeled, and many aspects of the organization’s knowledge can be modeled as an explicit resource.
- Solutions can be found in a variety of disciplines and technologies, and traditional methods of analysis can be used to re-examine the nature of knowledge work and to solve the knowledge problem.

Cultural issues are important, but they too must be evaluated systematically. Employees may or may not have to be “changed,” but policies and work practices must certainly be changed, and technology can be applied successfully to business knowledge problems themselves. Knowledge management has an important management component, but it is not an activity or discipline that belongs exclusively to managers. Unrepentant rationalists in the business world are taking a systematic approach to solving the “knowledge problem.”

5.7 Benefits of Knowledge Management

An organisation which embraces KM tends to benefit in several ways, prime among them being its ability to cut cost and time. Also by distilling the knowledge, software companies have an opportunity to create IP which can be a revenue stream. Knowledge management has proven benefits across a business. Benefits can be organized into the major categories of decreased costs, improved quality, improved sales, and save time. In each of these categories, the following areas can be considered.

<i>Decreased costs</i>	<i>Improved quality</i>	<i>Improved sales</i>	<i>Save time</i>
*Reuse products(methods, business process, templates)	Best practices and quality solutions	Higher average hourly rate – better qualified	Avoid redundant work
*Faster integration of new employees	Faster innovation through quality methods	Remote access for sales	Faster access
*Learning from failures, not repeating costly mistakes	Leverage worldwide competence	Selling knowledge management know - how to customers	Optimize communication and collaboration
*Reduced training costs		Improved billability	
*Reduced sales costs		by reducing	

5.8 Challenges to Knowledge Management

The challenges to knowledge management can be highlighted as follows:

- Those in charge of knowledge management initiatives in IT companies point to the creating a culture of knowledge sharing as the prime challenge that companies face in implementing knowledge management.
- Since most people think that knowledge is power they tend to hoard it, hence making them share it within becomes a difficult task.
- The time tested and effective way to transfer knowledge is for people to find others who have it and talk to them. This, however, becomes difficult when companies grow large or where knowledge content of tasks is high.
- The number of mature knowledge management tools is on the increase, which aids in making knowledge management a more scientific process. Most organisations however tend to develop their own knowledge management solutions.
- Employee attitude towards radical change in the ongoing system is also a problem to be dealt for.
- Huge network need to be set up for implementing knowledge management

6. Strategies to Knowledge Management

Knowledge may be accessed at three stages: before, during, or after knowledge management related activities. Different organisations have tried various knowledge capture incentives, including making content submission mandatory and incorporating rewards into performance measurement plans. We have tried to explore various strategies to knowledge management. The important ones are:

- 1) **Actively Managing Knowledge:** Actively managing knowledge (push strategy) where individuals strive to explicitly encode their knowledge into a shared knowledge repository, such as a database, as well as retrieving knowledge they need that other individuals have provided to the repository
- 2) **Expert Individuals Provide Insights:** Another strategy to knowledge management involves individuals making knowledge requests of experts associated with a particular subject on an ad hoc basis (pull strategy). In such an instance, expert individuals can provide their insights to the particular person or people needing this.
- 3) **Development of Critical Capabilities:** The focus should be placed on the way knowledge is used to build the critical capabilities a company needs in order to succeed – on the core processes and activities that enable it to compete. Enhancing a bank's know how in evaluating credit risk, for example should result in reduced loan losses; improving a consumer products company's understanding of customer preferences should increase its percentage of successful new products.
- 4) **Ease of Availability of Information:** New knowledge management tools and ideas focus on the ease with which information can be made available, improving search engines, and supporting

the overall desire to manage and present the overwhelming amount of data available to the user in a manageable format.

5) **Sensing and Understanding:** Knowledge management is about improving how team members work together. Therefore, we need smarter ways of sensing and understanding each other's meanings and values in order to better work together or at least to avoid wasteful conflicts.

6) **Structure the Institutionalized Goals:** If knowledge management is about seeking 'what works better', then we need a kind of knowledge management that looks into how we structure our institutionalized goals.

7) **Better Organisational Learning:** The next strategy is to have a new and better organisational learning which can extend our individual capacities to learn from daily life. And for this we need a 'finer toothed comb' for maximizing our individual processes of learning for understanding the broad scope of learning and for improving our operational knowledge of group memory and intra-organisational knowledge flows.

8) **Identify Knowledge Assets:** Many companies have vital knowledge resting with one individual and do little to make this available across the company. Also, as not many are aware of the knowledge base they have, they tend to lose it through attrition and cost saving methods. So the strategy to knowledge management is that organisations should first identify their knowledge assets and find out ways to manage those assets to ensure maximum return on them.

9) **Easy-to-Use Interface:** Knowledge management systems, to be effective should have easy-to-use interface, solid reliability, accessibility throughout the target segment and utilities to mine relevant information. The target segment (like employees, customers, investors) needs to be taken into account before creating knowledge management systems.

10) **Other knowledge management strategies for companies include:**

- Rewards (as a means of motivating for knowledge sharing)
- Story telling (as a means of transferring tacit knowledge)
- Cross-project learning
- After action reviews
- Knowledge mapping (a map of knowledge repositories within a company accessible by all)
- Best practice transfer
- Knowledge repositories (databases, etc)
- Proximity & architecture (the physical situation of employees can be either conducive or obstructive to knowledge sharing)
- Social Software (such as wikis, social bookmarking, blogs, etc)
- Master-apprentice relationship
- Collaborative technologies (groupware, etc)
- Measuring and reporting intellectual capital (a way of making explicit knowledge for companies)
- Competence management (systematic evaluation and planning of competences of individual organization members)
- Knowledge brokers (some organizational members take on responsibility for a specific "field" and act as first reference on whom to talk about a specific subject)
- Creating an enterprise knowledge-driven culture.
- Developing knowledge workers through senior management leadership.
- Developing and delivering knowledge-based products/services/solutions.
- Maximizing enterprise intellectual capital.
- Creating an environment for collaborative knowledge sharing.
- Creating a learning organization.
- Delivering value based on customer knowledge.
- Transforming enterprise knowledge into shareholder value.

7. India's Strategies to Exploit the Opportunities in the Knowledge Sector

A large number of knowledge workers are now being employed by a growing number of International companies, who are relocating their "back office" e-commerce activities, ranging from manufacturing to banking and other services. India is now the preferred location of several international knowledge-related commercial activities. The Political and Economic Risk Consultancy Ltd. Ranks India at the top in terms of quality, cost, and availability of skilled knowledge workers (Anonymous, 1999). This survey puts India ahead of Philippines, China, Australia, Japan, Taiwan, Vietnam, South Korea, and several other countries. Given India's unique advantages, this process of employment generation in the knowledge management sector is likely to exceed and surpass that provided by the manufacturing sector until now.

Three factors will determine the success (or otherwise) of India's strategies to exploit the opportunities in the knowledge sector. These are mentioned herein below:

- 1) The role of the Government, and that of private industry, in the development of education in India. Given the diminishing funds available with the Government, it is politically imperative for these scarce resources to be primarily utilized for attaining mass literacy rates, and for universalizing primary education. Simultaneously, the Government must encourage, enable, and empower the private enterprise to enter the spheres of secondary and higher education, especially for the professional programs in Engineering, Medicine, Management, and Law. The private sector also has very attractive opportunities to spread primary and secondary education, via innovative uses of distance education and web-centered learning tools. In the sphere of university and higher education, where the private sector is the main beneficiary, it has an obviously much larger role in funding such institutions. One such role could be in terms of research partnerships with academia. Many such partnerships, with varying degrees of university and industry participation, are already being witnessed, especially in hi-tech areas such as informatics, biotechnology, communications, new materials, etc. The second, and perhaps more gratifying, phenomenon is the grants and endowments being made by "successful" NRIs from USA, to modernize and advance the quality of the R&D infrastructure in their Alma Mater.
- 2) The second important determinant of India's success in the knowledge management sector will be the spread of the learning of English, and its use as a medium of instruction. Occasionally, politicians have gone on "English bashing", and have raised the bogey against the use of English, mostly for narrow political and chauvinistic needs. In spite of this, English has managed to survive as a language of business in large sections of Indian commerce and industry. English is the language of the knowledge era, and its importance as a key to the growth of knowledge industry must be acknowledged by one and all.
- 3) The third factor that will determine India's success in the knowledge industry is the need to create conditions which will engender a culture of venture capital and Angel funding. These are two important instruments which fuelled the knowledge revolution in the USA, and have also now spread to Europe. The demands of the knowledge sector are quite different, qualitatively and quantitatively, from the social and risk market profiles catered to by the traditional banking sector. The gradual emergence of such risk capital instruments and institutions in India is already beginning to fuel the growth of high-risk knowledge entrepreneurship. However, the chances of a venture capital culture blossoming in a traditional government environment have yet to be understood.

7.1 Issues and Challenges to be addressed by Means of Knowledge Management

Organisations are facing ever-increasing challenges and issues, brought on by market place pressures or the nature of the workplace. Many organisations are now looking to knowledge management to address these issues and challenges.

- 1) **Business Managers:** The volume of information available to business management has increased greatly. Known as 'information overload' the challenge is now to filter out the key information needed to support business decisions. The pace of organisational change is also increasing, as are the demands on the 'people skills' of management staff. Knowledge management can play a key role in supporting the information needs of management staff. It can also assist with the mentoring and coaching skills needed by modern managers.
- 2) **Aging Workforce:** The public sector is particularly confronted by the impacts of an aging workforce. Increasingly, private sector organisations are also recognising that this issue needs to be addressed if the continuity of business operations is to be maintained. Long-serving staff has a depth of knowledge that is relied upon by other staff, particularly in environments where little effort has been put into capturing or managing knowledge at an organisational level. In this situation, the loss of these key staff can have a major impact upon the level of knowledge within the organisation. Knowledge management can assist by putting in place a structured mechanism for capturing or transferring this knowledge when staff retires.
- 3) **Supporting Innovation:** Many organisations have now recognised the importance of innovation in ensuring long-term growth and even survival. This is particularly true in fast-moving industry sectors such as IT, consulting, telecommunications and pharmaceuticals. There has been considerable work in the knowledge management field regarding the process of innovation, and how to nurture it in a business environment.
- 4) **Organisational Environment:** Every organisation has a unique environment, defined by factors such as purpose and activities of the organisation, overall strategic direction, organisational culture, size of the organisation, geographic spread, staff skills and experience, organisational

history, available resources, market place factors. For this reason, each organisation has a unique set of needs and issues to be addressed by knowledge management.

7.2 India Inc's Knowledge Management Successes

1) **Patni Computer Systems:** Patni Computer Systems, India's sixth largest software services exporter is one of the few organisations that makes extensive use of knowledge management. The company has created a knowledge centre, which allows its employees to learn about new technologies, have discussions, get technical queries answered and even draft quick sales proposals. For Patni, this system has led to a reduction in training time and a boost in productivity due to better sharing of knowledge among its employees.

Here are some of the features of the knowledge centre:

- The knowledge centre contains information about the quality management system, information related to different projects, related best practices and lessons learned, technology related white papers and tutorials.
- A searchable repository of reusable software components
- As it is based upon a Web based model, information is accessible from all Patni offices
- Classification of content according to industry verticals and technologies
- A discussion forum for exchange of ideas and solutions
- A helpdesk for facilitating process consulting to projects
- A marketing centre which holds frequently asked questions by customers (the same is used by employees in sales and marketing). Additionally, case studies and templates for proposals and newsletters are also captured in the knowledge centre.
- A role based access privilege model that ensures that every user has access only to information pertaining to his department

2) **Wipro Technologies:** Wipro Technologies created virtual communities to help employees having common interest share their views and opinions. It is also creating a directory of people who have knowledge base in specific technologies like wireless or Java for instance. This is to help knowledge seekers within the company to tap the right resource for their queries. Wipro Infotech for instance has a 'saint and thief' award concept, under which both the saint (person who contributes the maximum knowledge) and the thief (the one who steals the most from the knowledge repository and deploys them) are rewarded.

3) **Infosys Technologies:** Infosys maintains a company-wide body of knowledge which enshrines experiential learning gained by past projects. A review mechanism screens the contribution made by Infosys. Since only a small proportion of employees generally distills and writes on their experiences, as-is project deliverables must be captured too. In order to capture these assets into an intranet-based repository a 'process assets' system has been developed. Infosys has a company-wide intranet called Sparsh which acts as a central information portal. The intranet consists of about 5000 nodes, spread throughout the various India-based development centres and the US-based marketing offices. Infosys, he says, has created a proprietary KMM (Knowledge Management Maturity) model. Infosys has created Knowledge Currency Units which employees can earn for contribution towards knowledge sharing, accumulate and encash them for contribution to knowledge sharing. IBM India has announced a knowledge sharing arrangement with Infosys Technologies under the aegis of the developer marketing initiative led by IBM India and the Knowledge Management group at Infosys. The aim of this relationship is to build skills and exposure on leading and emerging technologies. This tie-up is expected to help Infosys employees develop applications and deliver solutions on the IBM platform using the latest standards such as Web services.

4) **Oil and Natural Gas Corporation:** The Oil and Natural Gas Corporation (ONGC) is planning to rope in Infosys for setting up a knowledge management system. The project, to be implemented in a phase-wise manner, envisages a rich knowledge base built across the organisation. While the initial investment is estimated at Rs 50 crore, the total project size could go up to Rs 100 crore. E&P (exploration and production) and upstream activities are driven by knowledge. ONGC is looking at creating a structured approach wherein using technology, knowledge remains with the worker. The project is also expected to do internal branding for ONGC. The company has approached IIM-A to set up a virtual knowledge park and will launch a portal 'Gyan Udyan' based on the name of the project.

5) **ICICI Bank:** ICICI Bank's knowledge management strategy was established in 2000. Back then, the company was very much smaller than it is now – just 1,200 staff compared to the 30,000 that works for ICICI Bank today. However, the programme was started at a time when the company's growth was starting to go into overdrive. Initially, the organisation developed a broad

technology-linked infrastructure, including a corporate intranet, ICICI Universe, intended to provide a platform where, for instance, employees could check the human resources (HR) system for vacation entitlements, book days off or view their personal pension details. By putting these simple, but necessary activities on the intranet, it encouraged employees to get familiar with using web-based applications, to overcome any fear of technology as well as providing them with a good reason for using the portal on a regular basis. What began more as an idea and less as a project was simply the belief that staff should have a space on the intranet where they could participate in collaborative activities, such as contribute or find documents, engage in discussions and post or answer queries. That idea, in essence, first converted the bank to knowledge management. The knowledge management programme is now deeply embedded in the bank, but not as a result of any directive from top management. Employees work with the knowledge management programme because they see its benefits and realise the value it brings to them on a day-to-day basis. This is what makes it vibrant and engaging.

6) **Reliance Industries Ltd:** Reliance Knowledge Management System (KMS) was built to be the common intranet system for Reliance Industries Ltd., allowing users to share news, photos, videos and more. A single sign-on was developed to seamlessly integrate all popular applications with KMS and facilitate a common gateway for all systems. This application initially on a Microsoft platform was remade in open source to provide speedy functionality and security, which was not possible otherwise. A large part of the project development cycle was spent searching for the best components and their integration, the end result was a user-friendly system which is now central for the Reliance KMS initiative. Today, the KMS has more than 22,000 active users and more than 100,000 knowledge documents. Before the development of the KMS solution there was no common application except the mailing system, which was used by all employees of Reliance. Communication, Sharing and building structural capital was a major challenge. KMS is based on PHP Nuke which is a popular open source content management system. Coding was done to provide single sign-on facilities to any application, irrespective of its platform and the language it was written in. Currently, KMS is on PHP, MySQL and Linux, while applications integrated are on Java, Oracle, Microsoft .net and MSSQL. Reliance KMS now has more than 100,000 knowledge documents and acts as reference for most workers. Structural capital is being improved daily through staff contribution on KMS. Employees now have a common interface for all applications and a single point where they can now see all their company news, participate in forums and save a lot of productive time for the company. KMS has all the features of an advanced document management system, video and picture gallery, news section, surveys, forums, Wiki, personal planner, key utilities and much more which helped create a sense of bonding amongst employees. The KMS is fully operational and being used by 22,000 unique users of Reliance. The site is visited by more than 7,000 users daily and has on an average 600 users logged on at any point of time.

7) **National Thermal Power Corporation:** To meet our ultimate objective of becoming a learning organisation, an integrated Knowledge Management System has been developed, which facilitates tacit knowledge in the form of learning and experiences of employees to be captured and summarized for future reference. NTPC subscribes to the belief that efficiency, effectiveness and success of the organisation, depends largely on the skills, abilities and commitment of the employees who constitute the most important asset of the organisation. The Training Policy of NTPC envisages a minimum of 7 man days of training per employee per year. The Corporation has developed our own comprehensive training infrastructure. To meet the academic aspirations of employees and match them with the needs of the organisation, NTPC has tie-ups with institutes of repute like MDI, Gurgaon; IIT Delhi; BITS Pilani, etc. NTPC sponsors fixed size batches of employees who are inducted into these courses based on their performance rating in the company and their performance in the entrance exam conducted by the respective institute. Unlike other study leave and sabbaticals, employees undergoing these courses do not forego their salary or growth during the duration of the course.

8) **Aditya Birla Group:** Like most progressive organizations, the Birla group believes that the primary asset is the expertise of its people. "Taking people along, taking a flotilla approach and leading from the front is the key." For a corporate house of the size of Aditya Birla Group, the only way of tapping the talent pool was to have a knowledge management portal of its own. Today this knowledge management portal stands out for its scalability and low bandwidth utilization. It encompasses most of the group's employees and is co-hosted across many of the group's business locations. Being a large diversified group, the need to empower its people assets has driven it to embark on an e-learning initiative providing over 2000 courses such as marketing strategy, managing time, strategy management, dynamic decision-making, and Cisco certification. While the group had a Management Development Institute, the IT based training provided employees the

flexibility of time to learn, and choice of courses. Today the Group holds the World record for e-learning course completion rate, which stands at 90 percent plus. The earlier World record was 65 percent, what is surprising is the success of e-learning in a traditional manufacturing environment.

9) **Satyam Computer Services Ltd:** From its inception, Satyam has consistently innovated and advanced knowledge management practices. Now that Satyam is a global, networked organisation, it strives to make knowledge management extend beyond the company boundaries to include the entire ecosystem of partners and clients. Satyam focuses on continuous improvement and professional development for all of its associates, as evidenced by the world-renowned Satyam School of Leadership and Satyam Learning Center. Both entities train employees to share knowledge with their partners, suppliers, customers-even their customers' customers-to optimize opportunities for breakthrough results. This approach has led to numerous innovations.

10) **Tata Steel:** Tata Steel decided to embark on formal knowledge management initiative in the year 1999. The beginning was made in July '99 to place a knowledge management programme for the company to systematically & formally share and transfer learning concepts, best practices and other implicit knowledge. The emphasis on knowledge management was clearly demonstrated in 1999 while coining the vision statement of the company – which read “Tata Steel enters the new millennium with the confidence of learning and knowledge based organization.....” Then followed the new vision statement, co-created by the employees in 2001 which again identified ‘Manage Knowledge’ as one of the main pillars in strategy to become EVA+ by 2007. This clearly indicated the thrust Senior Management wanted on an initiative like KM. The essence of knowledge management is to capture the available abundant knowledge assets either in form of tacit (experience, learning from failure, thumb rules, etc.) or explicit (literature, reports, failure analysis etc.), to organize and transform the captured knowledge, and to facilitate its usage at right place and at the right time. Tata Steel aims at capturing knowledge from various working groups and outside agencies that play a major role in day-to-day functioning. The major stakeholders covered under knowledge management being senior management, officers, employees, customers, suppliers and experts (inside and outside the company). Tata Steel’s knowledge management initiative is driven by its corporate KM group which attempts to cover all possible opportunities of knowledge generation in and outside the steel works. The primary sources being day to day operation, learning from failure, published papers by employees, task force, consultant and technical groups.

7.3 Indian Most Admired Knowledge Enterprise (Make) Awards

In a flat world, where knowledge is available at the touch of a button, the key differentiator is often Knowledge Management. And to celebrate KM evangelists, Confederation of Indian Industry (CII) hosted the Indian Most Admired Knowledge Enterprise (MAKE) Awards ceremony, which recognizes the best Indian organizations in knowledge management based on an annual study conducted by the Know Network.

MAKE awards are part of the annual CII’s Annual Knowledge Management Summit: KM India 2008. Satyam Computers took the top KM honours followed by Mindtree Ltd, Tata Steel, Bharti Airtel, Eureka Forbes, Infosys Technologies, Tata Consultancy Services, Wipro Technologies and Reliance Industries. The awards were handed over to the winners by Suresh Prabhu, Member of Parliament and former union minister. Satyam Computers was recognised for its “organisational learning”, while Mindtree was awarded for “leadership, innovation and culture”.

Short listed out of 16 organisations, the winners were chosen on the basis of adopting and imbibing best knowledge management practices. These companies have made progressive stride in making knowledge management a part of their corporate culture and have institutionalized the processes.

Speaking on the importance of knowledge management within the organisation, Mr. Vijay Prasad, Chief Information Officer, Satyam Computers said “We operate 2,500 businesses and hence knowledge management plays a very crucial role in co-ordinating between these businesses.”

Speaking at the Inaugural Session of the Summit, Mr. K.V. Kamath, Former CII President and Former Managing Director and Chief Executive Officer ICICI Bank highlighted the importance of knowledge management as a catalyst for economic growth.

8. Conclusions and Recommendations

After going through the research work and having discussion with officials of various companies in Jaipur and Moradabad district we come to the following conclusions and recommendations:

- Knowledge management as a notion is very attractive and provides massive business opportunities that should not be missed.

- Organizations have to look into various issues and challenges such as organizational culture, strategy, information technology, knowledge organization. Despite all these issues and challenges companies world wide have shown keen interest in knowledge management.
- Knowledge management is an engine that transforms knowledge into business value. However, execution of knowledge management is not easy for small and medium enterprise as compared to large companies.
- As far as India is concerned knowledge management is still in infancy stage. It has to cover a long distance to come up to the level of knowledge management execution.
- In India there is need of national knowledge management concept to create and harness the knowledge of our own people and start creating and using our own software packages. The core competency definitely exists in our R& D laboratories, academics, institutions, software houses and industries.

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