# CHAPTER-1

## INTRODUCTION & OVERVIEW OF KM

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1.0 INTRODUCTION & OVERVIEW OF KNOWLEDGE MANAGEMENT

1.1. INTRODUCTION:

1.1.1. Manpower Management:

Manpower management is one of the most challenging tasks the business world is facing today. Added to that is the knowledge management which has assumed stupendous proportions due to the fast pace at which the technology has changed in the recent past and the changes are taking place now a days even at such a faster pace as has never been witnessed before. The problems generated by these two get compounded in case of heavy industries like Steel sector, Power sector, manufacturing industries like gas, chemicals, cement etc. wherein the initial investments are huge and to encounter the fast changing technology additional expenditure become almost prohibitive or beyond the capacity of the particular industry. Under the conditions these industries have to be on the constant guard to chalk out well planned strategy to face the challenges and devise systems that can continually adapt themselves to the changes, the industrial environment subjects them.

Steel Authority of India Limited being the largest steel conglomerate in India (Bhilai Steel Plant belongs to SAIL and is a pride unit) has been facing the said challenges, almost from the day of its inception. It was originally conceived and set up as a unit that generates huge employment potential in the country (Ref: Works Visit Notes, BSP 2003); subsequently with the advent of liberalization and globalisation the focus of attention shifted to making it a business unit and emphasis also shifted to profit generations rather than the earlier ideological functions of creation of employment that would meet primarily the government's political objectives. Once it was made to become a business unit, it suddenly got exposed to the market vagaries, the most important one being competition with private sector industries. Besides, these private sector industries were given more freedom to put up larger industries like those of public sector industries, Ref: Misra & Puri, (2002), unlike the original strategy of limiting them to smaller capacity units.

Public sector units like SAIL were made to feel the heat and thus came the requirement of changing entirely the methods of their functioning.
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The first axe fell on manpower size and its management. Right sizing of manpower to reduce the exorbitant costs prevailing erstwhile was the foremost requirement towards creating a direction to guide the organization to profitability. Whereas the initial expenditure towards manpower was as high as 22% in early seventies, the various steps envisaged brought down the cost of the same to around 10% by 2003, (Annual Performance Reports of Steel Authority of India Limited, (1975), (BSP Archives). While re-coursing to downsizing, the extreme caution was required to be exercised to see that the knowledge bank is not depleted with the exit of those knowledge workers who have been trained and given opportunities to enhance their skills and knowledge through various forums. SAIL has elaborate arrangements and infrastructure for training its manpower both at plant levels as well as at central location of MTI at Ranchi.

1.1.2. Importance of KM to BSP:

1.1.2.1. Management of Knowledge; need for the study:
The following points discuss the importance of KM in a large industrial setting as BSP

Knowledge Management and steps required for retention of knowledge which is embedded in the minds of the persons who worked for the BSP organization in light man power rationalization became all the more a necessity. Retention of the knowledge and its management in the changing environment of fast developing new technology and the importance of infiltration of computer application and digital technology in all fields of all industries can not be more undermined in the present day context of Business Environment wherein the small knowledge-intensive firms with virtually minimal capital investments are ruling the business world today. Under the conditions, for the heavy industries with huge capital investments, effective and smooth switchover to new methods of knowledge management and retention in a cost efficient way is the requirement of the day.

1.1.2.2. Multi pronged tasks:

Therefore, the task for the public sector heavy industries has become multi-pronged. On the one side they have to take steps to take the industries towards the right size of
the manpower, taking all required steps as possible to retain the knowledge bank and simultaneously they have to manage and enhance the knowledge potential of the available manpower such that it is able to assimilate the new technologies as well in to the stream of their industrial lives.

1.1.3. BSP, the domain of study and what the study will show:

In the present research study, Bhilai Steel Plant, Bhilai, has been taken as the domain of study. The study is done with the following objectives:

- Approach to knowledge management by BSP
- KM status at BSP
- Measures taken by BSP for its implementation
- Understand how people think about knowledge management
- Analyse its performance of BSP with respect to KM implementation
- Identify KM success factors at BSP
- Suggest steps needed for further improvement of KM performance at BSP

The study after going into the details as enumerated above will mainly identify the success factors, which then could be applied in other plants as well to get the benefits of KM implementation.

1.1.4. Architects in KM field:

Many authors evinced keen interest on the subject of knowledge management in the last two decades and propounded various methods at tackling the problem of knowledge depletion and elaborated upon the advantages of KM. Several books deal the subject, each author trying to give vent to his / her own understanding of the subject, develop the subject as well as offer suggestions in the larger interest of the business world as a whole. The list is myriad but few prominent authors are:

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Blair; Karl E Sveilby; Nancy Dixon; Etienne Wenger; Malhotra, Y.; Lubit, R.; Ernst & Young.; Hugh Wilmott and Stephen Denning.

The number of authors who have contributed to the development of the subject “Knowledge Management” and evinced keen interest is really exhaustive and thus it would be impractical to cover all but some efforts are made to collect few more names while surveying the literature and the details are presented in the Chapter-2 covering literature survey.

1.1.5. Aim of the study to identify KM success factors at BSP:

In the present study, KM practices adopted in general at Bhilai Steel Plant shall be covered with a view to find what factors make KM successful at BSP.

1.1.6. General steps involved in implementation of KM:

While it shall be the endeavour to discuss in more details in the later chapters, the fundamental and general steps for successful implementation of KM in an organization, according to Tiwana, (2005), mainly include, identifying knowledge critical to the business, as given below:

- Align business strategy and knowledge management.
- Analyze the existing knowledge in the company.
- Building on, not discarding existing IT investments.
- Focus on processes and tacit, not just explicit, knowledge.
- Design a future-proof, adaptable knowledge management platform.
- Building and deployment of a results-driven KM system.
- Implementation of leadership and reward structures needed to make KM work.
- Evaluating the initiatives using Real Option Analysis.
- Learning from war stories.
1.1.7. Scenario of KM in large industries:

However, the fundamental and important point to consider is, while theoretically all organisations need to embrace the procedures for knowledge management practices to ensure knowledge retention through a well organised documentation, the practicability in many units, especially larger ones is an important aspect to be taken into account. Generally it is seen that things start with a bang but soon fade into oblivion. They feel that they already practice KM in their own subtle way right since the beginning and the need to change systems drastically are considered not required, as the benefits that are likely to follow upon adopting the new ways, may not be much as compared to the actual expenditure involved in implementation and the indirect stress involved in aligning all the people to new way of thinking. While this is not true entirely, to drive the point is extremely a difficult step. In big organisations, where the productions, productivity, quality and such other things that are directly visible are given more importance, intangible things take back seat and very few people realise the real value of these intangible things. For example, how can one quantify the benefits accruing due to goodwill, though everyone knows it to be the one of the most important pillars for success in business? Similarly, earned brand equity ensures an assured business is known to people but quantification is not possible here as well. Similarly, Knowledge management practices, or rather lack of the same affects the business in a subtle way.

1.1.8. Relevance of KM at BSP as a thesis subject:

Steel industry in India, including BSP, is still more of a labour intensive and labour oriented organisation. The work force largely consists of unskilled and semiskilled workers where the education level itself is very low. For example, in BSP out of a total manpower of 34407 as on 01-04-2008, the strength of executives is only 3659 (Ref-1.5.). And though the manpower reduction has been substantial from 1994 to 2008 (from 54663 to 34407) (Operational Statistics of Bhilai steel Plant, 2007-08), the adverse effect of this reduced manpower was minimal to be seen in major fields of production, quality, techno-economic parameters and profits. (These are projected in Chapter-4). This information tends one to get inclined to the feeling that perhaps KM is not that much a dire need in steel industry. For this probable reason, it is seen that
apart from BSP, Tata steel and to some extent Visakhpatisnam Steel Plant no other steel maker has evinced much interest for KM.

But if we look at things the other way, KM has been already being followed almost since inception through established processes, practices, and developed culture in Bhilai Steel Plant. Even then, since BSP and Tata steel are fore-runners in steel making and good competitors at global playing level each vying for prestigious awards like Prime Minister’s trophy for best integrated steel plant, any innovative idea becomes an implementation priority for these two plants. That is how both plants embarked upon systematic implementation of KM and regularize and document the already and adopted practices such that it would be helpful to all. Thus, discussion and in-depth study of KM at BSP becomes a relevant thesis subject.

1.2.0. OVERVIEW OF KNOWLEDGE MANAGEMENT:

1.2.1. KM of recent times:

Knowledge management, in recent times, has become one of the most fascinating subjects not only for its richness in exploratory field area for educationists, but turned out to be most profitable proposition for the practitioners as well. Industries, irrespective of their size started to realize the importance of the subject, the advantages of approaching the subject in an organized manner, the perils of ignoring it. While undoubtedly its impact is immediately felt in small knowledge intensive firms, larger firms take longer time to come to realization and perhaps by that time the damage might have crept into the system.

There has been a virtual deluge of literature on this subject beginning in the last decade of last century. Great management visionaries and gurus like Drucker, (1993), “post Capitalist society”, states, “International economic theory is obsolete. The traditional factors of production - land, labor, and capital - are becoming restraints rather than driving forces. Knowledge is becoming the one critical factor of production. It has two incarnations: Knowledge applied to existing processes, services, and products is productivity; knowledge applied to the new is innovation.

Drucker, (2001), further portended the digital revolution and the new work force embracing this revolution much earlier. He stated that the ability of companies to
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exploit their intangible assets is far more decisive than their ability to exploit their physical assets.

After all what is this KM? Was it not there all the time since time immemorial? How come it is only now people are talking about it so loudly, so much so that it has been acknowledged to be the next most important element in running an industry besides man, machine, material and money.

1.2.2. What KM means:

At this point, it may be prudent to know the minds of many great authors on the subject, and according to them “What knowledge management means?”

Knowledge Management is the process by which the organization generates wealth from its intellectual or knowledge-based assets. (Bukhowitz and Williams) (1999).

Awad and Ghaziri (2003), say “Knowledge management is a newly emerging, interdisciplinary business model that has knowledge within the frame work of an organization as its focus and rooted in many disciplines including business, economics, psychology, and information management. It is ultimate competitive advantage for today’s firm. KM involves people, technology and processes in overlapping parts.

KM is the process of gathering a firm’s collective expertise wherever it resides – in data bases, on paper or in people’s heads – and distributing it to where it can help produce the biggest payoff.

Hibbard (1997) states Knowledge management is the discipline of capturing knowledge-based competencies and then storing and diffusing that knowledge into business. It is also the systematic and organized attempt to use knowledge within an organization to improve performance. KPMG (2000).

Sveiby (2001), says KM is an art of creating value from an organisation’s intangible assets.

Taft (2000) says KM is the classification, dissemination, and categorization of information and people through out an organisation.
According to Beijerse (1999), knowledge can be defined as: information; the capability to interpret data and information through a process of giving meaning to these data and information; and an attitude aimed at wanting to do so. In making these factors productive knowledge management can be defined as achieving organisational goals through the strategy-driven motivation and facilitation of (knowledge) workers to develop, enhance and use their capability to interpret data and information (by using available sources of information, experience, skills, culture, character, etc.) through a process of giving meaning to these data and information.

Brooking (1996) says, KM is accumulating knowledge assets and using them effectively to gain a competitive advantage.

Craig (2000) states that KM includes a combination of software products and business practices that help organizations capture, analyze and distill information.

Deveau (2000) says, KM is not about technology; it is about mapping processes and exploiting the knowledge database. It is applying technology to people’s minds.

As opined by Kellog and Erickson (2001), Knowledge management is often seen as a problem of capturing, organizing, and retrieving information, evoking notions of data mining, text clustering, databases, and documents. This view is too simple. Knowledge is inextricably bound up with human cognition, and the management of knowledge occurs within an intricately structured social context. It is essential for those designing knowledge management systems to consider the human and social factors at play in the production and use of knowledge.

Hersey (2000) says, KM can automate the classification of documents while using the machine logic that comes as close as to the human logic.

Bair (2001) says, KM is a discipline of identifying, capturing, retrieving, sharing and evaluating an enterprise’s information assets.

Malhotra (2000) says, KM is a framework within which the organisation views all its processes as knowledge processing, where all the business processes involve creation, dissemination, renewal, and application of knowledge toward organisational sustenance and survival.
According to Davenport and Prusak, (1998), KM is a fluid mix of framed experience, values, contextual information, expert insight, and intuition that provides an environment and framework for evaluating and incorporating new experiences and information.

According to Quintas, (1999), KM enables the creation, distribution, and exploitation of knowledge to create and retain greater value from core business competencies. The primary goal of KM in a business context is to facilitate opportunistic application of fragmented knowledge through integration.

Nonaka and Takeuchi (1995), divide knowledge into tacit and explicit knowledge. They also explain the four stages of organizational knowledge conversion: socialization (from tacit knowledge of person A to tacit knowledge of person B), externalization (from tacit knowledge to explicit knowledge), combination (from explicit knowledge to explicit knowledge), and internalization (from explicit knowledge to tacit knowledge).

Tiwana, (2005), says that the ability of the companies to exploit their intangible assets is far more decisive than their ability to exploit their physical assets. As markets shift, uncertainty dominates, technologies proliferate, companies multiply and products and services become obsolete rapidly, successful companies are characterized by their ability to create new knowledge consistently, quickly disseminate it, and embody it in their new products and services. The road to harnessing their expertise comes with few shortcuts. The reasons for this are:

1. Knowledge integration is the engine of economic prosperity.
2. Unpredictable markets necessitate “organized abandonment”.
3. KM lets you lead change so that change does not lead you.
4. Cross-industry amalgamation is breeding complexity.
5. Those who forget the past are condemned to repeat it.
6. A bridge is needed across Atlantic.
7. Tacit knowledge is mobile.
8. Knowledge application requires water cooler and coffee machine culture.
While the KM System refers the technology component of what facilitates integration, application, and management of knowledge, a KM platform includes the KM system infrastructure, knowledge management strategy, cultural facets of knowledge work, design of incentive schemes, and measurement and evaluation mechanisms in place. A KM system is therefore a subset of the KM platform.

KM is not compulsory but neither is survival. The capacity to integrate and apply distributed knowledge to create agility, responsiveness, and adaptability is now, more than ever, the "only" competitive differentiator. No business, whether it is big or small, old or new can afford to under-invest in building the capacity to harness this last scarce resource.

1.2.3. What KM is not:

a) Tiwana (2005) further says what KM is not about:

KM is not knowledge engineering. KM is a business problem and falls in the domain of information systems and management, not in computer science. KM needs to join information systems and people in ways that information management never has seen in the past.

KM is about process and not just digital networks.

KM is not about building a smarter intranet.

KM is not about a one-time investment.

KM is not about enterprise-wide integration (Infobahn’s) only. Although enterprise integration helps, the primary focus of KM is on helping the Right people Apply the Right knowledge at the Right time.

b) Awad and Ghaziri (2003) say what KM is not about in the following way:

KM is not re-engineering. Re-engineering implies one-shot, drastic electric-shock change in the organizational processes to improve efficiency. It is a mechanical shift from one stage of operation to a more efficient stage, and it usually involves radical changes of business processes and the people involved. In contrast, KM implies continuous change and addresses future threats and unique opportunities. There is
continuous learning, unlearning and relearning to ensure smooth change from top to bottom. The focus is on change that will generate gradual but solid gains in the competitive environment. KM is engrained in the day to day operations of the business and directed by people who are directly connected with the changing world of their company's business.

KM is not a discipline. It is another way of improving quality, profitability and growth.

KM is not a philosophic calling. KM goes to the core of an organization's intangible asset (Knowledge), revisits the knowledge, and taps into it.

KM is not intellectual capital alone.

KM is not based on information. Information can become knowledge after people use it in ways that create value. Knowledge has been viewed as information in action.

KM is not about data. Data by itself is not actionable knowledge.

Knowledge value chain is not information value chain. In information value chains, the key component is a technological system guiding the company's business processes, viewing the humans as passive processors. In contrast, knowledge value chains view humans as the key components assessing and reassessing the information stored in a technological system.

KM is not limited to gathering information from the company's domain experts or retiring employees and creating databases accessible by intranets.

KM is not digital networks. KM is about improving business processes with people and technology in mind. Effective technology is the enabler of KM, and people must be in the equation from the start to use the technology effectively.

KM is not about knowledge capture, per se. Knowledge can not be captured in its entirety. Problems involving collaboration, co-operation, and organizational culture must be addressed before one can be sure of reliable knowledge capture.

The biggest and key challenges the knowledge vendors face are:

1. Explaining what KM is and how it can benefit a corporate environment.

2. Explaining the firm's core knowledge by department and by division.
3. Learning how knowledge can be captured, processed and acted upon.
4. Addressing the neglected area of collaboration.
5. Continuing research into KM to improve and expand its current capabilities.
6. Learning to deal with tacit knowledge.

1.2.4. Myths about KM:

KM is not a separate area or function of business, represented by a KM department or a KM process. KM is interwoven into all of an organization’s processes. Although effective utilization of technology is essential, KM is not constrained by collecting knowledge from domain experts and building a networked databases or databases supported by the company’s intranet. Several more myths about KM are:

KM is a fad.

KM and data warehousing are essentially the same.

KM is new concept.

KM is mere technology.

Technology distributes human intelligence.

KM is another form of re-engineering.

Company employees have difficulty sharing knowledge.

KM works only within an organization.

Technology is better alternative than face-to-face.

It is “no-brainer” to share what you know.

1.2.5. KM life cycle:

Awad and Ghaziri (2003) defined the KM life cycle in the following way:

KM goes through a series of steps, making up an on-going cycle. The four step process includes gathering, organizing, refining and disseminating.
The capturing phase deals with knowledge capture and includes e-mail, audio files, digital files, and the like. In this phase, it is important to go to all the sources available and never judge the usefulness of the captured knowledge until after it is subjected to exhaustive testing. In this phase KM systems are an ideal approach to eliciting and representing knowledge into a form that can be available to many users which is very important KM process.

After the capturing phase, the captured data or information should be organized in a way that can be retrieved and used to generate useful knowledge. One can use indexing, clustering, cataloging, filtering, codifying, and other methods to do the organizing. Speed, user-friendliness, efficiency of access, and accuracy are important elements to consider throughout the organizing phase.

After organizing the information, it should be refined. Data-mining can be applied in this phase. Data mining takes explicit knowledge found in databases and transforms it into tacit knowledge.

After refining phase, knowledge should be disseminated or transferred. This includes making knowledge available to employees via tutorials or guidelines for effective use.

Summary of four process view of KM:

Capturing: Data entry; Scanning; Voice input; Interviewing; Brainstorming.
Organizing: Cataloging; Indexing; Filtering; Linking; Codifying
Refining: Contextualizing; Collaborating; Compacting; Projecting; Mining
Transfer: Flow; Sharing; Alert; Push;

1.2.6. Road Map for KM:

Tiwana, (2005), suggests a road map with four phases involving ten different steps that will help an industry leverage its existing infrastructure, design, develop, and deploy a KM system that is aligned with its business strategy on top of existing infrastructural capabilities; undertake cultural and organizational changes that can make KM succeed in the industry and show the ways to evaluate the KM effectiveness.
• Identify knowledge critical to your business
• Align business strategy and knowledge management.
• Analyze the existing knowledge in your company.
• Building on, not discarding existing IT investments.
• Focus on processes and tacit, not just explicit, knowledge.
• Design a future-proof, adaptable knowledge management platform.
• Build and deploy a result driven KM system.
• Implement leadership and reward structures needed to make KM work.
• Evaluate initiatives using Real Option Analysis.
• Learn from war stories.

The ten step KM road map as suggested by Amrit Tiwana is as follows:

Phase 1: Infrastructural evaluation

1. Analyze the existing infrastructure
2. Align knowledge management and business strategy

Phase 2: KM system analysis, design, and development

1. Design the knowledge management infrastructure
2. Audit existing knowledge assets and systems
3. Design the knowledge management team
4. Create the knowledge management blueprint
5. Develop the knowledge management system

Phase 3: Deployment

1. Deploy, using the results-driven incremental methodology
2. Manage change, culture and reward structures

Phase 4: Evaluation

1. Evaluate performance, measure ROI, and incrementally refine the KMS.
1.2.7. **KM Methods Suggested by Few More Authors:**

Similarly, several authors devised and suggested their own methods which ultimately speak of the same basic approach towards KM but with few refinements, variations and even appear as simplified approaches. In most of the cases, the fundamental emphasis was on converting tacit knowledge in to explicit knowledge so that it can be properly stored, now that the facilities are available with the advent of computers and such systems, so that other persons can gainfully make use of by suitably retrieving the information and thus contribute to the company as well as enhance knowledge of self.

Emphasis was also given for creation of atmosphere such that free flow of information amongst the groups is established and the earlier tendencies of people such as retaining one’s own knowledge as his own property and having fears that his/her importance gets reduced once the information is shared and such things are gradually eliminated. And people are made to think not at individual level but care more for the company’s interests and even at the global level, industry’s interests.

Well, implementation of KM practices in the organization, the most important step for the organization, involves few established steps, again with few variations suiting to that particular company. Basically, to start with, top management needs to take lot of interest and allocate and devote time in initiating KM by formation of task forces, expert teams, knowledge managers, create domains, sub-domains, sub-sub-domains, organize meetings, trainings and seminars, create intranet and portals at intranet for encouraging participation of people to share their views and experiences, encourage conversion of their innovative experiences into knowledge pieces with the help of knowledge managers. Top management also needs to encourage people through rewards, incentives, promotions and any other such practice that will kindle interest in the minds of the people.

Holsapple and Joshi, (2003), said KM involves Acquiring (Extracting, Interpreting, and Transferring); Selecting (Locating, Retrieving, and Transferring); Internalizing (Assessing, Targeting, and Depositing); Using; Generating (Monitoring, Evaluating, Producing, and Transferring); Externalizing (Targeting, Producing, and Transferring).
Spek and Spijkervet (1997a), define that Knowledge is the whole set of insight, experiences and procedures that are considered correct and true and that therefore guide the thought, behavior, and communication of people. According to them, (1997b), KM involved following steps: Developing, Securing, Distributing and Combining.

Beckman's, (1997), concepts on steps involved KM are: Identify, Capture, Select, Store, Share, Apply, Create and Sell.

Marquardt, (1996), defined KM to be involving: Acquisition, Creation, Transfer and Utilization and Storage.

DiBella and Nevis, (1998), contended KM to involve following steps: Acquire, Disseminate and Utilize.

Ruggles, (1997), said KM is a process that involves Generation (Creation, Acquisition, Synthesis, Fusion, and Adaptation), Codification (Capture, Representation) and Transfer.

Where as according to O'Dell, (1996), KM involved following steps: Identification, Collect, Adapt, Organize, Apply, Share and Create.

Further in the next chapter, where KM literature review is undertaken, more details are spelt out, regarding various tenets of KM itself and how the business world as a whole has taken to realization of value of KM and its successful implementation.

1.2.8. KM in Steel Industry:

Steel Industry and Steel Plant is an ideal place for implementation of KM. The plants consist mainly of the production units that process and produce steel. Production of Steel is a process consisting of individual units that in unison creates the steel end product. Making a perfect steel product is dependent on the performance achieved in the individual units and the unison performance of all. The quality of the end product is determined by the quality achieved in each individual step. To achieve a defined end product the whole Steelmaking, Rolling and Finishing process is best seen as a path on which each single unit has its defined area of operation, together aligned such that the defined end product of best quality is produced.
Awareness over the whole Production Process and one's own position in it, objective oriented communications between individual unit operations and the availability and actual use of intelligent Process Equipment, Automation and Information Technology create the best conditions for production of steel where Knowledge also is a vital and determining factor.

Knowledge obtained in the Production of Steel remains valid till the technology used does not become redundant. With the advent of new technologies, this knowledge needs to be realigned and at times even required to be unlearnt in order to go for learning new technologies. Knowledge is created everywhere in the Production Processes, so that Knowledge Management in these become a value creator.

The steel plant being an integrated unit, there is immense scope for introduction of KM not only in the main production units but all the fields of activities that support the main production departments. Even departments like finance and accounts department, training and development department, stores and purchase department and all other such departments that help main production units can go for KM implementation and thus contribute to a great extent to the plant as a whole.
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