CHAPTER 1
INTRODUCTION

1.1 KNOWLEDGE MANAGEMENT (KM)

Public and private organizations all over the world over have recognized the importance of knowledge to their long term survival and success. Academicians and practitioners observe that knowledge is one of the most important sources of competitive advantage and the greatest asset for organizations. Boisot (1999) observes that we live today in a post-industrial society in which knowledge has increasingly come to be recognized as a primary source of wealth. He further states that the evidence has become overwhelming that economies that are poor in natural resources but skilled in the production and exploitation of knowledge generally outperform economies that have abundant natural resources but are lacking in such skills.

The period 1990’s saw a radical shift in the way organizations viewed themselves (and also their competitors). They realized that their competitive advantage lay more on their intangible resources like – core competence, intellectual capital, ability to learn, and most importantly the collective knowledge of the organization. Thus, the basis of competition changed from traditional sources like land, labour and capital to knowledge-based sources. Moreover, organizations realized that their products and services are nothing but the manifestation of their collective knowledge and also that knowledge is the principal driver of all other competencies and capabilities. Thus, organizations, world over are seeking ways and means to
leverage their collective knowledge to create value for their customers and stakeholders. The past decade has seen the emergence of ‘practices’ (both formal and informal) within organizations to ‘manage’ this resource. Organizations (across several industry sectors) have evolved their own strategies for ‘Knowledge Management (KM)’ that suits their vision, competence, and culture. Thus, the discipline of KM has grown in terms of both theory and practice.

The emergence of knowledge as an important factor of production can be attributed to the recent works in the area of strategic management and economic theory, especially, the Resource Based View (RBV) of organizations. The RBV focuses on the resources and capabilities of organizations and not on its products and services (Barney, 1991). Resources and capabilities can be thought of as a platform from which the firm derives various products for various markets. Leveraging resources and capabilities across many markets and products is the key in the resource-based strategy. While products and markets may come and go, resources and capabilities are more enduring. Thus, according to the RBV, competitive advantage based on resources and capabilities is potentially more sustainable than that based solely on products and market positioning (Zack, 1999).

The RBV also advocates firms to possess ‘inimitable resources’ that will enable them to sustain their competitive advantage. Academicians and managers agree that a company’s knowledge may be the one thing that allows it to be competitive because all other resources are to a large extent reproducible. According to Zack (1999) companies having superior knowledge are able to coordinate and combine their traditional resources and capabilities in new and distinctive ways, providing more value for their customers than their competitors can. The literature on ‘organizational learning’ (Argyris 1992; Senge, 1990), ‘core competence’ (Prahalad and
Hamel, 1990), and ‘intellectual capital’ (Quinn, 1992) have in many ways added to the importance of knowledge as a resource and underscored the need for organizations to build the capability to manage it.

The term “KM” was coined by Mr. Karl Wiig in 1986 at a conference in Switzerland. He stated that KM is a systematic, explicit and deliberate building, renewal and application of knowledge to maximize an enterprise’s knowledge related effectiveness – returns from its knowledge assets”. But, later Nonaka (1991) mapped the term KM in the management literature. The famous quote ‘knowledge creating companies’ was emphasised and established by Nonaka (1991). The transformation of knowledge is explained in Figure 1.1.

The major inspirations were drawn through the inspiration from the KM practices of firms like Matsushita and Canon. Nonaka and Takeuchi (1995) have produced a classic work in KM by expanding the theme of the ‘knowledge creating companies’. Leonard-Barton (1995) has triggered the KM revolution with a different theme called ‘wellsprings of knowledge’. The KM practices of Chaparral Steel motivated the work of Leonard-Barton (1995). Post 1995, there has been factually a detonation in the literature on KM, including, articles, books and journals. In the year 1996, the Strategic Management Journal published a special issue on KM. The Journal of KM was launched in the year 1998.

Management consultancies like KPMG, Ernst & Young, etc., bestowed their part through several KM surveys (KPMG, 1998) and distinguishing leaders in KM (MAKE, 1998) among organizations. Many firms appointed chief knowledge officers (CKO) at the organizational level, similar to chief financial officers and chief information officers. The academia also witnesses the appointment of a “professor of knowledge” in the
University of California. Gamble and Blackwell (2001) depicted KM in different dimension and stated that KM draws from a wide range of disciplines and technologies including, cognitive science, expert systems, library and information science, organizational science, and network technology. Thus, KM came into sight as a discipline in itself.

**Figure 1.1 Transformation of Knowledge**

1.2 OBJECTIVES, USEFULNESS, DRIVERS AND PROCESSES OF KM

The primary objective behind the KM initiative is to capture the explicit and tacit knowledge about people, skills, processes, markets, competitors, customers,
suppliers, organization, environment, policies, procedures, regulation, legislation, etc., that exist in the organization in a structured manner and store the same as the organization’s asset available to all employees on a ‘who need what basis’. The forms of knowledge are clearly depicted in Figure 1.2. Individuals, organizations, and nations have been managing knowledge for millennia. It is only in recent times that researchers and managers have realized the need for ‘conscious’ and ‘purposeful’ management of knowledge. Hence, the focus has shifted from managing knowledge embodied in various forms (like products, processes, patents, procedures, and in people) to manage knowledge itself as a resource and a capability. The reasons for this shift can be attributed to reasons within and outside organizations. Through a semi-structured interview conducted with 43 executives belong to 32 manufacturing organization, the key drivers for KM are derived and detailed in Figure 1.3.

**Figure 1.2 Forms of Knowledge**
Figure 1.3 Key Drivers of KM
From the practice perspective, there are two categories of drivers namely, internal and external drivers. The detailed sub classification of both internal and external drivers are collected from the executives based on their experience at the organization. The application of this knowledge in the workplace is to reuse knowledge to reduce rework, redeploy knowledge to leverage best practices and transfer skills and behaviors and repurpose knowledge to drive innovation and achieve business benefits. KM also helps in tracking and retaining knowledge and information within the organization to provide it to the appropriate audiences in the most effective manner for which it is important to develop a knowledge-sharing culture and mechanisms to support it. The critical business benefits of KM are improved ability to capture and manage intellectual assets, effective dissemination of knowledge through collaboration, greater agility in responding to market and regulatory change and improved knowledge continuity during organizational change.

KM involves managing the following knowledge-related activities in the organization:

1. Knowledge Identification
2. Knowledge Acquisition
3. Knowledge Representation
4. Knowledge Classification
5. Knowledge Creation (or generation/production)
6. Knowledge Capture
7. Knowledge Storage
8. Knowledge Utilization (or application)
9. Knowledge Access (and Retrieval)
10. Knowledge Sharing
11. Knowledge Transfer
12. Knowledge Dissemination
13. Knowledge Networking
14. Knowledge Integration, and
15. Knowledge Organization

The list of activities given above is neither mutually exclusive nor completely
exhaustive nor is in a sequential order. Though the list contains 15 knowledge-
related activities that an organization executes (either consciously or sub-
consciously), the main “KM Processes” emphasized both in theory and
practice are:

1. Knowledge Creation
2. Knowledge Utilization,
3. Knowledge Sharing, and
4. Knowledge Transfer

All other processes such as – identification, acquisition, representation, classification, capture, storage, access, dissemination, networking, integration, and organization – support the above Four KM processes. It can be argued that if an organization consciously manages the
above four KM processes, it would take care of all the other processes also. The key KM processes are detailed in Figure 1.4.

![Figure 1.4 Key KM Processes](image-url)
1.3 IMPORTANCE AND IMPLEMENTATION OF KM

Cumulative evidence from past research in operations management and other disciplines suggests that effective communication and KM are critical elements of successful supply chain coordination and integration in manufacturing organizations. “KM is defined as the organized and systematic process of generating, creating and disseminating information, and selecting, distilling, deploying and exploiting explicit and tacit knowledge through the critical pillars such as people, process, technology to create unique value that can be used to achieve a competitive advantage in the marketplace by an organization” (Nonaka and Takeuchi, 1995; Pagell, 2004). The importance of KM Pillars is discussed as “KM addresses policies, strategies, and techniques achieved through people, process and technology aimed at supporting an organization’s competitiveness by optimizing the conditions needed for efficiency improvement, innovation, and collaboration among employees” (Sousa and Hendriks, 2006).

Unlike other management practices there are no standard guidelines or step-by-step procedures to implement KM in organizations. As yet, there are no ‘KM Maturity Models’, or ‘KM Certification Agencies’. This is because both the theory and practice of KM is still in the evolution stage. Many companies are experimenting with different models of KM. Since measurement of the costs and benefits of KM is also difficult, managers find it hard to convince their organizations to invest energies in KM. One of the advantages of KM is that it is wholly an ‘internal organizational affair’ and external consultants cannot play a significant role in designing KM systems for organizations. Hence, people cannot argue that KM is just another management fad initiated by the academic, research, and consultant communities to make money for themselves. Given the vast amount of case
studies, success stories, and frameworks available today in the internet for free, all organizations need to do is to form a KM team and set the ball rolling.

The following are some of the key points that need to be borne in mind when implementing KM in organizations:

People are the prime movers of KM. Unless all the employees believe in it, KM cannot succeed in the organization. It should neither be top-down driven or bottom-up driven. Employees should never feel that they are ‘driven’ by someone; they should be self-driven. Thus, KM should be everyone’s responsibility.

KM can be implemented through a big-bang approach or a piece-meal approach. In the big-bang approach, KM is a organization-wide process whereas in the piece-meal approach, only a department or a function is taken for implementation. Many organizations have first experimented with a small division in their organization and then expanded it to other parts.

It is very important to integrate KM processes like acquisition, creation, sharing, utilization and transfer into the core activities of the organization. Employees should never feel that they are doing ‘something extra’ apart from their normal routine. Over a period of time KM activities will then become a part of the fabric of the organization. If KM is carried out as a ‘separate activity’ removed from the daily routine, there is bound to be some resistance from employees. A dedicated KM team can be formed to take care of activities that are different from the organization’s regular routine.

In any management activity measurement is an important part. Managers never believe in any concept or philosophy unless they can measure it with the instruments that they are familiar with. Before initiating KM it is better to select an ‘organizational performance parameter’ that needs to be
improved using \( KM \). This can range from reducing employee attrition, increasing sales in a particular region, improving a particular quality parameter of a product, reducing wastage, or increasing customer response time. The performance parameter can be measured before and after implementation of \( KM \). This way \( KM \) will get integrated into the routine activities and also will gain confidence of the employees.

There is a common belief that \( KM \) is only the prerogative of big organizations with heavy investments in IT. This is not true. The size of the organization, number of employees, nature of business, infrastructure facilities, etc. don’t matter for \( KM \). Hansen et al (1999) suggest two generic \( KM \) strategies – Personalization, and Codification. Personalization strategy stresses on connecting people to people, i.e., people who possess knowledge to those who need it. Consultancies like McKinsey adopt this strategy. In Codification the stress is on documenting knowledge, storing it in databases, and then disseminating it to people who need it. Consultancies like Ernst & Young adopt this strategy. Depending on the resources available and the culture, organizations can adopt either of these strategies for \( KM \).

Some of the key \( KM \) activities that organizations undertake as part of \( KM \) implementation are given below. It should be noted that these activities are not presented in any chronological order. Though there many be inter-dependencies between certain activities, the \( KM \) theory has not yet devised a step-by-step guideline to implement \( KM \).

1. Knowledge Audit: The \( KM \) team consisting of key organizational employees who have sufficient knowledge of all the operations perform a ‘knowledge audit’. This involves – identification and cataloguing of key knowledge assets and knowledge competencies, identification of experts in various knowledge domains within the organization, and classification of knowledge assets into groups like ‘general’, ‘strategic’, and ‘proprietary’.
2. Knowledge Vision: The ‘knowledge roadmap’ or ‘knowledge vision’ document specifies the existing knowledge capabilities of the organization and the capabilities that need to be acquired in the short-term and long-term to remain competitive.

3. Knowledge Mapping: As discussed earlier, this exercise involves ‘mapping’ all the knowledge assets that exists in the organization. Knowledge maps can be constructed for specific departments/function/domains or for the whole organization.

4. Knowledge Architecture: Just as the construction of a building starts with the plan or architecture, organizations need to design their architecture for KM. This is especially important for managing explicit knowledge predominantly in the form of documents and reports in databases and file cabinets.

5. Establishing Knowledge Roles and Skills: This involves selecting and appointing a dedicated team of company personnel to oversee the knowledge activities of the organization. The roles and deliverables of the KM team should be specified clearly.

6. Knowledge Infrastructure: Depending on the nature of KM issues and needs coupled with the resources available, organizations can invest in suitable infrastructure facilities including talk rooms, open spaces, canteens, libraries, computers, telephones, intranet, groupware, and internet.

7. Organizational Structure: Suitable modifications should be made to the existing organizational structure and systems that enables employees to implement KM activities without hassles. The structure should inspire a culture of KM.

8. Creating Enabling Contexts for KM: Many researchers stress that the important job of managers and KM activists is to create ‘enabling contexts’ for KM. These ‘contexts’ can be in the form of knowledge fairs, talk
rooms, communities of practice, awards and incentives, idea contests, brainstorming sessions, and open houses. These contexts enable employees to open-out and freely express their ideas and exchange their experiences.

1.4 MOTIVATION OF RESEARCH

Implementing a KM system can be complex and dynamic, no matter how well planned and developed. Inevitably a degree of organizational inertia is focused on the current rather than the new. Within an enterprise, people (personal and group) involvement and interests, process status and technology landscape can deflect the commitment needed to successfully implement such a system. To successfully implement a KM solution, six critical success factors must be considered and are discussed below (Bixler 2002):

1. Vision and leadership - KM strategic plan: A clearly defined and inspirational statement for the value of what the KM system is intended to accomplish within the enterprise. Success in implementing a KM solution within an enterprise relies on a well-designed KM strategy and an implementation approach tailored to the enterprise and its constituents.

2. Organizational and communication assessment and training: Organizational processes, procedures and workflow are central to successful enterprise operations. The KM implementation strategy must be aligned with these organizational distinctions. Additionally, a well-developed enterprise communication system and learning system is necessary to facilitate effective KM implementation. Emphasis must be on the critical importance of collaboration.

3. Business performance measurements: A KM system must absolutely be led by business drivers based on client demands, even if the enterprise
itself does not recognize that. Leadership must define the business vision by demonstrating how a KM system will improve business processes and transform the enterprise. It needs to be recognized that KM implementation is not “business as usual.”

4. KM mission interface and alignment: The scale of KM demand requires simultaneous, coordinated activities within an enterprise and a foundation of unification based on the organization’s management structure. This ensures that it is possible to achieve the overall business vision of a KM system without compromising current service levels and existing business.

5. KM architectures and infrastructure: KM tools and the required infrastructure are essential and central to a successful KM system - but it is not everything. KM technology tools are the enablers of a KM system.

6. KM integration and resourcing: KM system integration within the enterprise is essential and requires proper resourcing. Senior management must commit to proper and practical levels of resource allocation to effectively manage and maintain a KM system and integrated program.

Cumulative evidence from past research in KM suggests that effective implementation of KM solution in any organization requires a robust designs and models for various critical elements of process, people and technology. With this background, a Delphi study was conducted (Nevo and Chan 2007a) with a semi-structured questionnaire with top management executives those with decision making authority, who select and evaluate the KM Solution (KMS) of manufacturing organization in order to understand the set of critical elements which influence the KM solution implementation. Overall, 43 executives participated in the study, from various manufacturing
industry in India varying in size from 200 to over 20,000 employees. Interviews were conducted in-person and also over the telephone. All interviews were conducted based on the interview protocol. After each interview, notes were reviewed to identify potential challenges or problems. Only in one case, it was necessary to contact the respondent again for purposes of clarification. Four rounds were conducted to arrive the final results.

Some of the Statements from Interview are stated below:

- Well, I guess my perception is, yes they have influence, but it’s very labour-intensive and very time intensive.
- It’s doing what we asked it to do but we’re missing the boat on its potential right now, so that [is] actually something I say have influence.
- We’re still too early to evaluate whether or not the million dollars worth of savings are real, but I honestly believe it is there.
- We’re going to be able to have them access a program that will be able to help them out right at the bedside and be able to look up best practices so we’re on that track and we’re going down that road but we’re not there yet.
- Where we are today and where we expect to be? I honestly think, this will have influence.
- You believe that this is going to help you within your research to do things faster, then you have to be able to measure the time along the timeline - and that is a long, long time to measure, to be able to get through research etc., so it’s not a quick hit return that you’re going to be able to see.

Based on the results of this Delphi study, a temporal confirmation conceptual model is developed (Figure 1.5) (Nevo and Chan 2007b) with six modules / elements to take it the next level of devising the generic framework, design, model and strategy for the identified modules. From this study, it is
clearly evident that the organizations should know the level and need a design and model for the below modules / elements before the implementation of $KM$ solution:

1. Readiness level of people, process and technology for the change
2. Behavior pattern of people for the change and for knowledge creation, use and re-use
3. Taxonomy and technology architecture landscape with navigation and content layer of $KM$ components
4. Process design for knowledge capture, storage and retrieval and environment design for organization structure
5. Reward, learning and communication design
6. Linkage design for internal and external levels and functions of organization

Keeping this as a base, a detailed business and research literature review is executed for all the six critical modules / elements to understand the research gap. Based on the detailed and thorough literature study and review on the six critical modules namely readiness assessment, behavior assessment, taxonomy and technology architecture, process, environment, reward and communication design, learning design and linkage design for internal and external levels and functions of organization, the following points are observed:

1. The base research papers for readiness assessment are Hanafizadeh et al (2009) and Khalfan et al (2001). There is a need for conceptual framework and generic readiness assessment design for the readiness assessment exercise.
2. The base research paper for behavior assessment is King and Marks Jr (2008). There is no generic behavior assessment model in $KM$ perspective.

4. Paiva et al (2008) is the base research paper for process, environment, reward and communication design and it reveals that there is no generic design for process, environment, reward and communication typically for implementation of KM solution in manufacturing industry.

5. The base research paper for learning, reward and communication design is Peter and John (2006) and a generic design and model for this element is a research gap.

6. Huang (2010) is a base research paper for linkage design for internal and external levels and functions of organization and it indicates that the integration design for balanced scorecard and vendor managed inventory are the critical research gaps.
1.5 SCOPE OF THE PRESENT STUDY

The current study addresses six modules / elements which is required before the implementation of KM solution in typical manufacturing and service industry. The objective is to develop generic framework, generic design and generic model for all the below modules / elements and also to implement the same in a case study organization.

1. Development of conceptual framework and generic readiness assessment design and model for the readiness assessment exercise in KM perspective.
2. Development of conceptual framework and generic behavior assessment design and model for the behavior assessment exercise in KM perspective.
3. Generic base framework, design and model development for KM taxonomy and technology architecture.

4. Development of generic framework, design and model for process, environment, reward and communication design

5. Development of generic learning design and model

6. Development of generic framework, design and model for linkage of balanced scorecard and vendor managed inventory in KM perspective