Chapter 10: Managing Knowledge

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Chapter Objectives

- Define knowledge and describe the different types of knowledge.
- Understand the concepts of organizational learning, memory, and the impact of organizational culture.
- Describe the activities involved in knowledge management.
- Describe different approaches to knowledge management.
- Describe the issues associated with implementing knowledge management in organizations.
- Describe the technologies that can be utilized in a knowledge management system.
- Describe the activities of the chief knowledge officer and others involved in knowledge management.
- Describe benefits as well as drawbacks to knowledge management initiatives.
- Understand the valuation approaches to KMS, as well as its successes and potential failures.

Knowledge Management

**Knowledge management (KM)** is a process that helps organizations identify, select, organize, disseminate, and transfer important information and expertise that are part of the organization's memory.

- Structuring of knowledge enables
  - effective and efficient problem solving
  - dynamic learning
  - strategic planning
  - decision making.
- Knowledge management initiatives focus on
  - identifying knowledge
  - how it can be shared in a formal manner
  - leveraging its value through reuse.
- Knowledge management can
  - promote organizational learning
  - help solve problems

Knowledge (Knowledge Management Systems)
Knowledge

Knowledge is very distinct from data and information and provides a higher level of meaning about that data and information. The ability to act is an integral part of being knowledgeable.

- **Data** are a collection of:
  - Facts
  - Measurements
  - Statistics

- **Information** is organized or processed data that are:
  - Timely
  - Accurate

- **Knowledge** is information that is:
  - Contextual
  - Relevant
  - Actionable.

Knowledge is Different (1)

- **Intelligence**
  - Human, judgmental
  - Contextual, tacit
  - Transfer needs learning

- **Knowledge**
  - Codifiable, explicit
  - Easily transferable

Dr David J. Skyrme, The State of Practice, 1998

Knowledge – Corporate Asset

- **Extraordinary leverage and increasing returns.** Knowledge is not subject to diminishing returns. When it is used, it is not consumed. Its consumers can add to it, thus increasing its value.

- **Fragmentation, leakage, and the need to refresh.** As knowledge grows, it branches and fragments. Knowledge is dynamic; it is information in action. Thus, an organization must continually refresh its knowledge base to maintain it as a source of competitive advantage.

- **Uncertain value.** It is difficult to estimate the impact of an investment in knowledge. There are too many intangible aspects.

- **Uncertain value of sharing.** Similarly, it is difficult to estimate the value of sharing the knowledge, or even who will benefit most.

- **Rooted in time.**

Knowledge – Explicit knowledge

Explicit knowledge has been **codified** (documented) in a form that can be distributed to others or transformed into a process or strategy without requiring interpersonal interaction.

- **Explicit knowledge** (or leaky knowledge) deals with objective, rational, and technical knowledge
  - Data
  - Policies
  - Procedures
  - Software
  - Documents
  - Products
  - Strategies
  - Goals
  - Mission
  - Core competencies

The more than knowledge is made explicit, the more economically it can be transferred.

Intellectual capital or intellectual assets
**Knowledge** – Tacit knowledge

Tacit knowledge is usually in the domain of subjective, cognitive, and experiential learning; it is highly personal and difficult to formalize. It is also referred to as embedded knowledge since it is usually either localized within the brain of an individual or embedded in the group interactions within a department or business unit.

- Tacit knowledge is the cumulative store
  - of the corporate experiences
  - Mental maps
  - Insights
  - Acumen
  - Expertise
  - Know-how
  - Trade secrets
  - Skill sets
  - Learning of an organization
  - The organizational culture

Tacit knowledge is generally slow and costly to transfer and can be plagued by ambiguity.

**Knowledge Management** (Continued)

- **Knowledge creation** or **knowledge acquisition** is the generation of new insights, ideas, or routines.
  - **Socialization mode** refers to the conversion of tacit knowledge to new tacit knowledge through social interactions and shared experience.
  - **Combination mode** refers to the creation of new explicit knowledge by merging, categorizing, reclassifying, and synthesizing existing explicit knowledge.
  - **Externalization** refers to converting tacit knowledge to new explicit knowledge.
  - **Internalization** refers to the creation of new tacit knowledge from explicit knowledge.

- **Knowledge sharing** is the exchange of ideas, insights, solutions, experiences to another individuals via knowledge transfer computer systems or other non-IS methods.

- **Knowledge seeking** is the search for and use of internal organizational knowledge.

**Activities or Processes**

**Knowledge** – Knowledge Management Systems

The goal of knowledge management is for an organization to be aware of individual and collective knowledge so that it may make the most effective use of the knowledge it has. Firms recognize the need to integrate both explicit and tacit knowledge into a formal information systems - Knowledge Management System (KMS).

- A functioning knowledge management system follows six steps in a cycle dynamically refining information over time
  - Create knowledge.
  - Capture knowledge.
  - Refine knowledge.
  - Store knowledge.
  - Manage knowledge.
  - Disseminate knowledge.

As knowledge is disseminated, individuals develop, create, and identify new knowledge or update old knowledge, which they replenish into the system.
Conversion processes

<table>
<thead>
<tr>
<th>From Tacit</th>
<th>To Explicit</th>
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<tbody>
<tr>
<td>Tacit</td>
<td>Socialization</td>
</tr>
<tr>
<td>Explicit</td>
<td>Internalization</td>
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Source: *The knowledge creating company*, I. Nonaka and H. Takeuchi

Knowledge Management Approaches

There are two fundamental approaches to knowledge management: a **process** and a **practice approach**. Since the two are not mutually exclusive a knowledge management initiative will probably involve both approaches.

- **The process approach** attempts to codify organizational knowledge through formalized controls, processes, and technologies frequently through the use of information technologies to enhance the quality and speed of knowledge creation and distribution. E.g.
  - Intranets
  - data warehousing
  - knowledge repositories
  - decision support tools
  - groupware

- The process approach is favored by firms that sell relatively standardized products since the knowledge in these firms is fairly explicit because of the nature of the products & services.

Knowledge Management Approaches (Continued)

- **The practice approach** to knowledge management assumes that organizational knowledge is tacit in nature and formal controls, processes, and technologies are not suitable for transmitting this type of understanding.

- Rather than building formal systems to manage knowledge, this approach builds social environments or communities to facilitate the sharing of tacit understanding.

- The practice approach is typically adopted by companies that provide highly customized solutions to unique problems. The valuable knowledge for these firms is tacit in nature, which is difficult to express, capture, and manage.

Two Knowledge Processes

- **Chaotic knowledge processes**
  - Human knowledge and networking
  - Information databases and technical networking

- **Systematic information and knowledge processes**

Knowledge Management (Information Technology)

Knowledge management is more than a technology or product, it is a methodology applied to business practices. However, information technology is crucial to the success of knowledge management systems.

- **Components of Knowledge Management Systems:**
  - Communication technologies allow users to access needed knowledge and to communicate with each other.
  - Collaboration technologies provide the means to perform group work.
  - Storage and retrieval technologies (database management systems) to store and manage knowledge.

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**Knowledge Management (Supporting Technologies)**

- **Artificial Intelligence** (AI methods: expert systems, neural networks, fuzzy logic, genetic algorithms, etc.)
  - Assist in identifying expertise
  - Elicit knowledge automatically and semi-automatically
  - Provide interfacing through natural language processors
  - Enable intelligent searches through intelligent agents.

- **Intelligent agents** are software systems that learn how users work and provide assistance in their daily tasks.

**Expert Systems**

Knowledge Management (Supporting Technologies) (Continued)

Technologies enable advanced functionality in knowledge management systems and form the base for future innovations.

- **Knowledge Discovery in Databases (KDD)** is a process used to search for and extract useful information from volumes of documents and data. It includes tasks such as:
  - knowledge extraction
  - data archaeology
  - data exploration
  - data pattern processing
  - data dredging
  - information harvesting
Knowledge Management (Supporting Technologies) (Continued)

- **Data mining** the process of searching for previously unknown information or relationships in large databases, is ideal for extracting knowledge from databases, documents, e-mail, etc.
- **Model warehouses & model marts** extend the role of data mining and knowledge discovery by acting as repositories of knowledge created from prior knowledge-discovery operations
- **Extensible Markup Language (XML)** enables standardized representations of data structures, so that data can be processed appropriately by heterogeneous systems without case-by-case programming.

Knowledge Management – IT Products

- Most knowledge management software packages include one or more of the following tools:
  - collaborative computing tools
  - knowledge servers
  - enterprise knowledge portals
  - electronic document management systems
  - knowledge harvesting tools
  - search engines
  - knowledge management suites.

Knowledge Management – IT Services

- Consulting Firms provide assistance
  - in establishing knowledge management systems
  - measuring their effectiveness
  - Support for vertical market software
- Application service providers (ASPs) have evolved as a form of KMS outsourcing on the Web.
  - Offering a complete knowledge management solution, including a KM suite and the consulting to set it up.

Knowledge Management – People (I)

Managing a KMS requires great effort. Many issues related to management, people, and culture must be considered to make the system a success. Some of those issues concern implementation and effective use of the system.

- **Chief knowledge officer's (CKO)** role are to maximize the firm’s knowledge assets, design and implement knowledge management strategies, effectively exchange knowledge assets internally and externally, and promote system use.
- **Chief executive officer's (CEO)** is responsible for championing the KM effort.
- **Chief financial officer (CFO)** must ensure that the financial resources are available.
Knowledge Management - People (II)

Managing a KMS requires great effort. Many issues related to management, people, and culture must be considered to make the system a success. Some of those issues concern implementation and effective use of the system.

- Chief operating officer (COO) must ensure that people begin to embed knowledge management practices into their daily work processes.
- Chief information officer (CIO) is responsible for the IT vision of the organization and the IT architecture, including databases, application software, etc.
- KMS developers are the individuals who actually develop the system.
- KMS staff catalogue and manage the knowledge, train users.

Knowledge Management - Metrics

Organizations gain several benefits from implementing a knowledge management strategy. This valuation can be based upon an asset-based approach or one that links knowledge to its applications and business benefits.

- Asset-based approach starts with the identification of intellectual assets and then focuses management's attention on increasing their value.
- The second uses variants of a balanced scorecard, where financial measures are balanced against customer, process, and innovation measures.
- Financial Metrics (tangible benefits)
- Non-Financial Metrics (intangible benefits)

Managerial Issues (I)

- Organizational culture change.
  - This issue is how can we change organizational culture so that people are willing both to contribute knowledge to and use knowledge from a KMS?
  - There must be strong executive leadership, clearly expressed goals, user involvement in the system, and deployment of an easy-to-use system that provides real value to employees.
  - A viable reward structure for contributing and using knowledge must also be developed.
- How to store tacit knowledge.
  - This is extremely difficult. Most KMSs (based on the network storage model) store explicit knowledge about the tacit knowledge that people possess.
  - When the knowledgeable people leave an organization, they take their knowledge with them.
  - Since knowledge requires active use by the recipient, it is important for the person generating knowledge to articulate it in a way that another, appropriately educated person can understand it.

Managerial Issues (II)

- How to measure the tangible and intangible benefits of KMS.
  - There are a number of ways to measure the value of intellectual assets and of providing them to the organization.
  - Determining the roles of the various personnel in a KM effort.
  - The lasting importance of knowledge management.
    - Knowledge management is extremely important. It is not another management fad.
    - If it is correctly done, it can have massive impact by leveraging know-how throughout the organization.
    - If it is not done, or is not correctly done, the company will not be able to effectively compete against another major player in the industry that does KM correctly.
- Implementation in the face of quickly changing technology.
  - This is an important issue to address regarding the development of many IT systems.
    - Technology has to be carefully examined, and experiments done, to determine what makes sense.
    - By starting now, an organization can get past the managerial and behavioral issues, which have greater impact on the eventual success (or not) of a KMS.
    - As better and cheaper technology is developed, the KMS can be migrated over to it, just as legacy systems have migrated to the PC.