

Chapter 2: Knowledge Management Foundations:

Infrastructure, Mechanisms, and Technologies

Knowledge Management Solutions and Foundations

- Knowledge management solutions refer to the variety of ways in which KM can be facilitated. It is about the ways in which specific aspects of KM (discovery, capture, sharing, and application of knowledge) can be accomplished.

Knowledge **Management solutions** include **two** components:

i-Knowledge Management processes: that facilitate the application and development of organizational **knowledge** and aims to create value and to increase/sustain competitive advantage for the organization and

ii-Knowledge Management systems: which are the integration of technologies and mechanisms that are developed to support the four KM processes (discovery, capture, **sharing**, application).

- Knowledge Management Foundations: are the broad organizational aspects that support KM in the short- and long-term. They include KM infrastructure, KM mechanisms, and KM technologies. Thus, KM solutions depend on these three KM foundations.
- Knowledge management infrastructure, mechanisms, and technologies are the underlying foundations for any organization's KM solutions.

Knowledge Management Infrastructure

- Knowledge Management infrastructure reflects the long-term foundations for knowledge management.

In an organizational context, knowledge management infrastructure includes five major components:

- organization culture
- organization structure
- organization's information technology infrastructure
- common knowledge, and
- physical environment

Organization culture

- reflects the norms and beliefs that guide the behavior of the organization's members.
- It is an important enabler of knowledge management in organizations.
- Attributes of enabling organizational culture include understanding the value of knowledge management practices, managing support for knowledge management at all levels, incentives that reward knowledge sharing, and encouragement of interaction for the creation and sharing of knowledge

Organization structure

- Knowledge management also depends to a considerable extent on the **organization structure**.
- Organizational structure determines the manner and extent to which roles, power, and responsibilities are delegated, controlled, and coordinated, and how information flows between levels of management
- The most common organization structures are: **hierarchical, centralized and decentralized, flat and tall**.
- A **traditional *hierarchical structure*** of the organization defines each employee's role within the organization and greatly affects with whom each individual mainly and frequently interacts, and share knowledge.
- Reporting relationships in those organizations influence the flow of data and information as well as the nature of groups who make decisions together, and consequently affect the sharing and creation of knowledge.
- The most important decisions in organizations with a traditional hierarchical structure are usually taken by senior management.

- In a decentralized structure, the decision making power is distributed and the departments and divisions have varying degrees of autonomy.
- Organizational structures can facilitate knowledge management through **communities of practice**.
- A community of practice is an organic and self-organized group of individuals who are dispersed geographically or organizationally but communicate regularly to discuss issues of mutual interest.
- **Communities of practice** provide access to a larger group of individuals than possible within traditional departmental boundaries. It also provide access to external knowledge sources.
- Communities of practice benefit considerably from emergent information technologies, including blogs and social networking technologies.

Organization's information technology infrastructure

- Knowledge management is also facilitated by the organization's **Information Technology Infrastructure**.
- Although certain information technologies and systems are directly developed to pursue knowledge management, the organization's overall Information Technology Infrastructure, developed to support the organization's information systems needs, also facilitates knowledge management.
- The Information Technology Infrastructure is the combination of data processing, storage, and communication technologies and systems (databases, servers, computers, information devices, etc) and the processes that make it all work.
- It comprises the entire spectrum of organization's information systems, including transaction processing systems and management information systems.
- It consists of databases and data warehouses, as well as enterprise resource planning systems.

Common Knowledge

- Common Knowledge represents another important component of the infrastructure that enables knowledge management.
- It refers to the organization's cumulative experiences in comprehending a category of knowledge and activities and the organizing principles that support communication and coordination.
- Common knowledge helps enhance the value of an individual expert's knowledge by integrating it with the knowledge of others.

Common knowledge provides unity to the organization. It includes:

- a common language and vocabulary,
- recognition of individual knowledge domains,
- common cognitive schema,
- shared norms, and
- elements of specialized knowledge that are common across individuals sharing knowledge

Physical Environment

- **The physical environment** within the organization is often taken for granted, but it is another important foundation upon which knowledge management rests.
- Physical environment can foster knowledge management by providing opportunities for employees to meet and share ideas.
- Coffee rooms, cafeterias, water coolers, and hallways do provide venues where employees learn from and share insights with each other.

Key aspects of the physical environment include:

- the design of buildings and the separation between them;
- the location, size, and type of offices;
- the type, number, and nature of meeting rooms; and so on.

Knowledge Management Mechanisms

- **Knowledge Management Mechanisms** are organizational or structural means used to promote knowledge management. They enable knowledge management systems, and they are themselves supported by the knowledge management infrastructure.
- Knowledge Management Mechanisms may (or may not) utilize technology, but they do involve some kind of organizational arrangement or social or structural means of facilitating knowledge management.

Examples of Knowledge Management Mechanisms include:

- learning by doing,
 - on-the-job training,
 - learning by observation, and
 - face-to-face meetings
- More long-term knowledge management mechanisms include the hiring of a Chief Knowledge Officer, cooperative projects across departments, traditional hierarchical relationships, organizational policies, standards, initiation process for new employees, and employee rotation across departments.

Knowledge Management Technologies

- **Knowledge Management Technologies** are information technologies that can be used to facilitate knowledge management.
- Knowledge Management Technologies are intrinsically no different from information technologies, but they can focus on knowledge management rather than information processing.
- Knowledge Management Technologies also support knowledge management systems and benefit from the knowledge management infrastructure, especially the information technology infrastructure.
- KM technologies constitute a key component of KM systems.
- Technologies that support KM include **artificial intelligence** (AI) technologies including those used for knowledge acquisition and case-based reasoning systems, electronic discussion groups, computer-based simulations, databases, decision support systems, enterprise resource planning systems, expert systems, management information systems, expertise locator systems, videoconferencing, and information repositories including best practices databases and lessons learned systems.
- KM technologies also include the emergent **Web 2.0 technologies**, such as wikis and blog.
- Knowledge Management Mechanisms and Technologies work together and affect each other.

Knowledge Management Processes

- KM processes refer to the ways that an organization handles knowledge at various stages of its life in an organization (KM cycle).
- are the broad processes that help in discovering, capturing, sharing, and applying knowledge.
- Various processes used to manage knowledge including processes for applying knowledge, processes for capturing knowledge, processes for sharing knowledge, and processes for creating knowledge.

There are four main **knowledge management processes**, and each process comprises **two sub-processes**:

Knowledge discovery

- Combination
- Socialization

Knowledge capture

- Externalization
- Internalization

Knowledge sharing

- Socialization
- Exchange

Knowledge application

- Direction
- Routines