Knowledge Management

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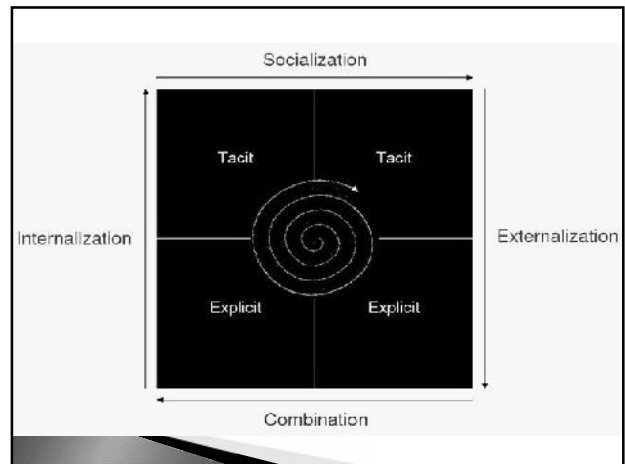

Knowledge management process

The steps involved in the process of knowledge management are
- Knowledge creation
- Knowledge capture
- Knowledge application
- Knowledge measurement

Nonaka and Takeuchi introduced the SECI model in 1996 , which has become the cornerstone of knowledge creation and transfer theory.

- They proposed four ways that knowledge types can be combined and converted
- The model is based on Tacit and Explicit knowledge.
- **Socialization**: Tacit to tacit.
- **Externalization.** Tacit to explicit
- **Combination.** Explicit to explicit.
- **Internalization.** Explicit to tacit.

Tools of Knowledge Management

Tools(IT Based)

Tools of Knowledge Management

- Groupware systems
- The intranet and extranet
- Warehousing, Data mining & OLAP
- Decision Support Systems
- Content management systems
- Document management systems
- Artificial intelligence tools
- Simulation tools
- Semantic networks

▸ Groupware refers to technology designed to help people collaborate and includes a wide range of applications.

Categories

▸ **Communication tools:** Tools for sending messages and files, including email, web publishing, wikis, file sharing, etc.

▸ **Conferencing tools:** video/audio conferencing, chat, forums, etc.

▸ **Collaborative management tools:** Tools for managing group activities e.g. project management systems, workflow systems, information management systems, etc.

▸ If designed and implemented properly, groupware systems are very useful when it comes to supporting **knowledge management** (KM).

▸ The most important function of the intranet is **knowledge sharing** and collaboration.

▸ **Publishing:** E,g, homepages, newsletters, documents, employee directories.

▸ **Searching:** The intranet can integrate different search functions, e.g. through a search engine or using a system of categorization.

▸ **Transactions:** Allows user to make transactions with other web/intranet homepages.

▸ **Interacting:** Collaborative applications and other groupware, expert finders, directories, etc.

▸ **Recording:** It can be used as a storage medium for such elements as procedures, best practices, and FAQs (embedded and **explicit knowledge**).

Data Warehouse

▸ A Data Warehouse is a subject-oriented, integrated, time-variant and nonvolatile collection of data in support of management's decision-making process."

▸ Bill Inmon is called the father of Data Warehousing.

Figure : Structure of a Data Warehouse
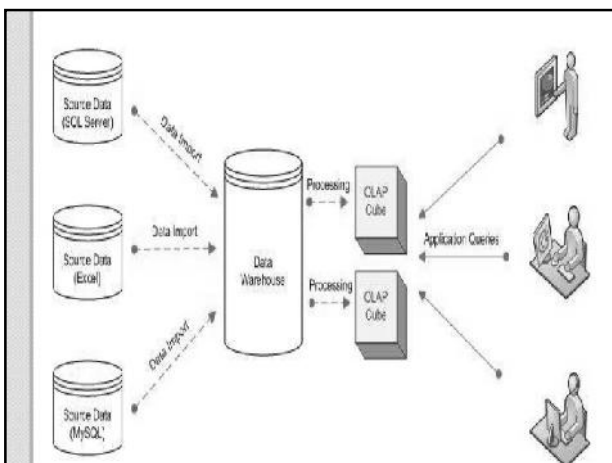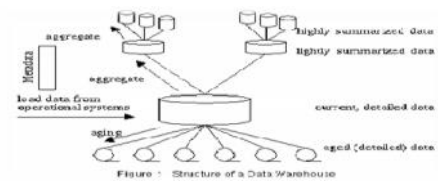
Data Mining

▸ Data mining is the process of sorting through large data sets to identify patterns and establish relationships to solve problems through data analysis.

▸ Data mining tools allow enterprises to predict future trends.

▸ Example

▸ "What were unit sales in New England last March? Drill down to Boston."

▸ "What's likely to happen to Boston unit sales next month? Why?"

Example:

▸ Many E-commerce companies use Data Mining and Business Intelligence to offer cross-sells and up-sells through their websites. One of the most famous of these is, of course, Amazon, who use sophisticated mining techniques to drive their, 'People who viewed that product, also liked this' functionality.

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Data Visualization

▸ This process involves representing data and information graphically so as to better communicate its content to the user.

▸ It is a way to make data patterns more visible, more accessible, easier to compare, and easier to communicate.

▸ Data visualization includes graphical interfaces, tables, graphs, images, 3D presentations, animation, and so on.

Content management systems

▸ It is very relevant to knowledge management (KM) since they are responsible for the creation, management, and distribution of content on the intranet, extranet, or a website.

A content management system may have the following functions:

▸ Provide templates for publishing

▸ Tag content with metadata

▸ Make it easy to edit content

▸ Version control

Six general factors for evaluating the CMS

▸ Technology:

▸ Ease of use

▸ Total cost of ownership

▸ Cross Platform Support and Scalability

▸ Web Presence Management

▸ Solution deployment

Document Management Systems

▸ Document management systems are systems that aid in the publishing, storage, indexing and retrieval of documents. It deals almost exclusively with explicit knowledge, the sheer volume of documents that an organization has to deal with makes them useful and in some cases even mandatory. Often they are a part of content management systems.

Usually, a document management system will include the following functions:

‣ **Capturing.** In order for paper documents to be useable by the document management system, they must be scanned in. This may be time consuming and expensive.

‣ **Classification using metadata.** Metadata (data about data) is used to identify the document so that it can be retrieved later. It can include keywords, date, author, etc. Optical character recognition may be used to identify text on scanned images.

‣ **Indexing.** The index function will use metadata.

‣ **Searching & retrieval.** Search functions allowing for searches by elements of the document's metadata, or by searching the actual document for key words/phrases and using semantic analysis to determine relevance.

‣ **Versioning.** Storage and management of different versions of documents – useful for documents that require frequent updating. Allows authorized users to return to earlier versions.

‣ **Administration & security.** Any IT system needs to be regulated and policed. Users require different levels of authorization, with certain more sensitive functions/documents being available only to selected users/administrators. Document management systems will also have backup systems in place in case of mishaps.

Artificial Intelligence

‣ The theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages. **McCarthy** created the term "artificial intelligence" and was a towering figure in computer science at Stanford most of his professional life.

Artificial Intelligence.

‣ **John McCarthy**, an American computer scientist pioneer and inventor, was known as the father of arificial Intelligence.

‣ **Artificial intelligence (AI)**, the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings. The term is frequently applied to the project of developing systems endowed with the intellectual processes characteristic of humans, such as the ability to reason, discover meaning, generalize, or learn from past experience.(https://www.britannica.com/technology/artificialintelligence)


Example of AI

‣ SIRI

‣ TESLA

‣ COGITO

‣ NETFLIX

✓ Knowledge management takes advantage of AI tools used to capture, filter, represent or apply knowledge. Using for example knowledge repositories like corporate Wikis or document storages, AI tools provide applications for the selection, parsing, analysis and classification of text, automated reasoning and visualisations to facilitate decision-making.

Simulation

‣ The production of a computer model of something, especially for the purpose of study.

Semantic Network

- Semantic networks are often closely associated with detailed analysis of texts and networks of ideas.
- One of the important ways they are distinguished from hypertext systems is their support of **semantic typing** of links.
- They consists of nodes with links between them.
- The nodes also called vertics in a semantic network represent concepts. Links or edges (also termed lines or arcs) in the network represent relations between concepts. Links are labeled to indicate which relation they represent. Links are paired to represent a relation and its inverse relationship.

A graph with 6 vertices [concepts] and 7 edges [semantic relations].
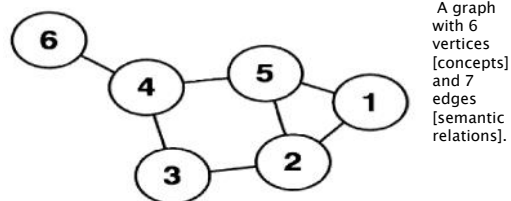
KM Tools: Non–IT Based

Storytelling

The role of storytelling are as follows:

- Stories act as a medium for passing on values and creating vision.
- Personal stories can communicate one's own ability and commitment, as well as conveying openness by sharing something personal. Organizational stories influence the perceived trustworthiness of the firm and its management (either positively or negatively).
- Enables the users to articulate tacit knowledge and communicate with feeling, which helps them convey more than they realize that they know (Weaver 2005 in Bali et al 2009).
- Unlearning often requires more than rational arguments. It needs an intuitive and emotional anchor, which stories can provide.
- We connect with stories emotionally and a story that has had an impact on us will be easily recalled long into the future.

A few considerations for the use of storytelling :

- Be clear on why you are telling it
- Keep it simple and accessible
- Try using more than one medium
- Monitor how the story is received
- Hone your story-listening skills

Mentoring

- Mentoring is one of the most effective ways of passing down tacit know-how from an expert to an aspiring expert. This practice dates back throughout human history, and is just as relevant today.
- Mentoring is about practice under the guidance of an expert. Unlike classroom learning, the apprentice or mentee is given practical tasks, under the supervision and guidance of his mentor.
- Mentoring is a key process for knowledge management. Apart from transferring tacit knowledge and retaining expertise within the organization, it can also help the mentee to become a recognized and accepted member of the community, by passing on corporate vision and values and improving his grasp of corporate networking

The characteristics of an ideal mentor are (based on the work of Clutterbuck 2001 and Heathfield 2011):

- Personal expertise
- Familiarity with the organization: its procedures, culture, etc.
- Desire to teach/guide
- Ability to motivate
- Ability to allow for personal development of the mentee: Must accept different approaches and offer his own advice as an alternative not a mandate.
- Commitment: time, resources, persistence, etc.
- Skilled communicator
- Ability to remain professional: includes the ability to realize when the mentoring relationship has run its course and/or when it is no longer functioning
- Self-aware and self-critical
- Ability to foster trust

Obstacles to KM Implementation

- Lack of business purpose
- Poor planning and inadequate resources
- Lack of accountability
- Lack of customization

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