2.3 Framework for Information and Knowledge Management

Knowledge Management Solutions: Processes and Systems

Processes used to manage knowledge including processes for applying knowledge, processes for capturing knowledge, processes for sharing knowledge, and processes for creating knowledge will be discussed.

KM processes refer to the ways that an organization handles knowledge at various stages of its life in an organization (KM cycle).

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

· Knowledge discovery

o Combination

o Socialization

· Knowledge capture

o Externalization

o Internalization

· Knowledge sharing

o Socialization

o Exchange

· Knowledge application

o Direction

o Routines

Knowledge Management Processes: Knowledge Discovery

Knowledge discovery or creation may be defined as the development of new tacit or explicit knowledge from data and information or from the synthesis of prior knowledge. The discovery of new explicit knowledge relies most directly on combination, whereas the discovery of new tacit knowledge relies most directly on socialization.Tacit knowledge which resides in human brain.Which is difficult to capture.

New explicit knowledge is discovered through combination, wherein the multiple bodies of explicit knowledge (data and/or information) are synthesized to create new, more complex sets of explicit knowledge. This happens through communication, integration, and systemization of multiple streams of explicit knowledge. Existing explicit knowledge, data and information are reconfigured, re-categorized, and re-contextualized to produce new explicit knowledge.

Example: Data mining techniques may be used to uncover new relationships among explicit data that may be lead to create predictive or categorization models that create new knowledge.

In the case of tacit knowledge, the integration of multiple streams for the creation of new knowledge occurs through the mechanism of socialization.

Socialization is the synthesis of tacit knowledge across individuals, usually through joint activities rather than written or verbal instructions.Which is difficult to codify and discover.

Examples: By transferring ideas and images, apprenticeships help newcomers to see how other think and discovery the knowledge.

Knowledge Discovery Systems support the process of developing new tacit or explicit knowledge from data and information or from the synthesis of prior knowledge. These systems support two KM subprocesses associated with knowledge discovery:

· combination, enabling the discovery of new explicit knowledge; and

· socialization, enabling the discovery of new tacit knowledge.

Examples of Knowledge Discovery Systems

Knowledge Discovery Systems support the process of developing new tacit or explicit knowledge from data and information or from the synthesis of prior knowledge.

Knowledge Discovery Systems support two KM subprocesses associated with knowledge discovery:

· combination, enabling the discovery of new explicit knowledge. Existing explicit knowledge may be re-contextualized to produce new explicit knowledge with previous lessons we can learn or create a new concept.

· socialization, facilitating the synthesis of tacit knowledge and therefore enabling the discovery of new tacit knowledge through joint activities rather than written or verbal instructions.

Socialization as a means of knowledge discovery is a common practice at many organizations, pursued either by accident or on purpose.

Mechanisms for socialization:

· Employee rotation across departments,

· research conferences to dig new concepts,

· brainstorming sessions,

· co-operative projects and discussion on them.

Knowledge Management Processes: Knowledge Capture

Knowledge capture is the process by which knowledge is converted from tacit to explicit form (residing within people, artifacts or organizational entities) and vice versa through the sub-processes of externalization and internalization. The knowledge being captured might reside outside the organizational boundaries including consultants, competitors, customers, suppliers, etc.

Externalization is the sub-process through which an organization captures the tacit knowledge its workers possess so that it can be documented, verbalized and shared. This is a difficult process because tacit knowledge is often difficult to articulate.

Internalization is the sub-process through which workers acquire tacit knowledge. It represents the traditional notion of learning. Knowledge capture can also be conducted outside an organization. Certain teams or groups are send for seminars, conferences, webinars, etc to gather the knowledge which can be applied in the organisation and made use of it.

Knowledge Capture Systems support the process of retrieving either explicit or tacit knowledge that resides within people, artifacts, or organizational entities. These systems can help capture knowledge that resides within or outside organizational boundaries including within consultants, competitors, customers, suppliers, and prior employers of the organization's new employees.

Examples of Knowledge Capture Systems

The earliest mechanisms for knowledge capture dates to the anthropological use of stories - the earliest form of art, education and entertainment. Storytelling is the mechanism by which early civilizations passed on their values and their wisdom from one generation to the next.

The importance of using metaphors and stories as a mechanism for capturing and transferring tacit knowledge is increasingly drawing the attention of organizations.

Knowledge Management Processes: Knowledge Sharing

Knowledge sharing is the process through which explicit or tacit knowledge is communicated to other individuals. Only hoarding knowledge is not of that importance, it should be shared or disseminated within the organisation at the right time and right place and to the right person.

Typical Examples of Knowledge Sharing: Whatever knowledge is gather it should be disseminated properly in the organizationvia :

· Writing books , white papers or research papers by academicians

· Delivering a lecture or making a speech or presentation

· Participating in a dialogue over coffee or lunch

· Participating in Communities of Practice, people having the same area of interest.

· Mentoring a new staff; shadowing an expert

Depending on whether explicit or tacit knowledge is being shared, exchange or socialization processes are used.

Exchange is used to communicate or transfer explicit knowledge among individuals, groups and organizations.

Knowledge Sharing Systems support the process through which explicit or tacit knowledge is communicated to other individuals.

Examples of Knowledge Sharing Systems

Knowledge Sharing Systems support the process through which explicit or tacit knowledge is communicated to other individuals. These systems are also referred to as knowledge repositories.Passed and previous experiences are noted and if any problem of the same sought is raised in the organisation they can refer to these repositories and solve the same thing.

The two types of explicit knowledge sharing systems most widely discussed in the KM literature are:

· lessons learned from the previous experiences and

· expertise locator systems.

Systems that support tacit knowledge sharing are those typically utilized by communities of practice.

Corporate Memory (also known as an organizational memory) is made up of the aggregate intellectual assets of an organisation.

It is the combination of both explicit and tacit knowledge. The loss of Corporate Memory often results from a lack of appropriate technologies for the organization and exchange of documents. Another contributing factor to the loss of corporate memory is the departure of employees

because of either turnover or retirement. Knowledge Management is concerned with developing applications that will prevent the loss of corporate memory.

Knowledge sharing systems are classified according to their attributes

- Incident report databases
- Alert systems
- Best practices databases
- Lessons-learned systems
- Expertise locator systems

Incident report databases are used to disseminate information related to incidents or malfunctions. Incident reports typically describe the incident together with explanations of the incident, although they may not suggest any recommendations but they can refer to certain incidents from passed.

Alert systems were originally intended to disseminate information about a negative experience that has occurred or is expected to occur. Alert systems could be used to report problems experienced with technology, such as an alert system. A warning may be given, certain measures also can be taken.

Best practices databases describe successful efforts, typically from the reengineering of business processes that could be applicable to organizational processes. Best practices differ from lessons learned in that they capture only successful events, which may not be deprived from experience.

The goal of lessons-learned systems is to capture and provide lessons that can benefit employees who encounter situations that closely resemble a previous experience in a similar situation.

lessons-learned systems could be pure repositories of lessons or be sometimes intermixed with other sources of information.

Expertise-Locator Systems are knowledge repositories that attempt to organize knowledge by identifying experts who possess specific knowledge. Expertise locator systems are also known as expert directories, expertise directories, skill directories, skills catalogues, white pages or yellow pages.

Knowledge Management Processes: Knowledge Application

Knowledge application is when available knowledge is used to make decisions and perform tasks through direction and routines.

Direction refers to the process through which the individual possessing the knowledge directs the action of another individual without transferring to that individual the knowledge underlying the direction. It is more that an individual who possesses knowledge advises another. For example, direction is the process used when a production worker calls an expert to ask her how to solve a particular problem with a machine and then proceeds to solve the problem based on the instructions given by the expert.

Routines involve the utilization of knowledge embedded in procedures, rules, norms and processes that guide future behavior.

Both direction and routines are applicable to either tacit or explicit knowledge. Application does not require the person applying the knowledge to understand it.

Examples of Knowledge Application Systems

Knowledge Application Systems support the process through which some individuals utilize knowledge possessed by other individuals without actually acquiring, or learning, that knowledge.

Knowledge application technologies, which support direction and routines includes:

- expert systems
- decision support systems
- advisor systems
- fault diagnosis (or troubleshooting) systems
- help desk systems.

An expert system is software that attempts to provide an answer to a problem, or clarify uncertainties where normally one or more human experts would need to be consulted. Expert systems are most common in a specific problem domain, and is a traditional application and/or subfield of artificial intelligence. A wide variety of methods can be used to simulate the performance of the expert however common to most or all are :

1) the creation of a knowledge base which uses some knowledge representation formalism to capture the subject matter expert's knowledge and

2) a process of gathering that knowledge from the subject matter expert's and codifying it according to the formalism, which is called knowledge engineering. Expert systems may or may not have learning components but a third common element is that once the system is developed it is proven by being placed in the same real world problem solving situation as the human subject matter expert, typically as an aid to human workers or a supplement to some information system.