INFORMATION AND KNOWLEDGE MANAGEMENT

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Abstract

Though literature on information and knowledge management is vast, there is much confusion concerning the meaning of these terms. According to the literature review, technology-oriented information management includes data management, information technology management and strategic information technology management. The main emphasis of these approaches is the effective and efficient use of information technology. In contrast, content-oriented approaches focus on information and its use. They can be distinguished in records management, provision of external information, human-centered information management, and information resources management. The reading of the literature on knowledge management reveals that this term is either used synonymously for information management or for the management of work practices with the goal of improving the generation of new knowledge and the sharing of existing knowledge. This article identifies various aspects that are embraced by the terms information and knowledge management. Thus, it should contribute to more terminological clarity and finally improve communication both in science and in professional practice.

Keywords : Knowledge Management/ Information Management

1. Introduction

Literature on information and knowledge management is expansive, there is much confusion concerning the meaning of these terms. Every few years, a new technological development or management philosophy captures the attention of many strategic thinkers in organisations. First there was the Total Quality movement, and then Business Process Reengineering. There is no doubt, that the last couple of years has seen a surge of interest in knowledge management and also the Internet. Yet, as someone who has followed and participated in leading edge management practice for years, neither of these are really new, and neither, if you analyse trends properly, are real surprises. Information management has been around for more than two decades. Many authors date its beginning back to the Paperwork Reduction Act of 1980 in which U.S. federal agencies were forced to introduce information resource management.

Regardless of its exact origins, there was a substantial growth in literature dealing with this topic at the beginning of the eighties. In the second half of the nineties, the term knowledge management became more popular.

2. Information and Knowledge

Since the mid-nineties the label knowledge management has attracted much attention (Disterer, et al. 2002; Ponzi & Koenig 2002) while information management has been used less. As with information management, there is no agreement on what constitutes knowledge management (Corrall 1998; Morrow 2001; Wilson 2002). According to Wilson (2002), knowledge management is either used as a synonym for information management or for the 'management of work practices'

3. Literature of Information Management

In order to cope with the voluminous literature on information management, a distinction can be made between content-oriented and technology-oriented information management. In the following sections, various approaches will be discussed for each of these two dimensions of information management. Then the concept of knowledge management will be investigated, in particular its relationship to information management.

3.1 Technology-Oriented Information Management

The general purpose of information management is to make available the right information at the right time and at the right place. For technology-oriented information management, computer-based information systems are the primary means to this end. Information management from this angle stresses the importance of information technologies. This is justified by the high degree of IT integration, the complexity of its application, and its strong consequences for an organization.

Within technology-oriented information management, the following aspects can be distinguished:

1. Data Management,

2. Information Technology management, and

3. Strategic use of Information Technology.

4. Content-oriented information management

3.1.1 Data management : Some authors equate information management with data management (e.g., Hoven 1995). This is due to the high importance of data. Data is needed for and produced by nearly every activity and is an important input for almost all decisions on each level of an enterprise (Levitin & Redman 1998). In a broader sense, data management can be defined as all organizational and technical tasks concerning the planning, storage, and provision of data, both for computer personnel

and end-users (Schulte 1987). Its goal is to maximize the quality, usability, and value of the data resources in an enterprise (Hoven 1995).

3.1.2 Information Technology management : There is a broader view of information management that data management is a part of or a precondition for information management (English 1996; Heinrich 2002; Henderson 1987; Schwarze 1988). The management of hardware, software, and IT personnel must be included as well. The emphasis here is on the technological aspects of electronic data processing.

One well-structured example for these approaches was suggested by Wollnik (1988). His model distinguishes three levels (see Figure 1): the management of information use (upper level), the management of information systems (middle level), and the management of the information infrastructure (lower level).
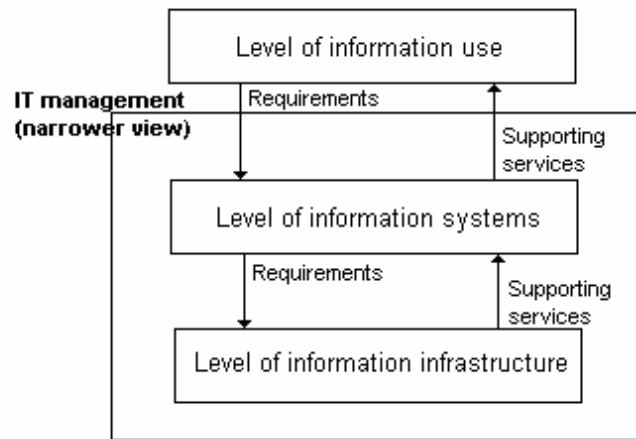

Figure 1: Three-level model of information management (source: Wollnik 1988)

Information infrastructures provide means for all possible types of data processing open to different use (e.g., computers, networks). They constitute the basis for the information systems that, in contrast, support specific tasks of an organization. The information systems provide, in particular, the means for information use and exchange. The main role of information systems management is the management of the development and operation of an organization's information systems. Information management from this view can be defined as the planning, organization, and control of information use, information systems, and information infrastructure in an organization.

3.1.3 Strategic use of Information Technology : The use of information technology as a strategic resource has attracted much attention especially in Anglo-American countries in the past. Many publications on this topic deal with the strategic relevance of information processing. These publications explore the question whether and to what extent information technology can contribute to the objectives of an organization (Krueger & Pfeiffer 1988; McFarlan 1984; Porter & Millar 1985).

Strategic aspects play an important role in nearly all concepts that are concerned with the management of information technology. For instance, the title of the book by Synnott (1987a) indicates the significance of strategic aspects in his approach. This applies to O'Brien and Morgan (1991) as well as to Lewis and Martin (1989) who view strategy as a fundamental characteristic of information [technology] management. Pietsch, et al. (1998) have even called their approach strategic information [technology] management.

3.1.4 Content-Oriented Information Management : This area of information management usually have a background in library and information science, records management, or a closely related discipline. Contrary to technology-oriented information management, these approaches focus on information content.

Publications can be classified here as follows:

- Records management,

- Provision of external information,

- Human-centered information management, and

- Information resources management.

4. Knowledge management

Meaning and definitions on knowledge management,

- Capturing, organizing, and storing knowledge and experiences of individual workers and groups within an organization and making this information available to others in the organization.

- Knowledge management is the name of a concept in which a company or organization consciously and comprehensively gathers, organizes, shares, and analyzes its knowledge in terms of resources, documents, and people skills.

- A method for gathering information and making it available to others.

- The way a company stores, organizes and accesses internal and external information. Narrower terms are: "Organizational Memory" and "Knowledge Transfer." (Process)

- the collection, organization, analysis, and sharing of information held by workers and groups within an organization

- The process of systematically and actively managing and leveraging the stores of knowledge in an organisation is called knowledge management. It is the process of transforming information and intellectual assets into enduring value.

- A system or framework for managing the organizational processes that create, store and distribute knowledge, as defined by its collective data, information and body of experience.

- A business process that formalizes management and leverage of a firm's intellectual assets. KM is an enterprise discipline that promotes a collaborative and integrative approach to the creation, capture, organization, access and use of information assets, including the tacit, uncaptured knowledge of people.

- A multi-disciplined approach to achieving organisational objectives by making best use of knowledge. It involves the design, review and implementation of both social and technological processes to improve the application of knowledge, in the collective interest of stakeholders. AS 5037 Clause 1.2.4

- Is a process for optimizing the effective application of intellectual capital to achieve objectives. In an organizational setting, this would mean a systematic approach to getting an organization to make the best possible use of knowledge in implementing its mission, broadly viewed as either sustainable competitive advantage or long-term high performance. ...

- We believe true Knowledge Management is eliciting and sharing the experience and intelligence of everyone working in a particular process.

- Strategic policy setting and information principles for Digital Asset Management (DAM), Document Management (DM), Content Management (CM), Web Content Management (WCM) and Records Management (RM).

- Discipline within an organisation that ensures that the intellectual capabilities of an organisation are shared, maintained and institutionalised.

- This still-evolving concept involves harnessing enterprise wide data, proprietary or otherwise, for comparative decision-making, workflow automation, supply chain management, and/or competitive advantage. For more than information-aggregation, knowledge management seeks to enhance business value and help employees work more productively.

- The strategic use of information and knowledge resources to an organization's best advantage.

- Is the industry buzzword used to describe a set of tools for capturing and reuse of knowledge.

- The process of creating, capturing, and using knowledge to enhance organizational performance. Knowledge management is most frequently associated with two types of activities. One is to document and appropriate individuals' knowledge and then disseminate it through such venues as a companywide database. Knowledge management also includes activities that facilitate human exchanges using such tools as groupware, email, and the Internet.

- Knowledge management (KM) is the organization, creation, sharing and flow of knowledge within organizations.

- Knowledge, in practice, is most often defined as tacit knowledge in spite of the conceptual problems mentioned above. Explicit knowledge was included only in those initiatives where the focus was converting tacit knowledge into explicit knowledge.

- Knowledge management, as it is practiced, really means facilitating the sharing of tacit knowledge. Despite the fact that other processes were part of the KM projects, sharing was the primary emphasis of all case studies.

- There are slight differences in the practices between private and public sector knowledge management. Private sector organizations use KM for internal knowledge sharing, targeted in specific areas of the organization and the KM initiatives are most often concerned with managing business and administrative knowledge. Public sector organizations use KM for both internal and external knowledge sharing throughout the organization and the KM initiatives are most often concerned with managing product-related knowledge.

- And finally, KM practices could benefit from the skills already held by information professionals. These skills include the identification of knowledge needs, helping to distinguish between information and knowledge, and will facilitate a broader and more inclusive KM initiative.

5. Characteristics of Knowledge Management

The role of knowledge management will become more and more important along with the development of knowledge economy. It is a new management mode, boasts the following superiority and characteristics incomparable with conventional management:

5.1 Human Resource Management Is the Core of Knowledge Management

The most important resource in the knowledge economy system is the talents who grasp knowledge. The talent competition has become the focus of market competition in the knowledge economy era. .

5.2 The Objective of Knowledge Management is to Promote Knowledge Innovation

Knowledge innovation is the core of the knowledge economy society. As bases for collection, processing, storage and distribution of knowledge and information, Secondly, take part in scientific research process directly. Thirdly, must pay attention to diffusion and conversion of knowledge.

5.3 Information Technology Is a Tool for Knowledge Managemen

Knowledge acquisition is the starting point of knowledge management in libraries. The application of information technologies enlarges the scope of knowledge acquisition, rises knowledge acquisition speed and reduces knowledge acquisition cost. It is impossible to accomplish such important tasks by using man's brains only in the modern society in which the knowledge changes with each passing day. It will be possible to link closely knowledge sources and knowledge workers by computer networks, thus constructing knowledge networks in libraries based on realization of single-point informatization

The knowledge acquired must be accumulated and converged into knowledge warehouses of libraries. The priority of information technologies in the field of knowledge storage not only finds expression in quantity, but also in retrieval, sorting and security of the knowledge. Information technology is also indispensable in the application and exchange of knowledge and other fields. It functions as a source and tool for knowledge innovation.

6. Contents of Knowledge Management

As a completely new method of management, knowledge management in libraries leaves much to be desired in its theoretical system. In my opinion, knowledge management in libraries should include such respects as follows:

6.1 Knowledge Innovation Management

Knowledge innovation management in libraries refers to the management of the production, diffusion and transfer of knowledge as well as of the network systems constructed by related institutions and organizations. It includes three aspects, namely, theoretical innovation management of knowledge, technical innovation management and organizational innovation management.

6.2 Knowledge Dissemination Management

Knowledge dissemination is of equal importance as compared to knowledge innovation. Knowledge creators do not have much time and energy to look for knowledge users. Though there are a multitude of knowledge users, it is very difficult to acquire knowledge that already exists in the minds of knowledge creators as restricted by various objective and subjective conditions. Therefore, libraries may play the part of knowledge tosser, use diverse media and channels to disseminate various new knowledge. In the 21st century, the Internet, with its mass information and extensive contents, will provide people with the main approach to searching knowledge and acquiring information. But now there emerge absurd, salacious, false and uncivil information resulting from seeking for commercial profits and political objectives on the Net. Therefore, it is necessary to strengthen knowledge dissemination management in libraries as follows:

1. uninterruptedly strengthening the creation of libraries' own document resources and deepening the development of document information resources;

2. continuously raising the quality of libraries' staffs and strengthening continuous engineering education of working staffs;

3. giving full play to the special role of the expert system in knowledge dissemination;

4. making a comprehensive utilization of all media to ensure security of operation of networks, and prevent online criminal activities and online dissemination of inappropriate information [5].

6.3 Knowledge Application Management:

In the 21st century libraries should also attach importance to provision of services for people to acquire knowledge and achieve maximum functions and efficiency of knowledge information. Therefore, knowledge services based on high-speed information networks should be carried out by:

1. Setting up virtual libraries or information centers for enterprises, governments, public organizations and scientific research institutions. It is difficult for an enterprise or a social organization to put sufficient manpower, material and financial resources on information gathering, organizing and developing. It is also impossible and unnecessary to spend a large amount of funds on information resources for their own use. Libraries can create virtual libraries or information centers for these organs separately according to their respective information requirements by using abundant information resources on the high-speed information networks.

2. Setting up digitized knowledge services which is actually a development trend of libraries in the 21st century. This presupposes: creating step by step the users-oriented information service systems such as information dissemination, information search and special supply of information; quickening the creation of digitized libraries; studying the methods, means and techniques of information distribution and search with the Internet as the base and WEB technique as the core.

3. Digitizing libraries' resources. The electronic libraries or digitized libraries are the technical modes and development trends of libraries in the knowledge economy era. The knowledge services of libraries in the future will start with creation of databases comprising electronic journals and books in different languages that have discipline features and can operate on high-speed information networks. Great efforts should be made to transform all existing large non-electronic information resources into electronic information and integrate them into electronic libraries.

6.4 Human Resources Management

Human resources management takes it as its basic starting point to train high quality specialized talents and to revitalize the library undertaking. In practice, we should pay full attention to diversity and variation of library staffs' requirements, strengthened management of different library staffs by applying contingency management approach. That is, to some people, rigid management method is applied, rigorous supervision and control imposed, and quantity and quality requirements of work according to regulations and procedures are made clear. And, to the rest of people, more flexible management method is applied to let them participate in decision-making and consultation and undertake more jobs so as to bring their management abilities into full play and realize organizational and personal objectives. Doing well in continuous engineering education of specialized staffs, which should not only focus on the theory of library science and related disciplines, but also cover the latest technical knowledge. And strengthening professional ethics education [6].

7.   The Knowledge Agenda

7.1   Momentum of Knowledge Awareness

The interest in knowledge as a strategic lever in business is not new. In the 1970s and 1980s there were great expectations that knowledge based computer systems ('expert systems') could harness knowledge to solve many business problems. That promise was only partially fulfilled and certainly not to the extent that workers in the field had hoped. In retrospect the problem was that developers focused too much on what has been described as "falling into the trap of trying to develop 'thinking machines' rather than using machines to augment human thinking" (Skyrme 1990).

The two most important written influences cited were the ongoing series of articles by Stewart in Fortune (Stewart 1993, 1995), and of the book by Nonaka and Takeuchi (1995) The Knowledge Creating Company. The latter, in particular, has provided managers with a framework for distinguishing between explicit and tacit knowledge and the conversion processes between them. They describe explicit knowledge as that which:

"can be expressed in words and numbers and can be easily communicated and shared in the form of hard data, scientific formulae, codified procedures or universal principles"

The four conversion processes they describe are:

■   Tacit-to-tacit (socialisation) - where individuals acquire new knowledge directly from others;

■   Tacit-to-explicit (externalisation) - the articulation of knowledge into tangible form through dialogue;

■   Explicit-to-explicit (combination) - combining different forms of explicit knowledge, such as that in documents or on databases;

■   Explicit-to-tacit (internalisation) - such as learning by doing, where individuals internalise knowledge from documents into their own body of experience.

7.2   Contribution of Knowledge to Business Success

Knowledge adds value to a business through its products, processes and people. The product contribution of knowledge is described by Davis and Botkin (1994). They describe six features of knowledge-based businesses:

1.   The more you use knowledge-based offerings, the smarter they get.
2.   The more you use knowledge-based offerings, the smarter you get.
3.   Knowledge-based products and services adjust to changing circumstances.
4.   Knowledge-based businesses can customise their offerings.
5.   Knowledge-based products and services have relatively short life cycles.
6.   Knowledge-based businesses enable customers to act in real-time.

7.3 State of Knowledge Practice

During 1996, as part of the research for a 500-page report on knowledge management, we investigated the state of knowledge management in various companies around the world (Skyrme and Amidon 1997). This included literature reviews, case study interviews and the results of an Ernst ∓ Young/Business Intelligence two continent survey (North America and Europe). The survey showed that nearly 90 per cent of senior managers believed that their organisations were in a knowledge-intensive business, whatever their industry. It also revealed different perceptions of the value of various activities and of the contribution of technology across different industries and functions. Our research showed that the following were common activities that were taking place in knowledge management initiatives:

- Creation of knowledge teams - people from all disciplines to develop the methods of knowledge management

- Sharing of best practices - from one part of the organization to another, through databases, but also through personal interaction and sharing events

- Development of knowledge databases - best practices, expert directories, market intelligence etc.

- Creation of Knowledge Centers - focal points for the development of knowledge skills, managing and enhancing knowledge databases and facilitating knowledge flow

- Collaborative Technologies - the use of Intranets (internal Internet) or groupware for rapid information access

- Intellectual Capital teams - to identify and audit intangible assets such as knowledge.

What many practitioners have found, is that it the flow of knowledge that is important. This is where networked computer and communications technology plays an important role.

8. Understanding information management and knowledge management

Is Knowledge Management (KM) an emerging discipline or just a new label for Information Management (IM)? To provide some answers to this question, the following table shows that Information and knowledge management: objects, terms and related disciplines,

Objects		Terms		Disciplines
		Narrower terms	Broader terms	
information technology business	data (structure)	data management	IT management (technology-oriented information management)	information systems informatics
	information system	information systems management		
	information infrastructure	management of information infrastructure		
(codified) information	internal	records management	(content-oriented) information management	Records management library and information science
	external	provision of external information		
work practices that relate organizational to knowledge generation sciences and sharing				knowledge management management
intellectual assets		intellectual capital management	sciences	

Table 1: Information and knowledge management: objects, terms and related disciplines

9.   Related concepts

To differentiate the management of information from the management of knowledge, one must examine the distinctions drawn between the related concepts: data, information, knowledge and intelligence. Attempts to define these concepts are numerous and produce slightly different results, depending on which discipline is looking at them. Dictionaries define data as factual information (measurements or statistics) used as a basis for reasoning, discussion, or calculation; information as the communication or reception of knowledge or intelligence; knowledge as the condition of knowing something gained through experience or the condition of apprehending truth or fact through reasoning, and intelligence as the ability to understand and to apply knowledge. For Meadow, et al. (2000), data refer to a "string of elementary symbols, such as digits or letters" (p.35).

After knowledge has been gathered, it must be stored and shared. Knowledge sharing involves the transfer of knowledge from one (or more) person to another one (or more). Knowledge sharing is often a major preoccupation with knowledge management and is frequently addressed in the literature. Not only most organizations abandon the idea that all knowledge should be documented, but they should also be ready to implement different methods for sharing different types of knowledge (Snowden, 1998).

10. Conclusions

The field of knowledge management is fairly new, and this explains why its research base is still under development. Despite the vagueness of KM, its potential overlaps with Information Management, and its weak theoretical base, KM is practiced in many organizations. Examining empirical evidence is certainly a valid approach for identifying building blocks of theories and concepts to support the development of new scientific fields. Indeed, scientific knowledge is often rooted in practice, culture and society existed before we had anthropology and sociology. KM seems to be made of various organizational practices requiring changes in policies, work routines and organizational structures. More specifically, our exploratory study allows a number of concluding remarks about knowledge management:

Content-oriented approaches are primarily concerned with the management of (codified) information. This relates both to the management of the information life cycle of mainly internally produced information and the provision of external information. Usually, they consider the user much more than technology-oriented approaches. Several authors who directed a particularly strong attention to humans were therefore attributed to their own sub-category. Strategic aspects are not dealt with as a central issue but are not of minor importance either. The emphasis is on external information and not on the competitive use of information technology. Information resources management has finally tried to integrate all the different aspects including the management of information technology creating a convergent view of information management.

Economic environment and information environment is changing quickly today. Knowledge management has become a powerful tool for promoting innovation and realizing reengineering the various walks of life. It occupies very outstanding position in the creation of the knowledge innovation systems of a country. How for the library circles to meet the challenge of knowledge economy and to build the knowledge management systems of libraries is a subject that demands our urgent study and solution.

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