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ABSTRACT

Information management concerns the control over how information is created, acquired, organized, stored, distributed, and used as a means of promoting, efficient and effective information access, processing, and use by people and organizations. Various perspectives of information management exist. In this paper, three are presented: the organizational, library and personal perspectives. Each deals with the management of some or all of the processes involved in the information lifecycle. Each concerns itself with the management of different types of information resources. The purpose of this paper is to clearly describe what, "information management" is and to clarify how information management differs in regards to closely related terms.

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1. Introduction

Information management (IM) is a broad conceptual term that has various meanings and interpretations among different constituencies. Often the term is used interchangeably with others. For instance, information management is often equated with the management of information resources, the management of information technology (IT), or the management of information policies or standards (Choo, 2002). Some suggest that information management draws upon ideas from both librarianship and information science (Macevičiūtė & Wilson, 2002). The purpose of this paper is to clarify the meaning of the term "information management," to showcase its major perspectives, and to illustrate how it relates to associated terms.

What is information management (IM)? Information management is the management of the processes and systems that create, acquire, organize, store, distribute, and use information. The goal of information management is to help people and organizations access, process and use information efficiently and effectively. Doing so helps organizations operate more competitively and strategically, and helps people better accomplish their tasks and become better informed.

This paper adopts a process orientation towards information management where IM is viewed as the control over the information lifecycle. Various models of information processes exist; some of the major processes involved in information lifecycle concern those that create, acquire, organize, store, distribute, and use information.

Importantly, this paper recognizes three major perspectives of information management: the organizational, library, and personal perspectives. By far, the organizational perspective is the most predominant and popular. In a nutshell, this perspective deals with the management of all information processes involved in the information lifecycle with the goal of helping an organization reach its competitive and strategic objectives. A variety of information resources are managed by organizations. These include transactional information stored in databases, summarized information found in data warehouses, and unstructured information content found in documents and reports. From the organizational perspective, the management of information technology is a major component of any IM plan. It is with this perspective where associated terms like information systems management, information technology management, data management, business intelligence, competitive intelligence, content management, and records management have relevance.

The library perspective of information management recognizes the unique role of information provision organizations, such as libraries, whose central mandate is to provide their clientele with access to information resources and services. As such, these types of organizations view information management primarily as the management of information collections, such as books and journals. With respect to information collections, libraries are neither the creators nor the users of this information. As such, this perspective deals with the management of a subset of information processes involved in the information lifecycle with the goal of helping library patrons access and borrow information items held in the collection. It is with the library perspective where associated terms like knowledge organization, classification, cataloguing, digital libraries, indexes, and information retrieval systems have relevance.

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The personal perspective of information management, though not strong, is similar to the organizational perspective in that it involves the management of all information processes in the information lifecycle. The major difference, however, is that the organizational perspective concerns the management of information of interest to the success and well-being of an organization, while the personal perspective deals with the management of information of relevance and concern to the individual.

In terms of this paper's organization, the remainder is structured to further explain the major points just described. First, description is given on the information lifecycle and the process view of information management. This is followed by a detailed discussion on each of the three major perspectives of information management: the organizational, library, and personal perspectives. Last, concluding remarks are made.

2. A process view of information management

Leading information management scholars and organizations purport a process-driven view of IM. For example, Wilson (2003) defines information management as "the application of management principles to the acquisition, organization, control, dissemination and use of information relevant to the effective operation of organizations of all kinds." Similarly, Choo (2002) defines IM as the management of processes that acquire, create, organize, distribute, and use information. Likewise, the US Government Accountability Office (2008) defines information management as "the planning, budgeting, manipulating, and controlling of information throughout its life cycle."

The conceptualization of information management from a process perspective emerged in the early-1990s (Davenport, 1993; McGee & Prusak, 1993). Advocates of this approach stress that a process model of information management should encompass all or some parts of the information value-chain or lifecycle. Choo (2002) proposes six discrete information-related processes or activities that need to be managed: (i) identification of information needs, (ii) acquisition of information to address those needs, (iii) organization and storage of information, (iv) design and development of information products, (v) distribution of information and (vi) information use. Wilson (2005) positions the creation and use of information outside the information management rubric and purports the following six information-related processes pertain to IM: (i) acquisition, (ii) organization, (iii) storage, (iv) retrieval, (v) access/lending and (vi) dissemination. Not all information management frameworks include information needs identification and information use as processes to be managed. However, many see the most critical issue facing information managers is eliciting information requirements and matching those information needs in the design and delivery of information systems to promote effective and efficient information use (Choo, 2002; Detlor, 2004; Karim & Hussein, 2008).

With respect to this paper, the following are considered to be the predominant information processes to be managed in IM: information creation, acquisition, organization, storage, distribution, and use. Information creation is the process where individuals and organizations generate and produce new information artifacts and items. Information acquisition is the process where information items are obtained from external sources. Information organization is the process of indexing or classifying information in ways that support easy retrieval at later points in time. Information storage is the process of physically housing information content in structures such as databases or file systems. Information distribution is the process of disseminating, transporting, or sharing information. Information use is the process where individuals and organizations utilize and apply information made available to them. Effectively managing these information processes helps get the right informa-

tion to the right people in the right forms at the right times and at reasonable costs (Choo, 2002; Robertson, 2005).

3. The organizational perspective

The organizational perspective is the most predominant perspective of information management. Under the organizational perspective, IM concerns the management and control over the full lifecycle of information processes ranging from creation to use for the betterment of the organization itself. In this sense, the management of information processes is seen as a strategic advantage that affords four kinds of benefits to an organization: (i) a reduction of costs, (ii) a reduction of uncertainty or risks, (iii) added value to existing products and services and (iv) the creation of new value through the introduction of new information-based products and services (Choo, 2008).

3.1. Information as a resource

Fundamental to the organizational perspective of information management is the view and treatment of information as a strategic resource—one that needs to be managed like any other critical organizational resource, such as people, equipment, and capital. Many organizations recognize the potential value of information and the need to be aware of what information resources exist in an organization, and the costs associated with acquiring, storing, processing and using that information. Forward-looking companies consider information as a strategic asset that can be leveraged into a competitive advantage in the markets served by the company (Karim & Hussein, 2008).

The concept of managing information as an organizational resource emerged in the late-1970s with the creation of the US Paperwork Reduction Act that was established to resolve the huge costs of managing and handling information by bidders for government contracts (Commission on Federal Paperwork, 1977). It was at this time, that the term information resources management (IRM) became popular and was used to signify the management of both information and information technologies (Horton, 1979, 1982). In reality though, the IRM concept was more about the management of data than it was about the management of other types of information, such as documents or reports. Case in point, an empirical assessment of the IRM construct defines IRM as "a comprehensive approach to planning, organizing, budgeting, directing, monitoring and controlling the people, funding, technologies and activities associated with acquiring, storing, processing and distributing data to meet a business need for the benefit of the enterprise"—not other types of information (Lewis, Snyder, & Rainer, 1995).

This paper suggests that within the organizational perspective of information management, IM is more than just the management of data (e.g., raw facts stored in transactional databases). Rather, information management in organizations involves the management of a varied set of information resources, ranging from data to information (Baltzan, Phillips, & Detlor, 2008).

Data can be considered as "raw facts" that reflect the characteristics of an event or entity. Examples of data items held in an organization would be a customer name, an order quantity, or a unit price. The management of data in organizations traditionally belonged to the "data management" function or "data resource management" department. Data management deals with the storage and processing of low-level data items found in transaction processing systems. The focus of data management is to maximize the speed, accuracy, and efficiency of processing and maintaining transactions or records (Choo, 2002). Data management is concerned with the creation and "acquisition of data, its storage in databases, its manipulation or processing to produce new (value-added) data and reports via application programs, and

the transmission (communication) of the data or resulting reports" (Karim & Hussein, 2008).

Information can be viewed as "meaningful data" where data have been converted into a meaningful and useful context, such as in the identification of a best-selling or worst-selling product item from historical sales data for a company. Examples of information items managed in a company would be summarized information pulled from transactional database systems and stored in data warehouses and/or data marts. Such "business intelligent" systems support decision-making, and allow for the slicing-and-dicing of summarized transactional information to find patterns and trends in operational data (e.g., sales data, supplier data, customer profile data) of importance and relevance to the organization. For example, the mining of summarized transactional data stored in a data warehouse could be used to justify the promotion of a product or service to an untapped market segment, or to measure the effectiveness of a marketing campaign in a certain geographical area (Baltzan et al., 2008).

Though more emphasis in organizations is placed on the management of data and information that is structured and formalized (i.e., data neatly contained within a transactional database or summarized information stored in a data warehouse), the amount of unstructured information that is created, acquired, organized, stored, distributed, and used within an organization usually far exceeds the amount of structured data and information an organization manages.

Unstructured information is the type of information that can be found in reports, documents, email messages, and PowerPoint presentations, among others. This includes reports and documentation generated internally with a company and outside the enterprise as well. For example, managing information concerning industry trends, legislative regulations, competitor happenings, news bulletins, etc. is key to helping an organization stay abreast and react to competitor threats and environmental concerns. This is where information management intersects with a company's "competitive intelligence" initiatives and "environmental scanning" activities. Competitive intelligence refers to the analysis of information about competitors and competitive conditions in particular industries or regions (Sutton, 1988). Environmental scanning refers to the analysis of information about every sector of the external environment that can help an organization plan for its future (Aguilar, 1967; Choo & Auster, 1993).

Often document management systems, also known as content management systems, help manage unstructured information that is created, acquired, organized, stored, distributed and used within an organization. These systems support the electronic capture, storage, distribution, archiving and accessing of documents. These systems typically provide a document repository where documents can be housed, indexed, and accessed. In these repositories, meta-data information is maintained about each document that tracks each document's editorial history and relationships to other documents. Indexing of documents within these systems, through both manual keyword classifications and automatic indexing techniques, facilitate easy document retrieval by organizational workers at later points in time (Baltzan et al., 2008).

Unstructured information also includes records of transactional information processing such as invoices, contracts, order requisitions, bills of lading, and financial statements. The actual data may be resident in a transaction database and managed elsewhere, but the entire record of the event, often with signatures, are handled as a complete entity that must be generated, stored, processed, retrieved and archived. The management of such information is referred to as "records management" and involves the application of systematic and scientific control to all recorded information that an organization needs to do business (Robek, Brown, & Wilmer, 1987).

3.2. Managing information processes

A good information management program in an organization will manage the full lifecycle of information ranging from creation to use. For example:

- When generating transactional data, steps will be taken to ensure that the data will be stored following database "normalization rules" to promote data integrity, the single sourcing of data, the reduction of wasted database space, and fast transaction processing.
- When acquiring information, such as the purchase of market research data or competitor intelligence information, steps will be taken to reduce duplicate purchases and to increase the accessibility of any purchased data and information across the enterprise.
- Any data or information that is stored will be adequately protected against unauthorized access, as security, privacy and copyright concerns exist.
- Data and information stewardship programs will be set up to identify those organizational workers or units who are responsible for the quality and management of certain data and information items.
- Data and information will be regularly backed up for recovery purposes.
- Duplicate or mirror copies of data and information items will be created to facilitate access, and reduce network congestion and/or an overload of requests on the servers on which the data and information reside.
- Old data and out-dated information will be archived and/or deleted (Baltzan et al., 2008).

3.3. Information technology's role

Information technology plays a critical role in the management of information in organizations. However, having said that, it should be understood that IT is the technical medium upon which information is housed, accessed, retrieved, distributed, and used, and not the primary entity that is being managed under the information management rubric. Information processes are.

Nevertheless, much confusion exists over the role IT plays in the management of information in organizations, with some equating information management primarily to the management of information technology itself. For example, the mission of the Society for Information Management (SIM), a professional society for chief information officers and senior information technology leaders based in the United States, is "to provide international leadership and education in the successful management and use of information technology to achieve business objectives" (Society for Information Management, 2008). Likewise, Davis and Hamilton (1993) define information management as "the management of information systems and information resources by an individual, a group, or an organization" and describe IM as a "new business function with responsibility to define organizational informational requirements, plan and build an information infrastructure and information systems applications, operate the system, and organize, staff, and manage these activities."

This paper suggests that such descriptions of the information management function in organizations are inappropriate and are better served by alternate terms such as information systems management or information technology management. Information systems management refers to the control over the development, design, roll-out, and support of information systems applications that support business processes and workflow. Information technology management refers to the management and control over information technology (e.g., hardware, software).

A variety of factors need to be considered when managing technology in organizations. The appropriate hardware and software needs to be installed and implemented. Repair and maintenance of hardware and software systems must be done. Licensing concerns must be taken into consideration. Information systems professionals (e.g., programmers, network specialists, database administrators, systems analysts) need to be hired and trained (Baltzan et al., 2008).

Information technology is very important to how information is managed in organizations, and the management of information technology should be an integral part of any IM plan (Choo, 2008). After all, information technology facilitates the ability to support information creation, acquisition, organization, storage, distribution, and use in both efficient and effective manners.

3.4. Organizational information processing

Information management is concerned with organizational information processing. Two broad orientations exist in the organizational information processing literature that have implications on information management (Choo, 1991).

The first, mainly developed at Carnegie Mellon University and represented by Herbert Simon, James March, & Richard Cyert, sees an organization's ability to process information as the core of managerial and organizational competencies and organizations as bounded, rational systems (Simon, 1976). Here, strategies to improve information processing capabilities concern increasing an organization's information processing capacity and reducing an organization's need for information processing (Galbraith, 1977).

The second, represented by Karl Weick & Richard Daft, sees organizations as loosely coupled systems where individual participants collectively develop shared interpretations of the environment and then act on the basis of this interpretation. In this sense, information processing is about reducing the equivocality or ambiguousness of information about the organization's external environment (Weick & Daft, 1983).

Taking these two orientations of organizational information processing together, information management then is about increasing an organization's information processing capacity and reducing both information processing needs and information equivocality.

4. The library perspective

Outside of the organizational context, information management also has meaning in the library world and to other information provision organizations whose central mandate is to provide clientele with access to information resources and services. Information management is of concern to all kinds of libraries, such as public libraries and academic and research libraries. This includes corporate libraries that manage serial subscriptions and electronic access to industry reports and electronic databases for workers and employees in their organizations.

From a library perspective, information management concerns the management of information collections, such as books and journals. The goal of information management from a library perspective is to help library patrons access and borrow information items held in the collection. A variety of activities surround the management of a library collection, including the development of collection policies and materials budgets, the selection of collection items, the analysis of collection usage and end-user collection needs, training of collection staff, preservation of collection items, and the development of cooperative collections with other institutions (Branin, 1993).

Since libraries are neither the creators nor the users of information, this perspective deals with the management of

a subset of information processes involved in the information lifecycle. For example, Wilson (2005) identifies six information-related processes pertaining to IM that are applicable to the library perspective: (i) acquisition, (ii) organization, (iii) storage, (iv) retrieval, (v) access/lending and (vi) dissemination.

Information acquisition involves the process of buying or securing information from sources external to the library for the collection. Care must be taken to ensure that the correct information items are acquired (those that match the information needs of end-users) and at reasonable costs.

Information organization pertains to the process of indexing or classifying information housed in the collection to support easy retrieval at later points in time. Today, this process is sometimes referred to as "knowledge organization" in the library world. For example, the International Society for Knowledge Organization (ISKO, 2008) utilizes the term "knowledge organization" to represent the process of how documents, document representations (such as bibliographic records), and concepts (Keywords, constructs) are ordered and classified. Likewise, Anderson (1996) defines knowledge organization as the "the description of documents, their contents, features and purposes, and the organization of these descriptions so as to make these documents and their parts accessible to persons seeking them or the messages that they contain" and describes how knowledge organization encompasses "every type and method of indexing, abstracting, cataloguing, classification, records management, bibliography and the creation of textual or bibliographic databases for information retrieval." In this sense, knowledge organization deals with both processes and systems (Hjorland, 2008). With respect to information management, this paper suggests that the use of the "knowledge organization" label is misleading. In actuality, information items (such as documents and document representations) are being organized or ordered (i.e., indexed, classified, catalogued) rather than knowledge items (concepts, constructs) per se. As such, "information organization" is suggested to be a better label to use when talking about the indexing and classification of items held in a collection, at least from a library perspective of

Information storage refers to physically housing items in the collection. This encompasses the housing of both paper and electronic documents (and their document representations). This could be accomplished by storing books and journals in physical stacks in the library or storing full-text electronic versions of documents in an electronic or digital library.

Information retrieval involves the process of searching and finding information in the collection. Typically end-users will conduct a search query using electronic tools that are Web-based to find items of interest in the collection. In the information retrieval process, end-users themselves, or information search intermediaries (librarians) working on the behalf of end-users, "pull" the information that is needed from the collection.

Information access/lending involves the process of providing physical or electronic access to the collection and the ability to check out information items of interest. For paper-based documents, this may involve signing out and borrowing a physical information item. For information in electronic form, this may involve viewing the information item online and/or downloading a copy of the information item from the collection.

Information dissemination is the process of circulating physical information items of interest from the collection to end-users. Traditionally, methods of dissemination involve the distribution of photocopied journal content pages, or the circulation of documents. Today, this has largely been replaced with electronic alert services that "push" information items in the collection of interest to specific users based on stored end-user profiles.

The management of library information collections is a complex and ever-evolving process (Branin, Groen, & Thorin, 2000). The extensive digitization of information resources has placed new pressures on libraries to respond to securing the requisite skills, resources and competencies to successfully manage digital library collections (Sreenivasulu, 2000). In order to manage the transition and reliance on digital information collections, it is important more than ever for libraries to consider the expectations and needs of end-users, as well as limitations in library staff and budget adaptability (Branin et al., 2000). These are critical factors in rolling out any successful information management program from a library perspective.

5. The personal perspective

Information management from the personal perspective refers to how individuals create, acquire, organize, store, distribute and use information for personal purposes. This can concern the management of information for every-day use (e.g., personal calendars, schedules, diaries, news items) or work-related reasons (e.g., work schedules, things-to-do, project files). As such, personal information management involves the handling and processing of information over the entire information lifecycle, just as in the case of the organizational perspective. However, the personal information management perspective differs from the organizational perspective of IM in that personal information management concerns items of interest to the individual, not the organization.

Central to the personal perspective of IM is the need to manage the information processes of information creation, acquisition, organization, distribution and use so that the right information is accessible and available in the right place, in the right form, and of sufficient completeness and quality to meet personal information needs. A variety of information items are created, acquired, organized, stored, distributed and used by people for personal purposes. These include personal notes, personal journals, web pages, email messages, news articles, address books, calendar dates, reminders, fax communications, etc.

Technologies and tools, such as electronic personal information managers like PDAs, help people carry out these processes more efficiently and effectively (Jones, 2008). Cheap and fast search and storage technologies bring stability and order to people's often chaotic and messy personal information environments, and facilitate making the most of people's personal information collections (Teevan, Jones, & Bederson, 2006). Despite the benefits of these technological tools, there is some evidence to suggest that technological advances are less important in determining how individuals organize and use information than are the tasks that people perform (Barreau, 2008).

It is interesting to note that the phrase "personal information management" was first used in the 1980s with the advent of personal computers and their capacity to process and manage information (Lansdale, 1988). However, the concept of "personal information management" was most likely first implied back in 1945 by Vannevar Bush when he envisioned using the "Memex" machine for personal information management—a machine that allowed an individual to store all his or her books, records, and communications and consult those personal information sources with great speed and flexibility (Bush, 1945).

As the proliferation of personal computing devices and the explosion of the amount of information that is created, generated and used continues to increase, the relevance of information management from the personal perspective will likely gain more attention and importance from both researchers and practitioners alike.

6. Conclusion

This paper provided a review and discussion of the information management concept. Importantly, a process-oriented definition of IM was proposed and three distinct perspectives of information management were described: the organizational, library, and personal perspectives. It was suggested that the organizational perspective was the most predominant, though the other two were shown to have relevance and meaning in today's world.

This paper emphasized the importance of information management. IM allows organizations to reach strategic goals and make sound decisions. IM enables libraries and other information provision organizations to manage information collections effectively and efficiently. IM helps people manage their own personal information collections.

This paper also described how IM is not so much about the management of technology, but rather more about the management of the processes of IM, specifically the creation, acquisition, organization, storage, distribution, and usage of information.

According to the current scope of the *International Journal of Information Management*, the challenge for information management now is less about managing activities that collect, store and disseminate information, and more about placing greater focus on managing activities that make changes in patterns of behavior of customers, people, and organizations, and information that leads to changes in the way people use information (Elsevier, 2008). This may not be such an easy task. People and their information behaviors are hard to change. So are organizational cultures (Choo, 2008). IM is less about solving technical problems and more about addressing the human-side of information management. Humans add the context, meaning and value to information, and it is humans who benefit and use this information. As such, "mastering information management is an essentially human task" (Davenport, 2000).

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