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Knowledge Management in Digital Information Technology

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ABSTRACT

Knowledge management is emerging as a key concern of organizations, particularly those
who have already redesigned their business processes and embedded a total quality approach into their practices. Knowledge management may mean management of knowledge, both explicit and tacit knowledge. Knowledge Management provides access to experience, knowledge and expertise that
create new capabilities, enable superior performance, encourage innovation, and enhance customer value. Present paper attempt to highlights the growth and development of knowledge management in the changing context of digital environment as well as current and common challenges in knowledge
management and its probable solution as well as role of library and information professionals.

1. Knowledge Management: Meaning

Knowledge management is an upcoming field of management, which focuses on maximizing business performance by making the most of the synergy between people, processes and technology. Knowledge management is all about establishing the link between an organization' s obvious and implied intellectual property and positive business outcome. In practice, however, it involves an organization recognizing and mapping its intellectual assets, creating knowledge for competitive advantage, making large amounts of business information available, and allocating the best practices and technology that facilitates the above, including groupware and intranet [1]. Knowledge management is not easy to define precisely or simply. It is a complex domain, like management itself. However, there are noteworthy connections between knowledge management and many popular management practices and strategies, including best practices, change management, benchmarking and risk of business process reengineering. Most recent business strategies accept and recognize the information and management, to mention a few. Largely, the business community also sees knowledge management as an accepted extension knowledge are its assets, and policies, strategies and tools are needed in order to manage those assets .The need to manage knowledge cannot be denied, but not many have acted upon that need. Wherever, knowledge management is being implemented, it may stretch from technology-oriented methods of gaining access to, managing and delivering information, to substantial efforts at changing the organizational culture .Boynton has described four steps in getting started in knowledge management :-

1. Making knowledge visible,
2. Building knowledge intensity,
3. Developing a knowledge culture,
4. Building knowledge infrastructure

Knowledge Management (KM) caters to the critical issues of organizational adaptation, survival and competence in face of increasingly discontinuous environmental change.essentially, it embodies organizational process that seek synergistic combination of data and information processing capacity of information technologies, and the creative and innovative capacity of human beings.

Knowledge Management promotes an integrated approach to identifying, capturing, retrieving, sharing, and evaluating an enterprise’s information assets [8]. These information assets may include databases, documents, policies, procedures, as well as the un-captured tacit expertise and experience stored in individual's heads."

KM may simply be defined as doing what is needed to get the most out of knowledge resources. In general, KM focuses on organizing and making available important knowledge. KM is also related to the concept of intellectual capital.

2. Knowledge Management: Growth And Development

Knowledge economy is a knowledge-based economy. In the knowledge economy era, the management refers to effectively identify, acquire, develop, resolve, use, store and share knowledge, to create an approach to transforming and sharing of tacit and explicit knowledge, and to raise the emergency and innovation capability by utilizing the wisdom of the team. Since knowledge has become the driving force for social development, the attention of the society to information and knowledge is rising and people's demands for information and knowledge are increasing step by step. This has provided a good environment for library development. Moreover, as information and knowledge has become an important productive factor for the modern economic system, the society will inevitably require intensified

management of information and knowledge. How to manage knowledge will become an important subject facing libraries in the near future. Knowledge management in libraries should be focused on effective research and development of knowledge, creation of knowledge bases, exchange and sharing of knowledge between library staffs (including its users), training of library staff, speeding up explicit processing of the implicit knowledge and realizing of its sharing. KM has emerged today as a multidisciplinary subject. As a discipline, it draws from a broad spectrum of disciplines and technologies such as follows:

1. Cognitive Science, which provides insight into learning and knowing that ultimately helps in improving the tool and technique for gathering and transferring knowledge.
2. Artificial Intelligence and Expert Systems which help in automating the process of cognition.
3. LIS which has a rich body of research and practice to contribute to KM
4. Organizational Science which explicitly deal with the need to manage knowledge
5. Technical Writing, which is concerned with effectives representation and Communication of knowledge
6. Decision Support system which provides insights to knowledge in the performance of cognitive tasks
7. Computer Supported Collaboration work(Groupware) which has immense potentialities for KM
8. Relational and Object Databases, which provide useful ideas to represent and manage knowledge resources
9. Simulation which is becoming a component of KM for learning and creation of knowledge
10. Other Technologies, which include hypertext, web technology, full text search and retrieval, performance support systems, object-oriented information modeling, help desk technology, electronic publishing technology, multimedia technology, etc.

3. Essential Features Of Knowledge Management In Libraries

The role of knowledge management in libraries 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: Human Resource Management is the core of Knowledge Management in libraries .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. In the knowledge economy era, the libraries will attach importance to vocational training and lifelong education of library staffs to raise their scientific knowledge level and ability of acquiring and innovating knowledge. They also will and fully respect the human value, guide and bring into play wisdom potentialities of library staffs, take developing knowledge resources in the brains of library staffs as an important way for rising work efficiency. An all-round improvement of library staff's quality and positioning of the human value will become important objectives of knowledge management in libraries. The Objective of Knowledge Management in libraries 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, libraries represent an indispensable link in the scientific system chain, an important link in the knowledge innovation. Secondly, libraries take part in scientific research process directly. The library work is a component of knowledge innovation.

Thirdly, libraries must pay attention to diffusion and conversion of knowledge. They act as

bridges for turning the results of knowledge innovation into realistic productive forces. Knowledge management in libraries is to promote relationship in and between libraries, between library and user, to strengthen knowledge internetworking and to quicken knowledge flow. In the knowledge economy era, libraries will carry out researches on development and application of information resources, construction of virtual libraries, protection of intellectual property rights in the electronic era etc., thus founding the base for knowledge innovation .Information Technology is a tool for Knowledge Management in libraries .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 informatisation .The knowledge acquired must be accumulated and converted 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.

4. Tools And Techniques For Knowledge Management

Hoffman describes the following technologies , which are being used for the knowledge management systems:-

- Intranet/Extranet
- Groupware
- Electronic Document Management
- Information Retrieval Tools
- Workflow Management System
- Data Analysis
- Data Warehousing
- Agent Technologies
- Helpdesk Technologies
- Machine Learning Computer-based training
- Geographic Information systems
- Meta data/Meta-information/Profile information
- Ontology

5. Knowledge Management In Digital Environment

The following important phenomena are being seen of knowledge management in digital environment.

- Service areas are increasingly competitive and the rate of innovation is rising.
- Reductions in staffing create a need to replace informal knowledge with formal methods,
- Competitive pressures reduce the size of the work force that holds valuable business knowledge,
- Early retirements and increasing mobility of the work force lead to loss of Knowledge,
- Changes in strategic direction may result in the loss of knowledge in a specific

area.(Ms. Macintosh's observations,2004),

- Most of our work is information based,
- Organizations compete on the basis of knowledge,
- Products and services are increasingly complex endowing them with a significant information component,
- The amount of time available to experience and acquire knowledge has Diminished,
- Competitive marketplace, and
- Accelerating rate of innovations that need to be assimilated at an even faster rate

6. Challenges Of Knowledge Management

Most of the challenges in knowledge management primarily stem from the types of knowledge reuse situations and purposes. Knowledge workers may produce knowledge that they themselves reuse while working. However, each knowledge re- use situation is unique in terms of requirements and context. Whenever these differences between the knowledge re-use situations are ignored, the organization faces various challenges in implementing its knowledge management practices. Some of the common challenges resulting due to this and other factors are listed below.

1. Data Accuracy*:* Valuable raw data generated by a particular group within an organization may need to be validated before being transformed into normalized or consistent content.

2. Data Interpretation: Information derived by one group may need to be mapped to a standard context in order to be meaningful to someone else in the organization.

3. Data Relevancy: The quality and value of knowledge depend on relevance.
Knowledge that lacks relevance simply adds complexity, cost, and risk to an organization without any compensating benefits. If the data does not support or truly answer the question being asked by the user, it requires the appropriate meta-data (data about data) to be held in the knowledge management solution.

4. Ability of the Data to Support/Deny Hypotheses: The organization could cleanse the system of very old files, thus diluting its own knowledge management initiative. Alternatively, it could set up another team to cleanse the database of redundant files, thus increasing its costs substantially. Apart from these, the real challenge for an organization could be to monitor various departments and ensure that they take responsibility for keeping their repositories clean of redundant files.

5. Legitimacy: In the print-only world, there has been a complex but well-defined system of content validation and description that involves librarians, referees, reviewers and publishers. After going through the various defined processes, its selection gave that material a legitimacy that students and scholars came to depend upon. Furthermore, technological advances and collaborative efforts have allowed the costs of this process to be reduced through shared electronic cataloging (e.g. OCLC) and through the purchase or licensing of abstracting and indexing electronic databases. Librarians recognized ages ago that the only scalable and affordable approach to such processes was to take advantage of leveraged and shared

resources.

6. Electronic Information Resources: The rise of electronic information resources freely accessible through the Internet has disrupted this relatively efficient system in a number of ways. There is no clear and defined role for libraries with regard to the selection, preservation and provision of access in regard to the digital resources accessible through the net. Additionally, students and faculty have a need to learn how to evaluate these new information resources, and it is far more difficult to do so on the Web than it has been in a traditional library. With a traditional library, the very fact that a book or a journal was held by a library represented a conscious set of decisions about the validity of the information, and implied a filtering process that suggested a reasonable level of legitimacy. This is not true when one surfs the Web**.**

7. Lack Of Scalability: Another problem is that of scale, as some libraries, academic departments, and even individual scholars are creating their own collections of Web sites,selecting and describing network resources they find useful and credible. In some cases these resources are even added to centralized databases, but the combination of the growth of the web, and the lack of scalability of these individual, highly labour intensive approaches do not make such efforts a viable or affordable means of addressing this important challenge. There is some hope on the horizon in dealing with some of these issues, as there are some newly emerging, shared (and hence leveraged) cataloging resources such as OCLC's Cooperative Online Resource Catalogue (CORC) project, and the subject gateways being established by the ROADS project in the UK**.**

8. Reality: Currently, scholars trying to thoroughly research an area have to go to a library to do the traditional search process and then do an electronic search of the web and other electronic resources. This also implies that these people doing this searching have the ability to discern the quality, authenticity and validity of the information that they find on the web. Of greatest concern, is that a student might go just to the Web, either assuming that the information available there is complete and accurate, or assuming that the Web alone provides an adequate search. There is plenty of reason to believe that students today and in the future will fall into this trap, because their preferred method of working is to do everything online. While everything possible should be done to educate students and others that each of these two different approaches has its own respective merits, it is unrealistic to think that such educational efforts will be successful with the vast majority of students who have grown up with the Web.

9. Search Engines: Another problem with the Web today is the nature of the various search engines such as Yahoo! and AltaVista. While such services offer far wider coverage than any traditional cataloging approach can possibly match, they do so with far less quality, filtering and a very different, often less powerful, level of description. A search using one of these engines may yield half million or more hits. These search engines are also tainted by a bias in the selection process rooted in their commercial advertising relationships, rather than solely on the search parameters [12]

10. Evaluation: There is no clear and defined role for libraries with regard to the selection, preservation and provision of access in regards to the digital resources accessible through the net [13]. Besides, academic information seekers should have a need to learn how to evaluate these new information resources, and it is far more difficult to do so on the web than it has been in a traditional library.

11. Use Of Information: Most of the users do not use or know how to use their advanced features and the more sophisticated search algorithms embedded in these highly used applications. Consequently, they search virtually the entire web.

12. Choice Of Online: A student might go just to the web, either assuming that the information available there is complete and accurate, or assuming that the web alone provides an adequate search. There is a plenty of reason to believe that users today and in the future will fall into trap, because they preferred method is everything they want to do through online.

7. How To Solve The Problem Of Knowledge Management In Digital Environment

In order to solve the problems of knowledge management in digital environment following aspects must be considered :-

- **People Aspects**: Training development, recruitment motivation, retention, organization, job design, cultural change and encouraging thinking and participation
- **Process Aspects**: Process innovation, re-engineering both for radical and continuous improvement
- **Technology Aspects:** Information and decision support systems, knowledge-based systems and data mining systems**.**
- **Knowledge Management In An Academic Setting:** It must encompass the community of scholars in a given discipline and must be able to integrate publications, data sets, tools for manipulating such data, connections to databases of pictures and images and much more [3]
- **Systematic Approaches To Knowledge Management:** It retains the traditional faith in rational analysis of the knowledge problem. The problem can be solved, but new way of thinking is required with some basic assumptions:-
  - **a)** A resource cannot be managed unless it is modeled, and many aspects of the organization's knowledge can be modeled as an explicit resource.
  - **b)** Solutions can be found in a variety of disciplines and technologies and traditional methods of analysis can be used to re-examine the nature of knowledge work and to solve the knowledge problem [10]
  - **c)** Cultural issues are important, but they too must be evaluated systematically. Employees may not have to be "Changed" but policies and work practices must certainly be changed and technology can be applied successfully to business knowledge problems themselves.
  - **d)** Knowledge management has an important management component, but it is not an activity or discipline that belongs exclusively to managers. [16]

8. Conclusion

Knowledge has become important productive factor for the modern digital information system. The society Will inevitably require intensified management of knowledge .How to manage knowledge will become an important subject facing libraries in near future. Knowledge Management in Libraries should be focused on effective research and development of knowledge, creation of knowledge bases, exchange and sharingof knowledge between library staffs including its users, training of library staff, speeding up explicit processing of the implicit knowledge and realizing of its sharing. Economic environment and information environment is changing quickly today. Since 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. Hence it is very essential to focus on Knowledge Management systems in Libraries and information centres by which the timely information service can be provided to the online user society.

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