APPLICATIONS OF KNOWLEDGE MANAGEMENT IN UNIVERSITY RESEARCH AND HIGHER EDUCATION

Prof. Babasaheb R Jadhav[*]

Prof. Dr. D. B. Bharti[**]

Abstract

The ability to manage knowledge is crucial in today's knowledge economy. The creation and diffusion of knowledge have become increasingly important factors in competitiveness. More and more, knowledge is being thought of as a valuable commodity that is embedded in products (especially high-technology products) and embedded in the tacit knowledge of highly mobile employees. While knowledge is increasingly being viewed as a commodity or intellectual asset, there are some paradoxical characteristics of knowledge that are radically different from other valuable commodities. These knowledge characteristics include the following:

• Using knowledge does not consume it.

• Transferring knowledge does not result in losing it.

• Knowledge is abundant, but the ability to use it is scarce.

• Much of an organization's valuable knowledge walks out the door at the end of the day.

The objective of this research paper was to make understanding about applications of knowledge management in various areas of university research and higher education such as University Research, Administration and Management, Examination Department, Institutional Repositories and Library Management and E-learning and Virtual learning amongStudents, Research scholars,

[*] **Assistant Professor,MAEERS, MIT College of Engineering's, Centre for Management Studies and Research (CMSR),Kothrud, Pune, Maharashtra, India**

[**] **Professor and Director, RIMRD, Dhankawadi, Pune, Maharashtra, India**

National and International universities, Research Institutes, Research and Development Centers, Knowledge Management Professionals, Knowledge Management System, ERP Vendors, Database managers, knowledge Management Research Groups, Knowledge Transfer Networks and so on.

Keywords: knowledge Management, University Research, Administration and Management, Examination Department, Institutional Repositories and Library Management and E-learning and Virtual learning.

1) Introduction:

Meaning:

Knowledge management (**KM**) is the process of capturing, developing, sharing and effectively using organizational knowledge. It refers to a multi-disciplinary approach to achieving organizational objectives by making the best use of knowledge in research.

Knowledge management(KM)is the systematic management of an organization's knowledge assets for the purpose of creating value and meeting tactical and strategic requirements; it consists of the initiatives, processes, strategies and systems that sustain and enhance the storage, assessment, sharing, refinement and creation of knowledge through research.

Knowledge- the insights, understandings, and practical know-how that we all possess- is the fundamental resource that allows us to function intelligently. Over time, considerable knowledge is also transformed to other manifestations- such as books, technology, practices, and traditions-within organizations of all kinds and in society in general. These transformations result in cumulated expertise and, when used appropriately, increased effectiveness. Knowledge is one, if not THE, principal factor that makes personal, organizational, and societal intelligent behavior possible.

Knowledge management systems refer to any kind of IT system that stores and retrieves knowledge, improves collaboration, locates knowledge sources, mines repositories for hidden knowledge, captures and uses knowledge or in some other way enhances the KM process.

Multidisciplinary Nature of KM:

Knowledge management draws upon a vast number of diverse fields such as:

- Organizational science

- Cognitive science

- Linguistics and computational linguistics

- Information technology

- Information and library science

- Technical writing and journalism

- Anthropology and sociology

- Education and training

- Storytelling and communication studies

- Collaborative technology

The above is by no means an exhaustive list but serves to show the extremely varied roots that KM grew out of and continues to be based upon today. Disciplines in KM are: Library and Information Sciences, Web Technologies, Decision Support Systems, Document and Information Management, Electronic Performance Support Systems, Organizational Science, Collaborative Technologies, Database Technologies, Help Desk Systems, Cognitive Science, Technical Writing, Artificial Intelligence and son on.

According to Bridgstock (2009), the application of KM to the career center of the university can enhance and facilitate the employability in tertiary students because the self-management and career establishment skills can be transmitted to the graduates effectively if the KM is well implemented to the career center. Apart from that, based on Lamont (2011), after carrying out the KM, admission department in the university becomes one very process-intensive for the reason that large amount of information is well organized and the tacit knowledge of staff are also monitored through using the method of knowledge mapping so that the expertise of the staff are fully utilized. Apart from that tertiary students could get more diverse employment information when the University' career center employed the Knowledge Management because of the fact that employment student advisers with various background expertise (for example

business and social sciences) could give professional advice for the students from different faculties and disciplines.

Besides, Ngulube and Mngadi (2009) stated that social interaction and knowledge sharing can be facilitated by the Communities of Practice (CoP) at the University of KwaZulu-Natal and the University of Zululand but policy of Cop is needed in order to enhance the efficiency of KM implementation. Furthermore, by implementing the Knowledge management, various explicit is knowledge is captured and tacit knowledge is codified into documents so complete learning resources can be provided to students. In the Higher Education in Britain, distance learning is greatly promoted because knowledge management helps to collect suitable information and knowledge to the learners.

Although there are articles regarding to the commercial organizational culture, the university departments' cultures with the use of online platform, particularly Web 2.0 are rarely investigated. Hence, it is worth to spend time research this area.

2) Research Methodology

1) Research Objectives:

a) To study the concept of knowledge management.

b) To study the applications of knowledge management in university research and higher education.

2) Hypothesis:

The knowledge management has applications in university research and higher education.

3) Scope of Research:

The present research study concentrated upon applications of knowledge management in Administration and Management, Examination Department, Institutional Repositories and Library Management and E-learning and Virtual learning.

4) Data Collection Methods:

a) Type of Data:

Secondary data has been collected and used for the present research study.

b) Sources of Data:

Secondary data was collected frominternet, reference books, journals, articles, publications and various printed material.

c) Duration:

The study covered time duration for last decades.

5) Limitations of study:

a) The present research paper was based on available info of applications of knowledge management.

b) Time span taken for this study was last decade.

3) Data Analysis:

3.1 Applications of Knowledge Management in University Research:

By its nature, university and higher education environment is suitable for the application of knowledge management principles and methods in university research. The reasons include the followings:

i) Universities usually possess modern information infrastructure and databases

ii) Knowledge sharing with others is natural for lecturers, linkages, tie-ups, exchanges, collaborations etc.

iii) The desire of students is to acquire knowledge from accessible sources as fast as possible for best possible outcomes or decisions making.

Universities and higher education have to live up to expectation of the global society. They must adopt good practices that derive from ICT and globalization. Traditionally, the main functions of universities are to create and disseminate knowledge and these are done through their research and teaching activities as well as their outreach programs.

The study of applications of knowledge management in university research outlinesthe following major objectives: ƒ

1. Teachingand Learning: To prepare students to become successful lifelong learners. Teaching is undertaking certain ethical tasks or activities the intention of which is to induce

learning. Teaching is becoming increasingly important in academic careers. Many research institutions - including such big names as Harvard, Oxford and the MIT - have noticed that their previous, exclusive focus on research skills at the moment of hiring their academic staff compromised the quality of their teaching and the learning process of their students.

In professional education, **learning by teaching** designates currently the method by Jean-Pol Martin that allows pupils and students to prepare and to teach lessons, or parts of lessons. Learning by teaching should not be confused with presentations or lectures by students, as students not only convey certain content, but also choose their own methods and didactic approaches in teaching classmates that subject. Neither should it be confused with tutoring, because the teacher has intensive control of, and gives support for, the learning process in learning by teaching as against other methods.ƒ

2.   Research, Innovation and Development :To expand the frontiers of human knowledge and to promote creativityƒ

3.   Administration and Service:To serve on communities and in leadership positions within the university and in professional organizations, and to participate in outreach activities that serve the local, national and international communities.

4.   Easy availability and accessibility of databases.

5.   Knowledge management practices adopted by various universities (i.e. acquisition, generation, storage and dissemination)

6.   Protect and license university-owned intellectual property

7.   Enable and attract more sponsored research funding

8.   Purely generate income by licensing and other IP commercialization

9.   Gain reputation and recognition for the institution, faculty or administration

10.   Create jobs for graduates, consulting and research opportunities for faculty

11.   Facilitate the creation of new or start-up businesses and jobs based on University intellectual property

12.   Stimulate cluster and regional economic growth

13.   Develop science parks and incubators

14.   Disseminate university expertise embodied in IP generation to society

With rapid changing economic environment, the role of universities or higher education institutions as knowledge providers has been scrutinized and challenged by the various stakeholders, including the public. To answer this challenge, knowledge management ideas and principles have been proposed to be employed by universities for the purpose of doing fundamental and applied research, teaching suitable curricular program, utilization of knowledge for management decision support to improve internal document management and exploitation to increase the level of knowledge dissemination, and utilization of knowledge for a qualitative change in the educational process. The introduction of KM methods and tools would enable the universities to share their knowledge, to improve the level of teaching and research collaboration, and to improve the working relationships among the staff and students and other stakeholders.

To successfully manage KM initiatives in universities, the management need to consciously and explicitly manage the processes associated with the creation of their knowledge assets, and to recognize the value of their intellectual capital to their continuing role in society. However, focusing on the technical side alone, such as increasing the level of computer literacy and providing adequate information and communication infrastructure will not ensure the success of the KM initiatives. The management needs to also overcome the more difficult problems related to social and cultural issues in organizational knowledge management.

3.2   Applications of Knowledge Management in Administration and Management:

However, there is a paradigm shift in university and higher education administration with the initiation of information and communication technology (ICT). Universities are today making substantial investments in ICT to meet their goals with a view to increasing the effectiveness of their operations. They are striving to, if not to meet up with their peers in other parts of the world, but at least, to stay not too far away from them. Even at that, the emphasis on change in the global environment puts knowledge management at the heart of what universities and higher education needs to do to cope up with today's fast changing globalized environment.

The study of applications of knowledge management in Administration and Management outlines the following major objectives:

1.   Focus the KM vision and practice to align with the organizational direction.

2.   Provide effective governance for the KM practice.

3.   Promote integrative management culture by fostering a knowledge: Promote integrative management culture by fostering a knowledge-supportive culture – including safe environment, ethical and mutually respectful behavior, minimal politicking, collaboration, and a common focus on delivering quality work without delay – i.e., "getting the right thing done quickly and with as little fuss as possible

4.   Implementation of KM for promotions and admissions

5.   Implementation of KM for examinations

6.   Implementation of KM for database

7.   Implementation of KM for payroll solution

8.   Implementation of KM for ERP solutions

9.   Implementation of KM for vendor management

10.   Provide shared understanding of organization's mission, current direction and individual roles to support the organizations and individual's own interest.

11.   Practice accelerated learning by pursuing a broad range of knowledge transfer activities: by pursuing a broad range of knowledge transfer activities to ascertain that valuable IC is captured, organized and structured, deployed widely, and used and leveraged.

12.   Educate employees by providing opportunities to teach professional, craft and navigational knowledge: by providing opportunities to learn professional, craft, and navigational knowledge and Meta knowledge, and by providing information and other resources necessary to deliver quality work products that satisfy work requirements and service paradigms.

13.   Provide opportunities by placing employees in situations where they can use their capabilities.

14.   Give permission by providing employees with safe environments in which to do their work: by providing employees with safe environments in which to do their work and have understanding of how far they can improvise enterprise guidelines and policies to serve individual situations and customers.

15.   Foster motivation by motivating employees to act intelligently: by motivating employees to act intelligently – 'to do the right thing' – and providing understanding and

emotional acceptance of how actions will be of value to stakeholders, the enterprise, and most importantly, to themselves.

16.   Create supportive infrastructure capabilities by including extensive IT applications.

17.   Governance functions to direct and support KMrelated efforts throughout the organization.

18.   Staff or infrastructure functions that support KM objectives and individual activities: Staff or infrastructure functions that support KM objectives and individual activities of many kinds including supporting capabilities like special expertise teams, institutions, and technological facilities.

19.   Operational functions to obtain and create knowledge and to capture, organize, distribute, and manipulate it.

20.   Functions to realize the value of knowledge related investments through understanding.

3.3   Applications of Knowledge Management in Examination Department:

University and higher education not only in India but also all over the world has become a complex, challenging and difficult task in recent time. This originated from the pressures occasioned by the changes in technology and globalization which have become the hallmark in world affairs. As a result, there are greater expectations from the universities as training points for high level manpower.Knowledge management is looking for determining the required information through storing, developing,spreading and functioning for achieving the main goals of the universities and examinations, besides contributing in achieving fundamentalexamination and administration tasks that appears through the ability of setting plans, taking decisions along with problem solving.

The study of applications of knowledge management in examination Department outlines the following major objectives:

1. Implementation of ERP system for database

2. Involve upper management to emphasize the systems importance

3. Foster a cooperative environment for sharing knowledge

4. Initiate polices that reward those who share knowledge

5. Appoint someone to manage and update the system

6. Make sure employees should get something from it

7. Develop an information system that is easy to use

8. Select knowledge management team

9. Establish knowledge management strategy and business case

10. Perform knowledge assessment and audit

11. Perform information technology assessment

12. Develop project plan and measurement systems

3.4   Applications of Knowledge Management in Institutional Repositories and Library Management:

Academic libraries have transformed drastically from MARC (Machine Readable Cataloguing) and circulation desk to metadata and web information, print collection and inter library loans to online databases and e-resources, quiet areas to learning and knowledge recreational area, bibliographic instruction to information literacy and life-long learning, information management to knowledge management and so on. Accordingly, the roles of academic librarians have changed radically at both library practitioners and library school educator's levels. They are no more traditional information protectors and managers. Open access, knowledge management, digital scholarship, institutional repositories are all often owned by the libraries and the librarians.

The study of applications of knowledge management in Institutional Repositories and Library Management outlines the following major mission:

1. Implementation of ERP

2. Digital library

3. KM requires specific planning and alignment with organizational objectives

4. Fulfills the knowledge gap

5. Survival factor with increased user demands and competition

6. Increased visibility of libraries

7. Academic libraries as knowledge creating organizations

8. Increased value of knowledge in the knowledge economy

9. Need of improved library services and customer satisfaction

10. To improve library services and productivity

11. Enhance database through Software's, journal's, CD's, periodical's, magazine's, newsletter's etc.

12. Use of online library services and software's

13. Manage information explosion

14. Manage rapid knowledge decay

15. Make timely decisions

16. Establish best practices

17. Reduce duplication of effort

3.5 Applications of Knowledge Management in E-learning and Virtual learning:

The e-learning and virtual learning framework of applications of knowledge management includes management, resource support, ethical, institutional, pedagogical, technological, interface design and evaluation.E-learning can be defined as learning using electronic means the acquisition of knowledge and skill using electronic technologies such as computer and Internet-based courseware and local and wide area networks.E-Learning applications and processes include Web-based learning, computer-based learning, virtual classrooms and digital collaboration. Content is delivered via the Internet, intranet/extranet, audio or video tape, satellite TV and CD-ROM, e-learning, focuses on the individual's acquisition of new knowledge and the technological means to support this construction process. Simulations close to the real world are the answer to constructivist learning theories, demanding situated learning with a high degree of engagement of the learner.

➢ E-learning is best defined as the category consisting of training and learning over the Web – training that can be delivered over an intranet, extranet or the Internet.

➢ E-learning is learning at a distance that uses computer technology (usually the Internet).

➢ E-learning is essentially the network-enabled transfer of skills and knowledge. E-learning refers to using electronic applications and processes to learn. E-learning applications and processes include Web based learning, computer-based learning, virtual classrooms and digital collaboration.

The study of applications of knowledge management in E-Learning and Virtual learning outlines the following major objectives:

1.   Socialization: Competency and skills measurements help identify the people with specific interests, skills and knowledge in the organization.

2.   Externalization: Knowledge is captured by the system with the intent of teaching that knowledge to other people.

3.   Combination: Knowledge about products and processes of the business is organized to make learning the knowledge more effective and efficient.

4.   Internalization: Competency and skills measurements help identify which people lack the knowledge to do their job effectively and provide them with online training.

5.   Cognition: People can be provided with on demand performance support by getting just the training that they need at the time that they need it to complete a business task.

6.   Feedback: Assessments provide feedback concerning how well a person has learned and how well they have applied what they learned to a business problem.

7.   Attention: Help students to focus on explained concept or specified sentence.

8.   Discussion: help students to discuss assignment based on each one's aspect in an efficient manner.

9.   Market based e-learning is based on supply and demand. Used by educational institutions, it uses e-learning integrated into traditional course offerings as well as for continuous learning for professional qualification.

10.   Activity based e-learning is related to customer needs. The learning is often based upon one or more specific business products, usually software. The learning may be provided directly from the business or through a service provider.

11.   Asset based e-learning is used by academic institutions and by private businesses. Again, academic institutions may have all or a part of the costs of providing the education subsidized by the state. Students pay directly for the e-learning content independent of other educational costs.

12.   Use of ICT, IT and ITES

13.   Case studies and Teaching notes

14.   Simulations and Mini projects

15.   Peer based learning

16.   Field work and Experimental learning

4) Research Findings:

1.   University and higher education environment is suitable for the application of knowledge management principles and methods in university research. The reasons includes Universities usually possess modern information infrastructure and databases, Knowledge sharing with others is natural for lecturers, linkages, tie-ups, exchanges, collaborations etc. and the desire of students is to acquire knowledge from accessible sources as fast as possible for best possible outcomes or decisions making.

2.   There is a paradigm shift in university and higher education administration with the initiation of information and communication technology (ICT). Universities are today making substantial investments in ICT to meet their goals with a view to increasing the effectiveness of their operations.

3.   Knowledge management is looking for determining the required information through storing, developing, spreading and functioning for achieving the main goals of the universities and examinations, besides contributing in achieving fundamental examination and administration tasks that appears through the ability of setting plans, taking decisions along with problem solving.

4.   Academic libraries have transformed drastically from MARC (Machine Readable Cataloguing) and circulation desk to metadata and web information, print collection and inter library loans to online databases and e-resources, quiet areas to learning and knowledge recreational area, bibliographic instruction to information literacy and life-long learning, information management to knowledge management and so on.

5.   The applications of knowledge management in e-learning and virtual learning include management, resource support, ethical, institutional, pedagogical, technological, interface design and evaluation. E-learning can be defined as learning using electronic means the acquisition of knowledge and skill using electronic technologies such as computer and Internet-based courseware and local and wide area networks.

5) Conclusion:

Knowledge is the most important asset to a university and higher education. The ability to proficiently manage the diverse types of knowledge used by both academics and non-academics, in particular decision makers, is crucial for the sustainable improvement in the performance of

the university as a whole. A variety of computer-based techniques for managing knowledge has been developed and will continue to be developed to supplement inborn human knowledge management skills. Knowledge management is concerned with a range of practices used by organizations to generate, store and disseminate knowledge for reuse, especially in research, teaching and learning, decision making and others. In universities and higher education, knowledge management initiative is usually knotted to its objectives and intended to achieve specific outcomes such as improved performance through shared intelligence and higher levels of innovation.

The socio, economic and technical components have become the parameters in enhancing the performance of university and higher education. It can be concluded that the universities and higher education community can be effectively performing their core work if they utilize and manage knowledge in a proper way when they are aware of the benefits as well as added value that knowledge management brings and also when they are provided with adequate info-structure support, thus the implementation of knowledge management throughout the organization is instilled as an organizational corporate culture. Deployment of inputs such as infrastructure or Knowledge Management System enables the utilization of human capital and organizational knowledge through best practices, rules and procedures, which will produce outcomes trough effective teaching and learning.

References:

1. The Application of Knowledge Management in Enhancing the Performance of Malaysian Universities, MohdGhazaliMohayidin, Nor Azirawani, Man NorfaryantiKamaruddin and Mar IdawatiMargonoUniversiti Putra Malaysia, Serdang, Selangor, Malaysia, Electronic Journal of Knowledge Management, Volume 5, Issue 3, 2007, (301 - 312)