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A Framework for Academic Knowledge Repository

Abdul Azeez Khan*, P. Sheik Abdul Khader **

Abstract

As computer technologies are highly emerged in today's world, leading organizations have digitalized their maximum data transferred in their organization. These leads to digital data maintenance issue as well as issue of retaining the knowledgeable data, which is considered as organization intellectual asset. Organizations are taking higher steps to build knowledge repositories to retain their knowledgeable data on centralized shared storages. The importance of maintaining knowledge repositories to preserve the intellectual capitals has made the institutions to plunge in the ease of creating knowledge repositories for holding institutional intellectual assets. This research contains a novel approach of creating an environment to build knowledge repository for institutions, which provides a mode of capturing the externalized knowledge transferred in the institutions by the stack holders.

Keywords: Knowledge Management, Information Sharing, Tacit Knowledge, Virtual Learning environment, Knowledge Externalization, Tacit Knowledge, Knowledge Repository

1. Introduction

Computers are extremely important in the modern world of today. In the fast moving life of the modern world of today, computers hold tremendous significance. Many of us will feel crippled without a computer, as we have gotten so used to this machine. The importance of computers cannot be denied in the corporate or business world, at the work place and even in one's personal life. This situation does the institutions to convert their knowledge transformation into digital phenomenon. Creating a knowledge repository for an academic institution is a greater challenge for the academicians to digitalize their data transferred in the institution. The knowledge transferred in the institution is considerably a formation of unstructured data contents such as video, document, power point presentation and analytical sheets etc. More over to retain the knowledgeable data is also having an issue of identifying the data as knowledgeable. As the contents are created and maintained by the subject experts, the system has to work along with the experts into day to day work activity to nurture the capturing of data contents with the help of the stack holders and backup the contents into appropriate order for easy retrievals. This research work proposes an approach to capture the externalized knowledge content of academic institutions for building academic knowledge repository. This framework provides an environment for the user, to create content for the day to day work activity. It also notifies the user to denote the importance of the content and future usage. Once it identify the significance of the content, the system will take the content or copy of content to centralized knowledge base and store it in appropriate order of creator storage area in the knowledge base. This facilitation internally acts as a knowledge retainer by storing it into structured, unstructured and collaborative categories, and making it available on demand.

The knowledge in the institution is diversified into four categories such as: Socialization, Externalization, Combination and Internalization.

* Assistant Professor, Department of Computer Applications, B.S.Abdur Rahman University, Vandalur, Chennai, Tamil Nadu, India. E-mail: abdulazeezkhan@bsauniv.ac.in

** Professor & Head, Department of Computer Applications, B.S.Abdur Rahman University, , Vandalur, Chennai, Tamil Nadu, India. E-mail: hodca@bsauniv.ac.in

1.1. Socialization

This process focuses on tacit to tacit knowledge linking and more over socialization is also known as converting into new knowledge through shared experiences. New knowledge is created by using the process of interactions, observing, discussing, analyzing, spending time together or living in same environment. The possibility of tacit to tacit conversion is more in direct practices such as son learns the technique of wood craft from his father by working with him (rather than from reading from books or manuals).

1.2. Externalization

This process focuses on tacit to explicit knowledge linking. Thus a standardized storage is required to store the lessons learned from situations and desperately a mechanism has to be enabled for an on demand service to the searcher. Quality circles are formed in Information Technology sectors where workman put their learning and experience, they have to improve or solve the process related problems.

1.3. Combination

Combination is a process of transforming the explicit knowledge to explicit knowledge. Creative use of database to get business report, sorting, adding, categorizing are some examples of combination process.

1.4. Internalization

Internalization is a process of transforming the explicit knowledge to tacit knowledge. The internalization of newly created knowledge is the conversion of explicit knowledge into the organization's tacit knowledge. This requires the individual to identify the knowledge relevant for one's self within the organizational knowledge. That again requires finding one's self in a larger entity. Learning by doing, training and exercises allow the individual to access the knowledge realm of the group and the entire organization.

Learning mechanism in higher education has to be customized in accordance to the new requirements and changes of people, culture and economy. This requires new models of management of its logical capital. Knowledge Management can facilitate universities to ensure that potential information as well as knowledge and gets the appropriate people at the right time to take the worthy decisions, using knowledge management Systems. Knowledge management system refers to a system for customizing knowledge in organizations in terms of capture, storage information and broadcasting of knowledge.

2. Related Works

In [1] this research work, they discuss a survey conducted and a pilot implementation of an institutional repository at the Icfai Business School (Business School Institute of Chartered Financial Analysts of India), Ahmedabad, India. Digital repositories are emerging technologies for knowledge sharing and management in academic institutions. Digital repositories collect, store, preserve, index and share the intellectual capital of faculty and research staff, namely their scholarly publications and teaching material. In a developing country like India, capturing this intellectual capital is becoming important and unavoidable for business schools. Creation of a digital archive for scholarly and teaching material is a growing requirement. Infrastructure, funding and manpower were the initial limitations. Once the institutional repository was installed, management of the repository was necessary. Planning of communities and collections, system maintenance like backups, populating the repository with the seed collection, creating awareness for initiating faculty self-archiving for the growth of the repository were some of the challenges faced. Staffs were to be trained to ensure that documents were properly uploaded and metadata submitted into the repository.

The research work carried in [2] has disseminated information about the Welsh Repository Network (WRN), innovative work being undertaken to build an integrated network of institutional digital repositories. A collaborative approach, in particular through the provision of centralized technical and organizational support, has demonstrated improvement in the use and curation of digital repository content across Wales.

[3] This study investigated the development of institutional repositories (IRs) at doctoral institutions, identifying factors that influence development and best practices using a comparative case study analysis approach to

gather and analyze data. The development of a repository is one of the more complex projects.

In [4] this research work, they proposed a model called Info-Ca-Sh. It's a contributed knowledge portal of dynamic web content activities. The design flow serves as an information exchange of knowledge among users by facilitating the users with a range of open source tools. The tacit and explicit knowledge of the users are made captured and externalized as knowledge repository.

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In [6] this research work, they finds that five knowledge capabilities are presented and described as expertise, lessons learned, policies and procedures, data and knowledge documents. In [7] some knowledge representation issues in machine learning. The focus is on machine learning applications for which the individuals that are the subject of learning have complex structure. To represent such individuals, a rich knowledge representation language based on higher-order logic is introduced. The logic is also employed to construct comprehensible hypotheses that one might want to learn about the individuals. The tutorial introduces the main ideas of this approach to knowledge representation in a mostly informal way and gives a number of illustrations.

The Research work [8], discuss the introduction of a new model with the help of which the management of businesses can evaluate, what kind of a role tacit knowledge plays in their organizations. After that the structure of the model is discussed with four different systems, namely memory, communication, motivational, and situational systems, which all include numerous factors that affect tacit knowledge utilization in organizations.

In [9] this research work, the tacit dimension of knowledge in the context of the model is different from that in Polanyi's original context; it actually includes considerable "implicitness" idiosyncratic in Japanese context. The separation of implicitness from real tacitness suggests carefully considering the potentialities of "unveiling" the secrets of tacit knowledge in different contexts. Second, considering most cases for the model mainly came from certain Japanese manufacturing companies that more or less relates to assemble lines, it is necessary to be cautious when the model is extended for a broader application.

In paper [10], they analyze the KM concept, system and architecture; then they propose a framework of KM system implementation in collaborative environment for Higher Learning Institutions (HLI) and discuss various issues involved in this field that will help organizations to increase productivity and quality as well as to achieve return on investment (ROI). Issues that are highlighted in this paper include how best to acquire and disseminate knowledge; how to determine the best way for approaching and acquiring knowledge effectively including motivating people to share and access knowledge through the system; how to determine metrics for evaluating KM efficiency; how to identify how people create, communicate and use knowledge; and how to create more inclusive and integrated KMS software packages.

3. Methodology

The externalized knowledge content in an institution is generated from people, process and culture of the institution. The stack holders of the institution create valuable content into their day to day work activity. But once they go out of the institution, everything goes along with the individuals. Institution does not aware of the valuable content they lost along with the stack holder exits. The content may contain knowledgeable data, which can be reused for future purpose.

Sometimes the stack holder may have created valuable intellectual content, due to lost or forgot the path of the file may lead to non-utilization of the existing content. These reasons make the individual to create a new content of the same, which take unnecessary work and time wastage.

In general, once a new employee joins in an institution, needs some reference work to carry out the current work process in a successive status. But the reference work should be made available to the new employee as an on demand services in a quick and easy way of retrievals. This entire phenomenon made the institutions to behave like corporate sectors to preserve the content they work on every day basis. This can be accomplished by creating knowledge repository for the institutions.

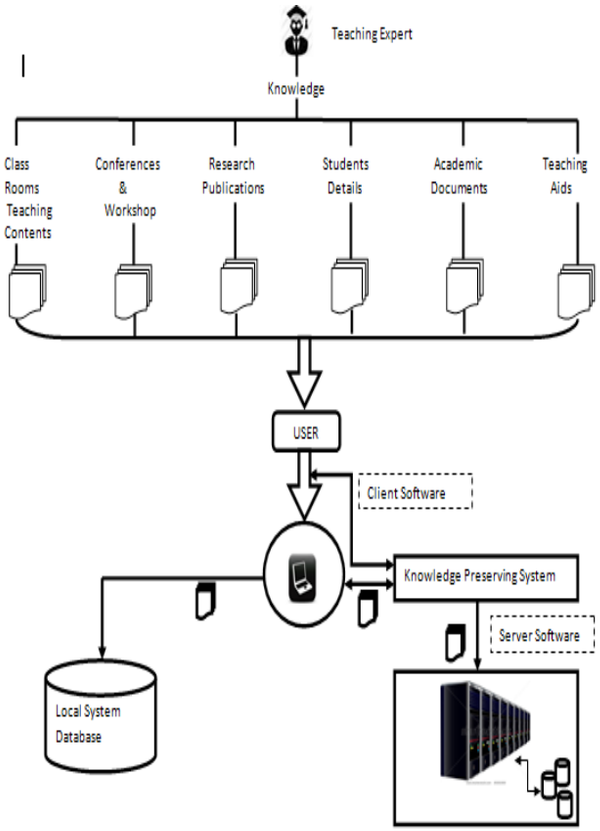
Simply creating knowledge repository does not collect externalized contents of the institutions into it. The knowledge repository requires special applications, process and strategies to collect valuable content and simpler way of retrieving the stored content as an on demand services. The knowledge holders of the institutions create contents on their allotted computing machines. In sometimes they create content on different machines also due to various reasons and situations. But all these creation, modification of the contents take place within the institutional intra-network.

This fact, gives an idea of creating a knowledge repository connected to the centralized storage of the institution server and linked with all intra-network systems. To facilitate the institutional knowledge repository on collecting the contents, created by various authors is accomplished by the client software installed on the local machines. The client software takes care of user logins and authentications for accessing the system documents.

The client software keeps a track of content creations and modifications done by respected authors. As well as, the client software post comments pop-ups of content priority, content topic relations and future usage value to the user at the time of saving the content. Based on values given by the user, it takes the decision to make a copy of the content into the centralized knowledge repository under the space allotted to the user.

The server software framed in the knowledge repository schedules backups for collecting the content from different machines connected with the institutional centralized knowledge repository. The server software allows the user to customize the stored contents as per the user wish of arrangements. This framework will make a tremendous approach to create a knowledge repository for the institution in an automated way of collecting the externalized contents created and managed by various stack holders of the institution.

Figure 1.1: Academic Knowledge Repository Framework



(AKR)- Source as: Based on Primary Database.

The problem of extracting knowledgeable content from collected materials is handled by reporting the number of times the content accessed by the users. This approach of collecting data deals with the issue of finding knowledgeable content from the content gathered from knowledge repository.

4. Conclusion and Future Work

The externalized knowledge transformed in the institution is considerably important to maintain in the knowledge repository for future references. The proposed AKR framework can provide a overall facilitation for the academicians to automatically preserve the institutional knowledgeable contents in the centralized knowledge repository. The content are stored on the under storage space with the user name and further categorized at the time of taking permission of storing it in centralized knowledge repository for maintain. Such as frequently useable content, rarely usable content, content related to

academic teaching, content containers for documents etc. Future work can be carried out to preserve the socialization knowledge transferred in the institution. This is usually generated from shared experiences. So, a framework need to be developed to collect the shared experiences from the institution stack holders.

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