

## A Framework for Faculty Memory Information System

Salimah Mokhtar, Zaitun Abu Bakar and Wan Hasnira W.Husin  
 Department of Information Science  
 Faculty of Computer Science and Information Technology  
 University of Malaya  
 50603 Lembah Pantai, Kuala Lumpur  
 E-mail: {salimah, zab}@um.edu.my & eira2125@yahoo.com

### Abstract

*Many approaches have been developed which claim to guide organization to use their common or shared memory in more efficient way. One of the approaches is realizing the organizational memory with the help of information system, resulting the term Organizational Memory Information System (OMIS). This paper introduces an initial effort towards developing a framework for organizing and managing as well as decluttering the faculty's information and knowledge assets through OMIS. The management of the faculty and the lecturers are the target audience for the framework that also intends to improve knowledge sharing within the faculty level and perhaps later at the university level. The proposed framework namely called Faculty Memory Information System (FMIS) portrays the interaction between components that support the faculty's memory and the information system components that support the effort to capture and preserves the faculty's knowledge. This project is concern with the application of knowledge management in the university environment, highlighting on the bottom-up implementation approach which starts at the faculty level with a faculty memory information system and later upon successful endeavor may proceed to the university level to create a university memory information system.*

### 1. Introduction

Academic organization is increasingly aware that knowledge resources have become their key assets and are essential to the development of their organizations. The ability of an organization to reuse its experience or knowledge embedded in formal documents, reports and manual and in organizational routines, processes, practices and norms is known as Organizational Memory (OM). The conceptualization of an organizational memory has been around for almost three decades, that is since [1] introduced it. A number of definitions about OM has been published. Organizational memory (sometimes called institutional or corporate memory) is the body of data, information and knowledge relevant to an individual organization's existence (*source: wikipedia*). As information and knowledge are considered to be the asset to the organizations, and the survival of the organizations depend on these assets, the quick and easy availability of data, information and knowledge in various form is becoming increasingly important for them [2]. With

information technology being used to support OM, the term Organizational Memory Information System (OMIS) become known and since then the application of OMIS has hiked up especially by the corporate sectors and learning organizations. OMIS is defined as "a system that functions to provide a means by which knowledge from the past is brought to bear on present activities, thus resulting in increased levels of effectiveness for the organization" [3]. The OMIS captures knowledge of the organization in a computational form and make part of this knowledge available either by providing direct access via links to external repositories. Universities as the academic and research institutions, a knowledge-intensive organizations have significant opportunities to apply knowledge management practices in order to benefit the rewards as been received by the corporate sectors. Universities therefore need to learn from the corporate success stories.

### 2. Problems Addressed

The recurrent concern faced by most of the faculty members of higher education institutions is the difficulties to locate and recover past information and knowledge assets held at the faculty. The information which is usually sought after for input in planning, decision making, job performing and action taking, are scattered all over in an unorganized manner. Locating such documents and subsequently retrieving them manually through loads of paper would be very time consuming and thus productive time are sacrificed.

Another problem arises when lecturers are often requested by the management to fill out certain forms again and again given a short period of time. Normally the information required here is to give updates besides the same information which had been provided earlier. This also is another case of time and effort waste. Yet another problem due to lack of information sharing culture and system, the faculty members will not know of any changes or updates if they missed any meetings at the faculty. When it comes to the routine rotation (every two years) of management positions (e.g. the deanship, deputy deanship, head of department), the management staffs also face difficulty to perform well with existing knowledge that they have as they need to trace manually past documents of a particular portfolio to find information regarding their responsibility before being able to perform the jobs.

Collective memories that stores soft information, such as expertise, experiences, success & horror stories, unwritten rules, critical events, academic skills and know-how & know-why, is considered inevitability to be made accessible too. The faculty needs to identify, collect, classify, verbalize and diffuse the tacit knowledge present in the faculty. Hard information such as reports of conferences, seminars, technical papers, meetings minutes, written rules and procedures needs to be more organized and categorized appropriately, before making them accessible from the faculty's intranet / portal.

Aiming at increasing productivity, effectiveness, efficiency, OMIS is seen not only as the solutions to the problems addressed above also the ones unaddressed here but also a necessity in today's environment where change is the norm. In addition this is the effort towards clutter-free faculty.

**3. Case Study**

The bottom-up approach is the plan to adopt knowledge management principle at the university. This approach starts at the faculty level and if successful move up to the university level. A faculty at a university is chosen as a case study.

Most of the knowledge at the faculty, such as informal rules and routines, customs, cultural aspects, norms and values are tacit knowledge and are stored in the heads of mostly the senior staffs. A mechanism is needed to capture the faculty's knowledge, whereby later this information or knowledge can be effectively recalled and reinterpreted by the staffs for planning, decision making or action taking purposes. In order to create the faculty's memory, the faculty should have the capabilities to learn and to remember. The faculty learns when the knowledge or experience of individuals is captured in the memory of the faculty. This memory is of help to avoid "reinventing the wheel", or "having to solve the same problem over and over".

**3.1. Interview Outcomes**

A formal interview was conducted with the management staffs, administrative officer (registrar) and lecturers of the faculty. The interview revealed that there are no digital documents archive implemented at the faculty. To date the knowledge sources are documented manually on paper or printed form stored in a document. The faculty has utilize information technology to facilitate information distribution but not widely used. It is used only for certain information and it was not complete. For instance, the student's final year project system provide only student grades and does not provide the complete report. This system also did not allow user to print the report, so it will cause a problem for the department's staff to refer the information about

the students. The lecturers also informed that the system are not integrated with other students information system, and only have one database, and the data is not updated. There are abundance of information residing within the faculty but not in a managed manner. To make this information and knowledge valuable to the faculty, a proper faculty memory strategies and tools is certainly needed, to deal with the capturing and preserving organizational knowledge asset to improve the operation of the faculty in term of effectiveness and efficiency.

What goes into the memory can be categorized as shown in Table 1.

Table 1: Knowledge categories to be stored in the faculty's memory (adapted from [4]).

Explicit Knowledge (Media-based)	Process-based Knowledge	Electronically -Indexed Knowledge	Culturally-based Knowledge	Tacit Knowledge (People-based)
*Created when the content of knowledge is made explicit and stored online. * Explicit knowledge is formal and systematic. For this reason it can be easily communicated and shared, in product specifications or a scientific formula or a computer program.	*Standards and methods that define the actions required to facilitate a campus work procedure.	* Created when the structure is made explicit and captured through processes / practices along with online content.	* Shared beliefs and values that define the educational behaviors and shared assumptions among campus stakeholders.	* Expressed through a faculty's individual production, expertise and training. *Tacit knowledge is highly personal. It is hard to formalize and therefore difficult, if not impossible, to communicate.
<b><u>e-Profile</u></b> Faculty Staff & Students & Alumni. Faculty Chart / Directory / Map  Program of Studies (Handbook)  Announcement Reports Minutes Schedules	<b><u>e-References</u></b> Guidelines  Forms & Template  Facilities Reservation  <b><u>e- Services</u></b> Registration  Advisory and counseling  Class Attendance  Examination Slip & Results	<b><u>e-Svstems</u></b> E-learning  Meeting Support System  Conference/ Workshop /Training  Attendance & Leave Management  Budgeting System  Inventory System  Online Journals & Thesis	<b><u>e-Academic</u></b> Vision & Mission  Message from the top management.  E- newsletter  Success stories  Horror stories	<b><u>e-Advising / Consultations</u></b>  Teaching Blogs  Learning Blogs  Research Blogs  SkillsBlogs  Experience Blogs  Expert Blogs  Words of wisdom.

Salimah [5] proposed e-faculty projects to promote a change in the work culture through maximizing the use of electronic approaches towards existing information processes. The use of information technology in relevant areas pertaining to the faculty

can be accelerated and the successful implementation of such practices will ensure an increase in productivity and so existing processes will be more effective and efficient.

**4. Framework of FMIS**

The Faculty Memory Information System (FMIS) framework focuses on capturing knowledge while providing an integrated structure which provides the mechanism that support knowledge acquisition, dissemination, retrieval and knowledge reuse for a faculty environment. The primary objectives of FMIS framework are to facilitate information exchange/ sharing among faculty members. FMIS also act as extending computer collaborative work (CSCW) to facilitate and enforce the knowledge sharing among workgroups since groups and group tasks are increasingly being viewed as the basic unit of formal faculty structure.

Generally a faculty of a higher education institution subsists on communication and coordination of their knowledge workers. Communication and coordination provide the means to produce and store information that the institution or the faculty needs. The proposed framework for FMIS is shown in Figure 1.

The construction of the FMIS framework is based on the design of OMIS identified by Stein and Zwass [6] as the development of computational tool to support existing organizational processes. Their OMIS framework is based on an organizational effectiveness as one of the principal concerns and expressed on term of integrative, adaptive, goal attainment and pattern maintenance function. While in the proposed framework of FMIS, it focuses on the organizational effectiveness functions specially tailored to the higher education institution. These functions are expressed on term of human relations, open systems, rational goals and internal process.

This framework divides FMIS into two parts, which is Faculty Memory structure and FMIS structure. The Faculty Memory structure is referring to the ability of the faculty to remember and learn from it past. In the most general sense, Faculty Memory structure is concerned with being able to reuse the organizational knowledge assets. This framework identifies two major components of Faculty Memory structure that interact with the FMIS structure to support activities leading to faculty effectiveness. These components are team memory and institutional information. Team memory refers to the faculty members that are working together in their respective group, in which are the users of the system while the institutional information refers to the type of information that resides in the faculty that are available to be captured into the FMIS.

The FMIS structure is composed of two layers based on OMIS framework by Stein and Zwass [6] and with modification to adapt with higher education needs. The first layer is the memory functions layer while the second layer is the faculty effectiveness functions layer. This framework is viewed from bottom up in which the resultant activity from memory functions layer (bottom layer) must be able to support each component in the faculty effectiveness functions (top layer) in order to increase the organizational effectiveness. The memory functions layer is composed of mnemonic functions and retention facility. While the faculty effectiveness functions layer is composed of human relations, open systems, rational goals and internal process. Components in the bottom layer, which is the memory functions is constructed and supported by a database application and information technology and this layer is responsible in supporting the success of the top layer of the FMIS structure.

Dissemination process to mnemonic functions proposed by Stein and Zwass [6] has been added in memory function layer. Thus this framework suggests that the memory functions layer must involve process of acquisition, creation, maintenance, dissemination, search and retrieval to be able to support key activities of knowledge sharing in a faculty. The retention structure in the memory layer acts as a static repository where all data, information and knowledge are stored accumulated and preserved so that it can be retrieved later.

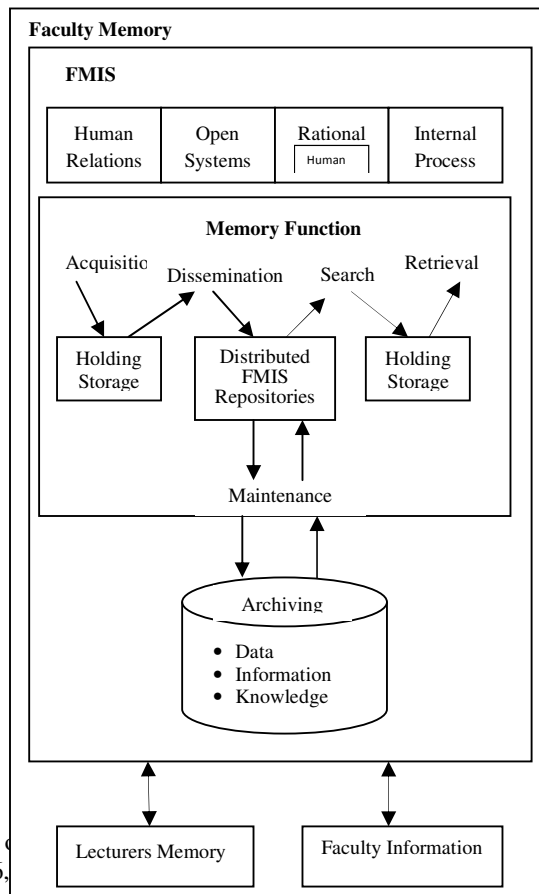


Figure 1 – Framework for FMIS

## 5. Conclusion

This faculty memory information system (FMIS) project or initiative is proposed to address the problems inherent to information and knowledge at the faculty. There are abundance of information and knowledge with regard to the faculty business such as teaching, learning, research, consultation and other academic experiences to be shared among faculty members and this knowledge shall be stored in the "faculty memory". At present tacit knowledge has not been documented and is retained in the individual's memory or in individual's computers. Thus, information system that supports organizational memory by making recorded knowledge retrievable and by making individuals with knowledge accessible is proposed to increase the level of effectiveness of knowledge sharing for the faculty. However, the implementation success of this project will be very much dependent on the commitment of its implementers as well as on the readiness of the affected parties. In a nutshell, the implementation of knowledge management system is expected to create significant and substantial benefits to both the faculty and at later stage the university.

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