

Facilitating Knowledge Sharing With Groupware among Faculty Communities in Higher Learning Institution

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Abstract

Knowledge is power. Most of the organizations today are looking on this matter as a very important issue and try to search the best way to manage or organize this knowledge for sustain a high rate of continuous improvement. While Knowledge management system (KMS) is a system that related to the process of knowledge capture, re-use, searching and representation to the people in a variety of form. This role of KMS could be determined by looking on the issues of the right knowledge could be disseminated to the right people at the right time in the faster ways that based on the simplest command or agent given to the system in order to getting the relevant knowledge. Besides that, KMS also could be looking on how the knowledge could be shared by using the facilitation of groupware for the benefits of faculty communities in higher learning institution (HLI) in order to promote knowledge sharing, stored and captured as well as presenting the knowledge. This paper also will examine the concept and approach of KMS implementation in faculties of HLI and discusses a variety issues that related to its involvement, so that it will help organizations to increase productivity and quality as well as to gain return on investment (ROI).

Keywords

Groupware, Knowledge Sharing, Knowledge Management System, and HLI

1. Introduction

In the course of only few decades, Information Technology (IT) has come to play an important, and often as vital a role in almost all sectors of organized societies especially in term of knowledge as a weapon power. Today, many organizations, from commercial enterprises to government agencies and research institutions, are focusing on knowledge management by implementing a groupware computing and/or videoconferencing environment to expedite research and development, reduce travel expenses, support informed, up-to-the-minute business decision making, convey high-impact messages and to maintain their competitive edge. Knowledge sharing is a particular kind of IT as enabler that intended to support collaborative

knowledge working as opportunities and challenges into the organizations.

Beside that, most of the organizations are also looking on this matter as a very important issue and try to search the best way to manage or organize this knowledge for sustain a high rate of continuous improvement. While Knowledge management system (KMS) is a system that related to the process of knowledge capture, re-use, searching and representation to the user in a variety of form. This role of KMS could be determined by looking on the issues of the right knowledge could be disseminated to the right people at the right time in the faster ways that based on the simplest command or agent given to the system in order to getting the relevant knowledge. In this case, KMS is also could be looking on how the it could be shared by using the facilitation of groupware for the benefits of communities especially in higher learning institution (HLI) in order to promote knowledge sharing, stored and captured as well as presenting the knowledge. This paper also will examine the concept and approach of KMS implementation in faculty of HLI and discusses variety issues that related to its involvement, so that it will help organizations to increase productivity and quality as well as to gain return on investment (ROI).

2. Knowledge Management And Collaboration

There is an English saying: “Two heads are better than one”. This proverb stresses on the importance of having a second person involved in whatever task one is performing. By having two persons working together on one task, the job will be performed faster. If one person is an expert in a field that the other is not, then, the combining of expertise will definitely make the job easier and smoother to run, thus ensure the best results for the job. This is why having two heads are better than one. The question here is how do we bring the heads together? Working together, whether among two or more people means there is teamwork involved. Teamwork refers to the cooperation and collaboration between the team members. Collaboration can provide a framework for bringing the heads together, organising their efforts, managing the process and producing the outstanding results. When each member of a team collaborates on a mission or project, each would be able to contribute his or her own strength, skills and knowledge, to ensure the best results for the project. This is why collaboration is very important compared to handling the project alone. Cooperation, collaboration and teamwork are essential to the survival of any organisation. Many realise that the importance of teamwork and collaboration may lead to the successful conduct of business.

In this case, there is a model for collaboration that was proposed by Ugwu et al., (1999a,b) as shown at the Figure 1 below. There are too many tools that are available in the market. But the most popular tools are listed below.

- a) Lotus Notes by IBM/Lotus Company
- b) Live Link by OpenText Company

- c) Microsoft Dashboard by Microsoft Company
- d) Verity by Verity Company

3. KM System Capabilities In Collaborative Environment

KM system capabilities in collaborative environment could be look closely from the acquisition and dissemination of knowledge among their communities of practice. The detail description of this involvement is discusses below.

Acquiring Knowledge

For the purposes of implementing the KMS in term of acquiring knowledge in collaboration environment, these are elements that adopted form Arthur Andersen (2000) involved processes and enablers such as described as below.

Processes – In order to make sure that the knowledge could be disseminate to the right people, time and place, there are some steps that suggested in the following that to be uses it. The steps are:

- Identify Knowledge (Determine sources and type of knowledge)
- Collect Knowledge (Gather and transform knowledge according to the specifications)
- Adapt Knowledge (Categories the knowledge)
- Organize Knowledge (Prepare and mapping knowledge into the specific requirements.)
- Store Knowledge (Keep and indexing the knowledge dynamically)

	Same Time	Different Time
Same Place	Face-to-face collaboration (Synchronous)	Asynchronous Collaboration
Different Place	Distributed Synchronous Collaboration	Distributed Asynchronous Collaboration

Figure 1: Collaboration model

- Enablers – Another elements that used for the process implementing this disseminating of knowledge involved some enablers so called soft side of knowledge dissemination. These enablers are described as follows.

i. Leadership

Involved the supporting and commitment from the management especially CEO, Chief knowledge officer (CKO) and other related level of management.

ii. Culture

Involved the process of intended to take challenges in term of sharing and working together as team, and willing to changes or reform for the benefits to all.

iii. Measurement

Involved the process of evaluation in term of audit trail and control as well monitoring the system and its relationship. Therefore the system will be operated smoothly according the requirement given.

iv. Technology

Involved the technical aspects like Intranets, Electronic Document Management System

(EDMS), Information Retrieval (IR), Relational and Object Database, Electronic Publishing System, Groupware and Workflow System, Agent Based, and Data Mining Tools.

b) Disseminating Knowledge

In the process of disseminating knowledge of KMS in collaboration environment, there are four types of technique as shown as Table 1 and that could be considered as synchronous or asynchronous or combination of it. These techniques are involved whether it could be done at real time or not at real time one.

Beside that, in the process of implementing this acquiring and disseminating of knowledge in KMS, there are some issues involved with regarding on this matter. These issues are described as follows.

- To determine the best way for approaching and acquiring knowledge effectively including motivating people to share knowledge and access through the system.
- To determine the good metrics for evaluating efficiency
- To determine the best way to perform a knowledge audit.
- To determine how people create, communicate and use knowledge.
- To determine more inclusive, integrated KMS software packages with the others.

Table 1: The process of disseminating knowledge of KMS in collaboration environment

Techniques	People Involvement
<i>Synchronous Technique (ST)</i> • Meeting room, • Discussion • Forum	Same time
<i>Asynchronous Technique (AT)</i> • Bulletin Board System • Notice Board	Different time
<i>Distributed Synchronous Collaboration (DSC)</i> • Video conferencing, • Tele-conferencing • Chatting	Different/same time
<i>Distributed Asynchronous Collaboration (DAC)</i> • E-mail, • Short Messaging System (SMS) • Voice mail , • Fax machine	Different time

The KMS implementation should be able to offers based on the following services:

- Open and Distributed

To make sure that the system could be integrated with the other system like groupware, EDMS, workflow system, and other services system by using standard protocols an application programming interface (API). This system should be able to be distributed over various host computers and physical locations, and also allow system administration from any location by using HTML, XML, Java applets or others that are accessible through any compatible web browser.

- Secure - To provide secure repositories and preserves security models present in existing knowledge silos where appropriate, while allowing access across the organization.

- Customizable - To make sure that system easy to customize by using software tool kits (SDKs) according to the user requirements.

- Measurable - To make sure that in term of user satisfaction, financial ROI investment, and effectiveness of business processes, ability to sustain innovation and changes, improvement through organizational learning, quantifying critical success factors.

4. A Proposed Model of Groupware Facilitation for Knowledge Sharing in a Faculty of HLI

There are three basic possibilities of how the HLI could be exploiting the KM ideas and principles. Firstly is the management of knowledge in term of student courses and others related with the academia program. Secondly is how to manage knowledge for decision support, to improve the internal document management and exploitation, to increase the level of information and knowledge dissemination. Lastly is how to make use the qualitative of change in the educational process itself. Generally, collaboration in a faculty of HLI could be involved people as listed below.

- Academician or lecturers - their roles are as teachers and become designers of learning experiences, processes, and environments. They concerned with identifying and then transmitting intellectual content and more focused on inspiring, motivating, and managing an active learning process by students.

Researchers – process or generates new ideas by doing research

- Administrators- managing all aspects of the higher learning institution task such as a financial management, security, students' registration and others.

The student – They are study, accept, review the knowledge at higher learning institution.

The sponsors- the agent who sponsors the students or researchers in completing their studies or research works.

They are working together, hand –in-hand, in their institution to achieve their aim and mission. In this case, there are three important goals of the KM system implementation in the HLI. The goals are to serve the community, and administration of the HLI's faculty. Below are some descriptions about the goals:

- Community

One of the most important objectives is to support and encourage interaction between the PHLI and local community. Both individuals and community-based organizations may want to investigate an issue, drawing upon the expertise of HLI's faculty and staff. HLI involvement includes diverse activities such as public presentations, guidance, research projects, and educational outreach. The use of the Internet is an obvious deployment strategy for the community and any underlying database design should support intuitive browsing and topic-based search capabilities. In fact, the Internet can extend the notion of "local" community to include a geographically dispersed intellectual community interested in the research and educational materials generated by PHLI

- Faculty and Staff

The HLI faculty and staff have a somewhat different set of objectives. The public higher learning institution is developing its research presence through graduate education, grants and funding, technology transfer, and scholarly publications. In a very real sense, this mirrors some of the requirements that face organizations such as consulting companies and industrial research laboratories. How can the public higher learning institution researchers find collaborators, facilities, and grant proposals that might support new projects. The Internet is allowing professional societies and other academic organizations to build online intellectual communities.

- Administration

From an administrative perspective, the HLI would like to promote community involvement and research activity. While these activities are not completely aligned, a knowledge management system could enable key administrators to gain insights into ongoing activities. Administrative capabilities should support the development of policies that encourage new projects and activities in line with the strategic directions set for the university. For example, community contacts and project outcomes could be collected and used to foster new community outreach initiatives.

The need to develop and maintain a knowledge management system (KMS) is common to many knowledge-intensive organizations. While the term "knowledge management" has become overloaded with different meanings, there is a need to develop specific strategies to capture and organize knowledge assets or expertise. HLI is a knowledge-intensive organization that could benefit from knowledge management efforts.

There are seven steps of critical success factors (CSF) to knowledge management process in the HLI. The steps are:

- **The identify stage** determines which core competencies are important to academic success. Every department needs robust knowledge about its pedagogical needs and expectations from its members, services and administration. An understanding needs to be developed to settle its place in the pedagogical world and in other organizational and environmental aspects such as research endeavors and consulting services offered by the department.
- The **collect** stage deals with acquiring the internal and external knowledge, educational skills, fundamental theories and human experience needed to create the selected core responsibilities and knowledge domains.

- The **select** stage takes the continuous stream of collected, formalized knowledge and assesses its value. Initially, one framework should be selected as the basis for organizing and classifying knowledge to be stored in the Knowledge Bank or Repositories.

Departmental memory resides in three different forms: in human minds, on paper and electronically. The **store** stage takes the nuggets of knowledge and classifies them and adds them to the departmental memory. Much of this knowledge can be represented in electronic form as expert systems. This is where even tacit, intangible knowledge assets are transformed to tangible one.

- The **share** stage retrieves knowledge from the departmental memory and makes it accessible to the users. Individuals, teams and departments often share ideas, opinions, gossip, knowledge & expertise in meetings held in person or through groupware.

The **apply** stage reclaims and uses the needed knowledge in performing tasks, solving problems, making decisions, researching ideas and learning. To reclaim just the knowledge, requires that the system understand the user's purpose and context. To receive the knowledge at the right time requires a proactive system that monitors the user's actions and behavior and determines his/her purpose.

- The **create** stage uncovers new knowledge through many avenues, such as observing students, student feedback and analysis, research, experimentation, creative thinking and automated knowledge discovery and data mining.

The features and a model of system configuration of Knowledge Management System (KMS) are also shown as in Figure 2. Among the functionalities at higher learning institutions are:

Electronic on-line document sharing including sharing of files, workflow diagrams, tools, procedures, manuals, best practices, and lessons learned etc. It is how students, lecturers, administrators, researchers and sponsors in the communities can share the ideas or communicate the new knowledge, learn and then can use it effectively.

Correspondence Handling and Tracking System (CHATS) for the management of all correspondence, complaints, enquiries etc. Here, students can communicate with their lecturers or sponsors regarding their studies or financial problem and other matters without having to arrange for the meeting and having to wait for quite a long time to meet face to face. Students also can discuss with each other synchronously, and they can grab the result of their discussion as fast as can.

- Extensive collaboration tools such as group and individual calendars, task and resource management, "to-do" lists, email, discussion boards, and on-line surveys. It is really important for the people in the public higher learning institution to plan, manage and collaborate with each other.

As for example, with the discussion board, the administrators can discuss with the academicians about the structuring of the courses, examination date, the date of students registration, salary scheme matrix (SSM) and others.

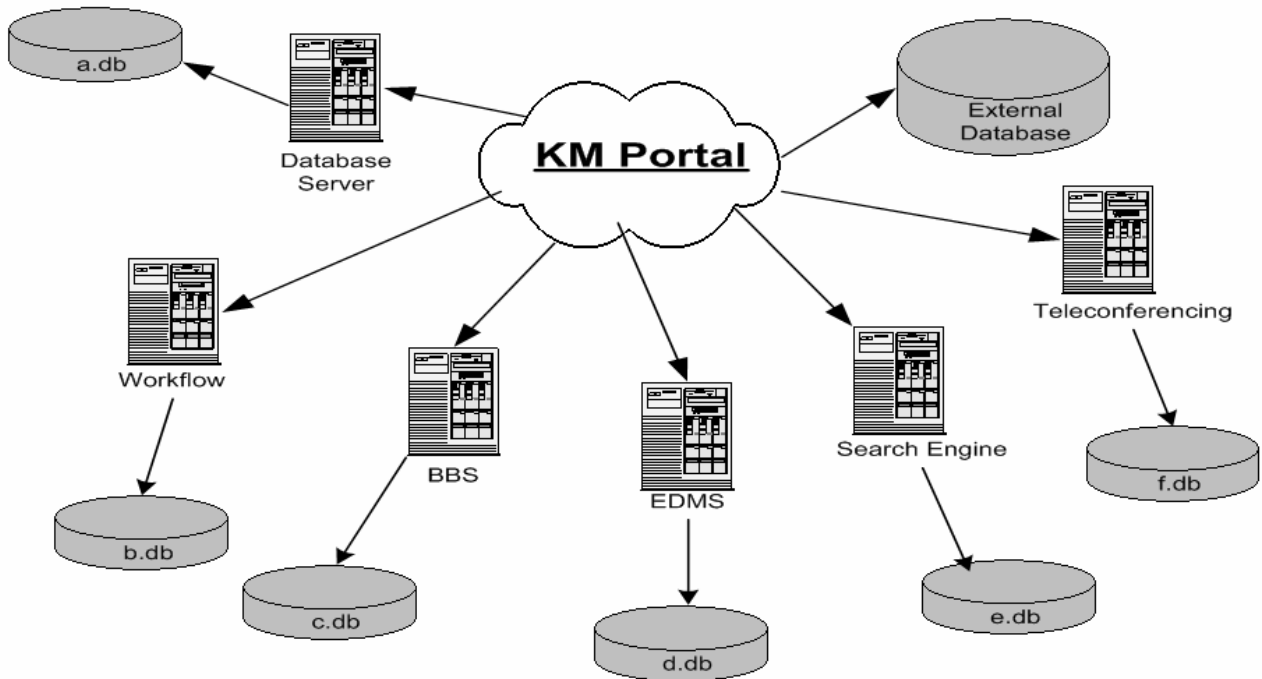


Figure 2: The KM System Configuration and Its Functionality For HLI's Faculty

- Various security features to ensure that information are only available to the people who need it. The password and login is only for the authenticated person in the public higher learning institution. Only people who have that password can access the databases or the information, such as only the students who are registered or in the class of a certain lecturer who are available and authenticated to access those lecturers' databases and website.
- Information retrieval through Search and Advanced Search to allow you to find any information simply and easily. Here, we can see that most of the public higher learning institution own their website and inside the website, it is provided with the searching tools. By typing words to be search in the searching box, it will bring us the information that is needed. It is useful for the students and researchers especially in completing their task.
- Flexible views so that each user can tailor the portal to meet their own requirements

Higher learning institutions nowadays have their intranet and can link to other information and institutions via the intranet. Knowledge management system that will be implemented must make sure that it can be link to others. For example, Lotus Notes is one of the knowledge management software that probably can be easily implemented in the higher learning environment.

5. Results And Discussion

Higher learning institutions do have a significant level of knowledge management activities, and it is important to recognize these, and use them as foundations for further development, rather than to invent a whole new paradigm. HLI and their staff must recognize and

respond to their changing role in a knowledge-based society. In order to assess the challenges that higher education institutions face in embedding knowledge management, we use Davenport's four types of knowledge management objectives as a lens through which to view higher education institutions: the creation and maintenance of knowledge repositories; improving knowledge access; enhancing knowledge environment; and, valuing knowledge.

The knowledge management system of the HLI, need its own framework. Current frameworks are may not suitable to the higher learning institution because it does not emphasis the role of human, technologies and the content development itself. Higher learning institution consisted of human who manage it, administrative, conductive research, and teaching and studying; consisted of the technology that is needed by the human to convey and distribute their content that is ideas of knowledge. It consists of the content development, which is the knowledge management process. The proposed model of knowledge management framework for the HLI is shown in Figure 3 below.

In this case, a prototype system by using Lotus Notes software has been developed as shown at Appendixes 1. This appendix will show the role of technologies in order to facilitate knowledge in term of acquiring and disseminating of knowledge in the HLI. In this case, the system also set up was based on HLI in a selected university in Malaysia. As a general concept or overview of KMS functionality as well its components in HLI environment, it could be viewed as shown in Figure 3 at below. This KMS development took into consideration the technical perspectives as stated in discussion in the literature review. Especially those was related to technologies, its functionality and the knowledge of both tacit and explicit or content development and as well as its implementation.

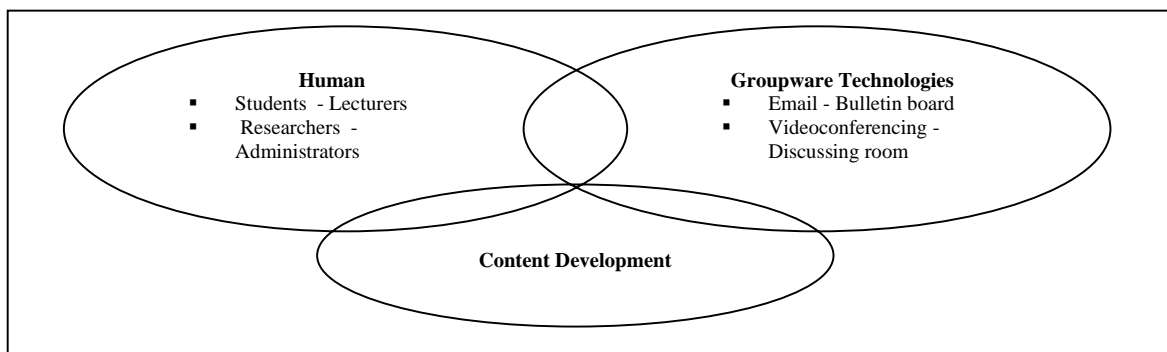


Figure 3: The System Components of Knowledge Management Framework for the HLI

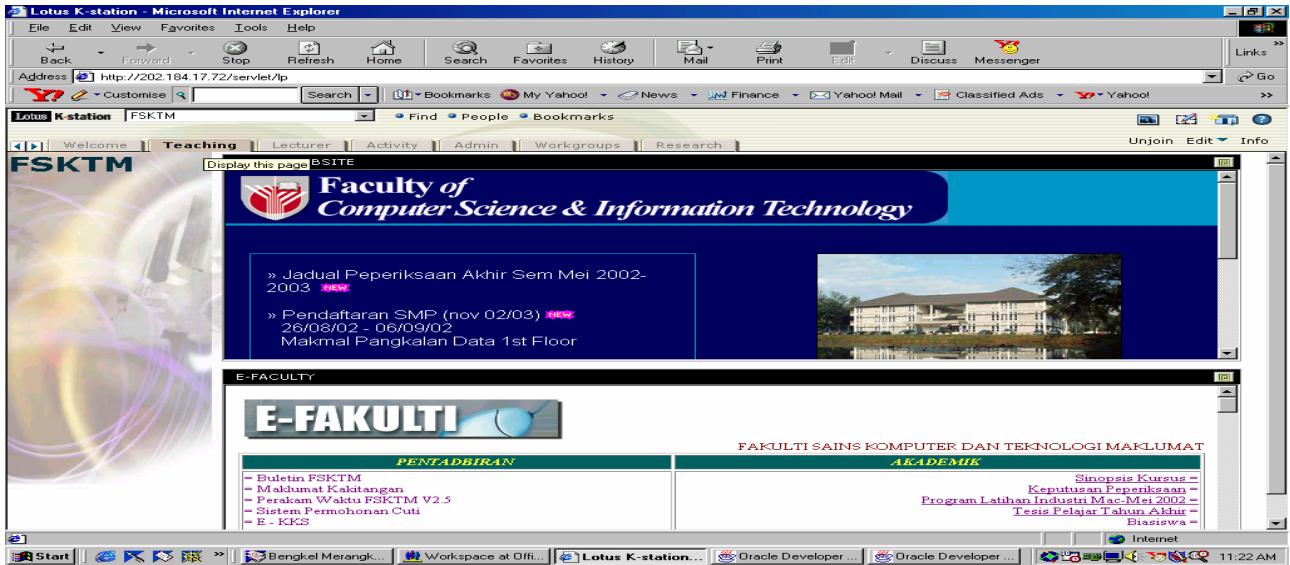
6. Conclusion

The groupware technological opportunities to improve interaction and increase collaboration are expanding rapidly. They will be seized by many organizations especially at HLI, whether or not they amount to 'knowledge management' according to an ideal definition. Knowledge management provides a rationale for managing corporate intranets capabilities, which are burgeoning. Organizations or HLI that do not deploy that rationale may more quickly experience information overload and other detrimental effects from intranets. However, organizations that pursue knowledge management policies are more likely to succeed if they complement groupware technological developments together with the development of collaborative strategies. The encouragement of employee-run networks or communities of practice seems to be one successful strategy, providing both employees and the company with rewards from knowledge management within their workspace.

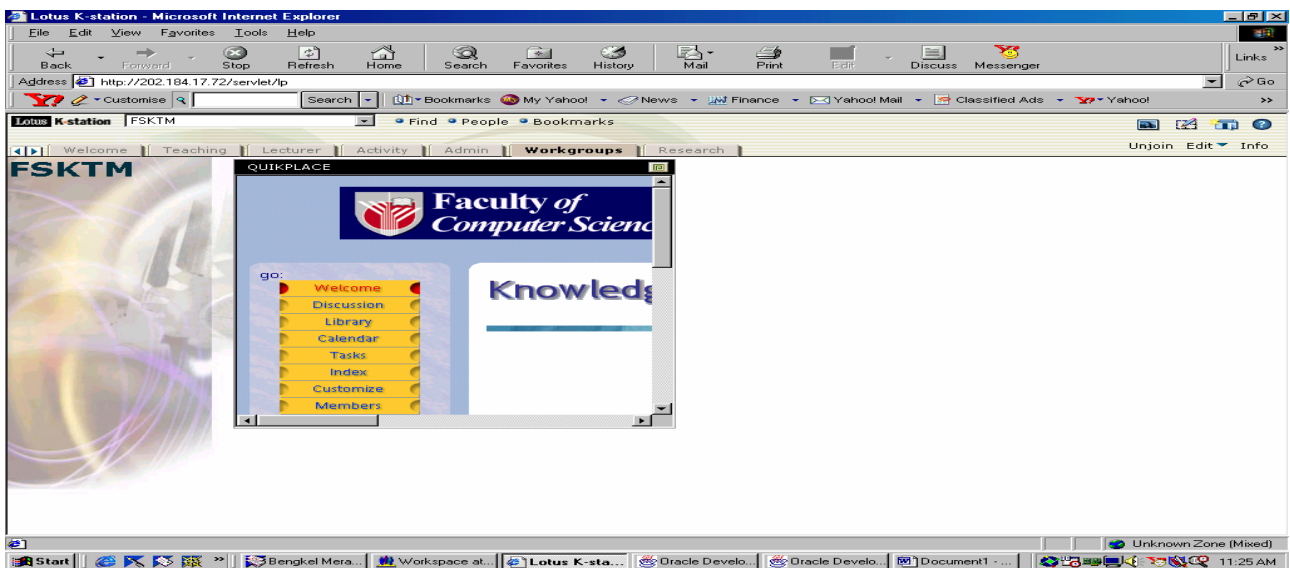
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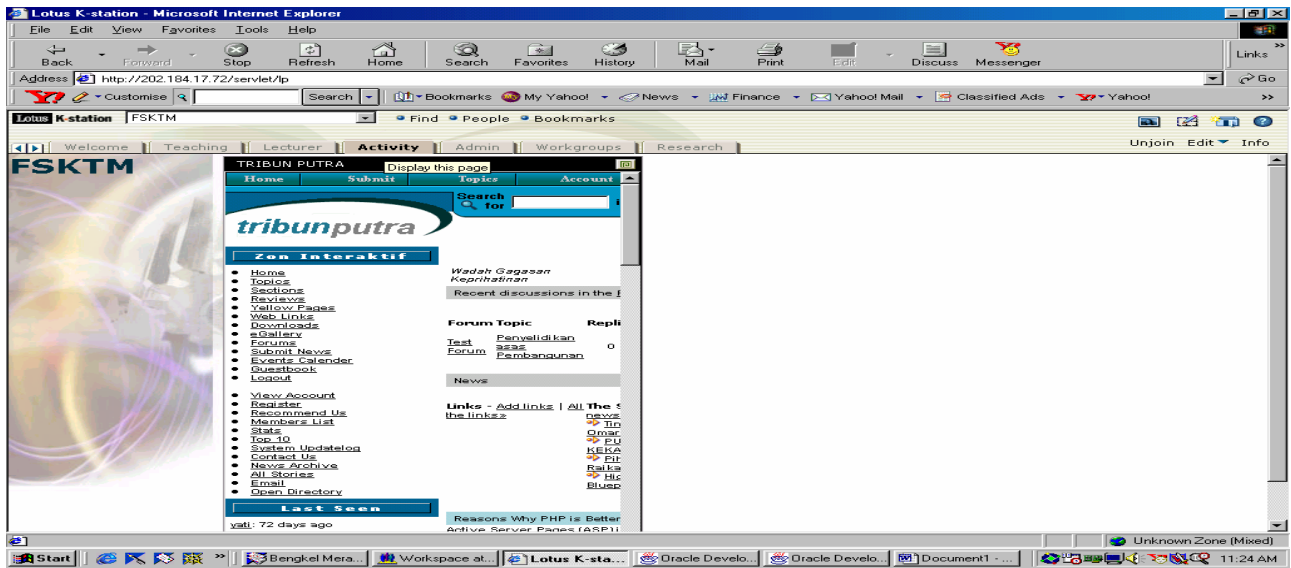
Appendix 1: The Example Interface Design of a prototype KMS using Lotus Notes at HLI



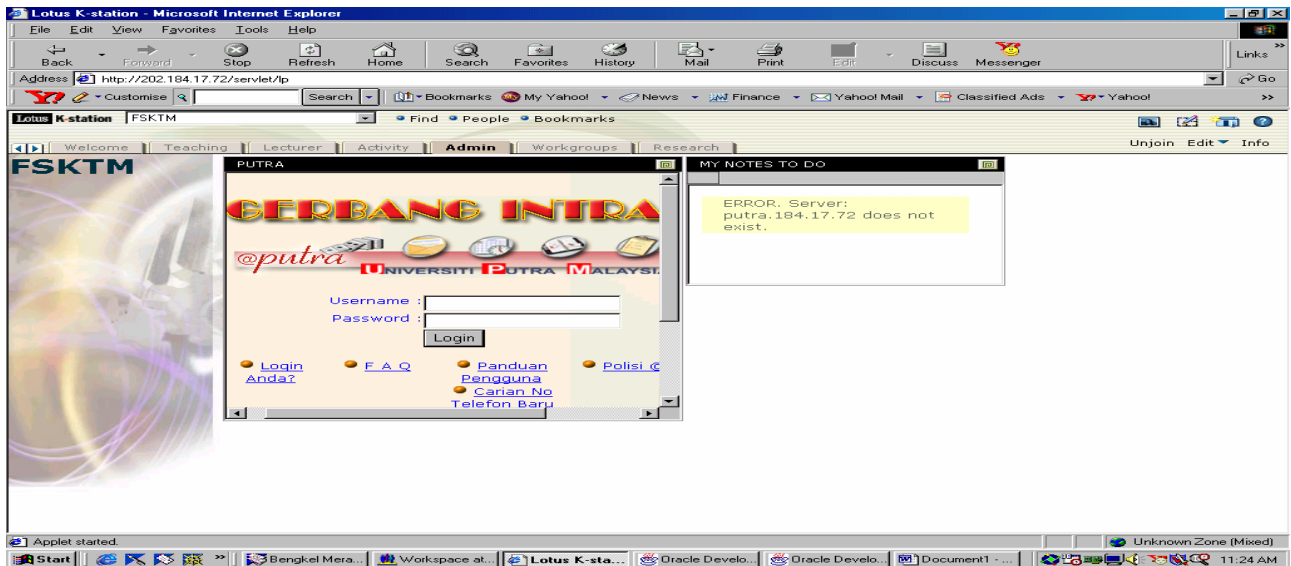
Example 1. Main menu of KM System for HLI as a central of desktop control



Example 2: An Interface of KMS for a portlet linkage for knowledge dissemination facilitation



Example 3: Another Interface of KMS for a portlet for knowledge acquisition facilitation



Example 4: An Interface of KMS for a portlet for community's communications facilitation