

FROM UNIVERSITY PORTAL TO KNOWLEDGE MANAGEMENT SYSTEM

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Abstract: *Quality has always been an essentiality of a university. With the development of IT, especially web technology, Web Portal has become a management tool, aiding university in utilising resources, gaining a competitive advantage in university education. This paper presents Web Portal as a knowledge management system, a technological solution for university in targeting true education.*

Keywords: *Web portal, knowledge management system, knowlege sharing, KMS, knowledge management.*

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1. INTRODUCTION

Nowadays, with technological advances, a lot of services are digitalised which facilitate improving service quality and planning developmental strategy of organisations. University, as an institution providing multidisciplinary educational services, is in the process of implementing university autonomy model. To achieve this, intergrating the three fields Education, Research, Application in an organic body is vital and demands many resources that are being wasted in administrative activities. In such case, shifting activities into digitalisation does not only enhance efficiency but also help manager obtain more accurate and timely information, therefore formulating management policy suitable with the rapid change in the market economy. With the development of web technology, from simple informational website, universities have built web portal, the conversational gate between university, learner and related parties, allowing them to participate in a system operation process as a form of quality guarantee. This paper presents an approach to developing university's web portal as a digital knowledge management system, a technological solution for university in targeting true education.

2. DEFINITION

Before discussing on web portals as an essential knowledge management system in the universities, this paper starts with some basic definition of knowledge, knowledge management and web portal.

2.1.1. Data – Information - Knowledge.

To have a precise definition of knowledge management system (KMS), it is important, first look at knowledge contents. Knowledge is derived from data and information. Data is a collection of words, numbers, observations or facts, which are not meaningful. Data can be converted to information when it is put in a meaningful framework. Finally, knowledge is derived from information, which has been validated to be true. Maglitta [1] suggests that data is raw numbers and facts, information is processed data, and knowledge is “information made actionable”. Chaffey and Wood [2] show the hierarchy in Figure 1, with the additional axes of meaning and value.

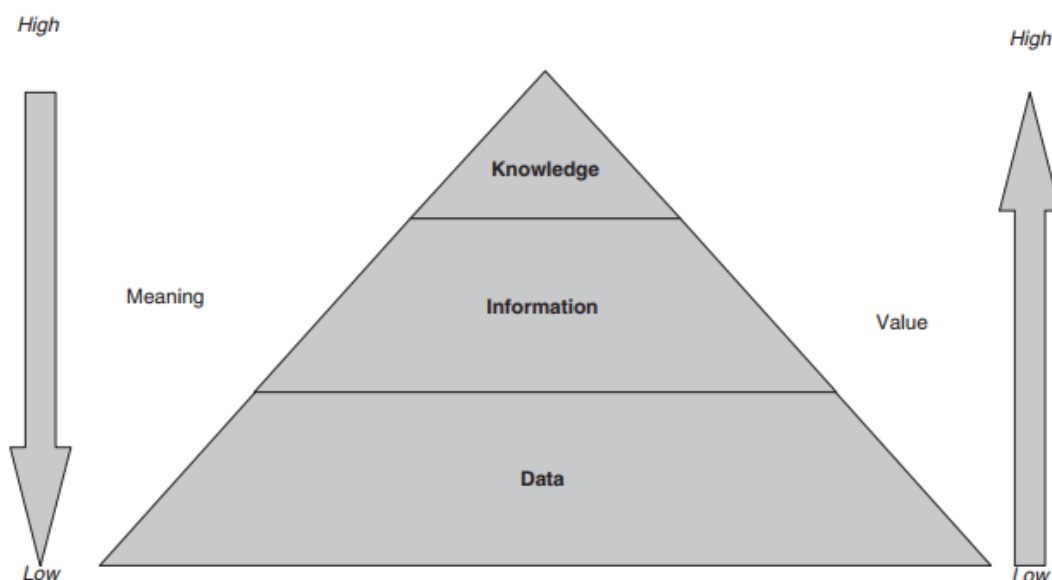


Figure 1. Data, information, and knowledge, according to Chaffey and Wood [2].

2.1.2. Knowledge Management System

The term Knowledge Management - KM first appeared in the early 1990s. As Kimiz Dalkir [3] - a top-tier professional in knowledge management - defined: Knowledge management is initially considered as a process of methodical approach to understand the organisation, managing and spreading knowledge through an organisation in order to improve productivity and reduce unnecessary tasks.

As Kimiz Dalkir [3] - a top-tier professional in knowledge management - defined: Knowledge management is initially considered as a process of methodical approach to understand the organisation, managing and spreading knowledge through an organisation in order to improve productivity and reduce unnecessary tasks. An important issue related to knowledge management is understanding and integrating knowledge. This means knowledge

is only valuable and useful when shared. Computer network, with communication and information-sharing features, becomes a suitable environment for effective knowledge management. Knowledge system is established in organisations to aid collecting, integrating and spreading knowledge. These systems, in practice, are Knowledge Management System - KMS. Benbya et al. [4] divided KMS into four categories:

- 1- Content management tools: These tools mix and group knowledge from different originating sources.
- 2- Knowledge sharing tools: These tools provide the facility for sharing knowledge among people or organization.
- 3- Knowledge search and retrieval system: This provides the ability to search and retrieve knowledge from the systems.
- 4- General KMS: These types of systems provide the requirements for knowledge management in the organizations.

2.1.3. Portal as a Knowledge Management System

Web portals are general KMS that provide the facility for organizations or companies to share, create, exchange and reuse knowledge. Portals support knowledge management processes. Considering the technology of the knowledge management system, a portal is a network service that collects information from many sources into a single access point that is personalized. Azarbarzin [5] highlighted the differences between the website and web portal, as shown in Table 1:

Table 1. *Comparison between Website and Web Portal*

TT	Website	Web Portal
1	Website is owned by an organization or center.	Portal is user-centric, which means that a user can organize and offer information and data.
2	The user cannot interact with a website.	The user and portal can have two-way communication or interaction.
3	Website is not an essential knowledge domain.	Portal is the gateway to specific or special knowledge domain.
4	The information and sources on a website are, rarely updated.	The information sources on a web portal are updated, regularly by the owner.

Among the above differences, it can be seen that the unique feature that governs all other characteristics of the portal is personalization. Personalization is reflected in both aspects: the functionality dedicated to the individual user and the knowledge content with which that individual interacts.

2.2. Portals support for knowledge management processes

The web portal for university students is essential to learning. It is also important for the university portal to be integrated with the university IT infrastructure, both internal and external. A university portal can be viewed as a single point, which provides comprehensive access to information on courses, data search tools, educational resources, interactive teaching materials, communication tools, etc. It can act as a gateway, to provide access to learning resources for experts, teachers, or researcher, and allow interactive access to online information, and to other students.

A university portal potentially offers other stakeholders a vital link into the university. The new, wonderful, and challenging aspect of Web management posed by portals is the idea of creating and managing knowledge systems whose primary purpose is to sustain positive relationships between an institution's stakeholders and the institution [6]. Portals also represent new strategic means of increasing a university's competitive position by fostering innovation and research activities that can lead to greater acquisition of grants and improved prestige for the university.

Portals also serve to empower individuals within a more broadly defined university community. By providing easy accessibility to both explicit and tacit knowledge as well as communities of practice, people are not constrained by geographic or other physical barriers in terms of communicating and exploring new knowledge. "The portal will improve the efficiency of knowledge exchange and deliver a set of shared business objectives that include communications around best practices, a gateway to research on the use of teaching and learning through technology, professional development, policy development and review and resource development" [7].

2.3. Conceptual portal framework

Goodman et al. [8] mentioned that universities consider three aspects pertaining to use of the portals:

1 - Systems integration: By increasing the use of the Internet, universities have tried to have a more integrated IT system within their campuses. In this way, universities can transform more effectively and offer more varied services to the campus community.

2 - Utilization of e-business technology: Universities and other educational institutions have done likewise. In some countries, some important processes in e-business have been developed by educational institutions to offer better services to the staff and students.

3 - Provision for a wider use of data and services offered by existing systems: The knowledge and resources in the existing information systems of universities could be useful if the students and lecturers have easy access to them. Portals can be used to facilitate access to the required information.

The main reason for using the portals: efficiency because of its ease of development, easily customized interface, rich functionalities, and pluggable architecture. When users face

a problem, they search the relevant portal to find a solution. Portal framework can provide benefits, but it is clear that no framework can provide solutions to all problems. It is important to understand the of technology used and the framework before starting the development process

Allan et al [9] identified 5 standard features to consider when selecting a portal framework:

- Integration with the existing functionality
- Easy to develop new functionality
- Programming language independence
- Standards to access content
- Standards for interoperability and portability

Figure. 2 presents the conceptual framework with the basic knowledge management system that includes some main components of a portal administration, decision support, document management, Web management, content communication, and programs [10].

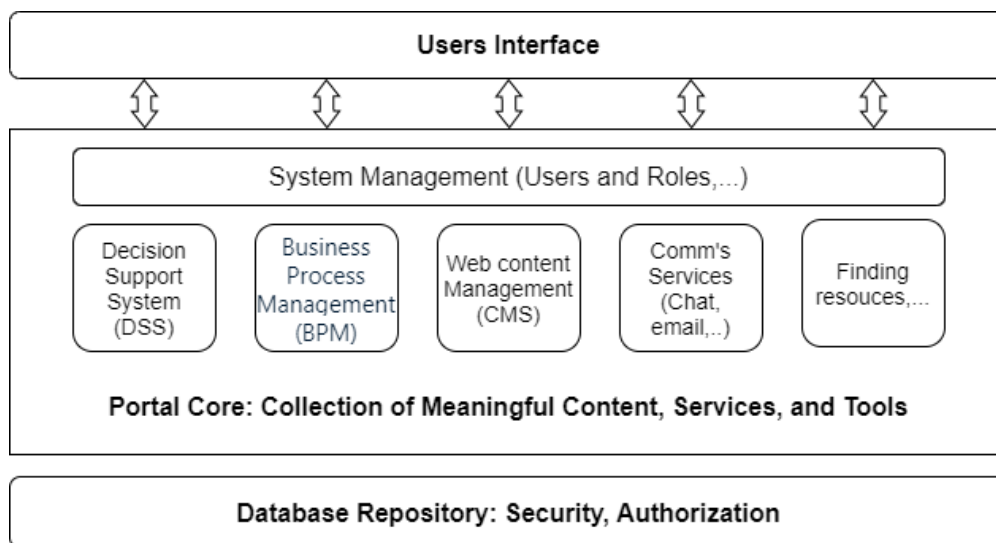


Figure 2. Conceptual Portal Framework [10]

2.4. Specification of some requirements of the University Portal.

Based on the characteristics and definition framework of web portal as a knowledge management system, we suggest some specifications for the aspects of university's web portal. These specifications are characterized requirements, guarantee stability and efficiency of web portal in the time of constantly and rapidly changing technology.

User Interface

- Web based: Responsive to popular web browsers such as Chrome, Firefox, .. Uses Unicode character codes.

- Install applications that have many frequent users on mobile devices using popular operating systems such as iOS, Android ,...
- User friendly interface. Restrict communication with users via symbols for internal use only, such as keys for entity.
- Data can be updated via forms or imported from spreadsheets. Reports can be printed directly in the web application and exported to Word, Excel or PDF files.
- User actions are minimized by maximizing automation. Uses the default based on context.

System Administration

- User logins only once for all applications
- Support storage access tracing, using system functions over time.
- Users are authorized to perform and only perform system functions corresponding to their rights and responsibilities.
- Users can and only can interact with data in accordance with their rights and responsibilities.
- Rights of system interaction (access to functions and data) change over time, according to user rights and responsibilities.
- Allow custom authorization of specific functions with corresponding data for each user group at the request of the school when needed.

Database

- Servers are installed to ensure high availability, minimizing the possibility of system interruption.
- Stored data must ensure integrity to guarantee system consistency according to the principle of “each event is only stored in one place”.
- The system is open, has a customization mechanism that allows the addition of new features, or modifications when there are changes in policy and business.

Business Process Management

The following management functions, as shown in Table 2, need to ensure that the business process requirements are based on legal documents, in accordance with the actual conditions of the university. The work environment is designed for every user involved, in accordance with their position in the management process. In each module of the web portal, there are reports to support decision-making in related fields.

Table 2. *Business Process Management in University*

Business Process Management for	System Management	Decision Support	Business Process Management for Staffs
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training management and learner support services	(User and Roles)	System (DSS)	
1. Curriculum Management			1. Office Management
2. Enrollment Management			2. Human Resource Management (HMR)
3. Training Management			3. QUALITY ASSURANCE MANAGEMENT
4. Examination and Evaluation Management			4. SCIENCE AND TECHNOLOGY MANAGEMENT
5. Progress Management			5. SCIENTIFIC JOURNAL
6. Student Management			6. COOPERATION DEVELOPMENT
7. Learning Management System (LMS)			7. Financial management
8. Library Management			8. Asset Management
9. Accommodation Management			

3. CONCLUSION

The quality of a university is not presented in the declaration of mission, vision and goals, but in the operation process of achieving such goals and undertaking the mission. Web portal, as a digital knowledge management system, fully and realistically reflect the operation of a university. As a result, web portal becomes a technical tool, proving the quality of the university. Technology is rapidly changing. Universities therefore have to constantly change their policy to suit the current practice and future development trend. The required characteristics of a web portal that this paper suggests are stable criterion for constructing a digital system, aiding university in sustainable development in a changing world.

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TỪ CÔNG THÔNG TIN ĐIỆN TỬ TRƯỜNG ĐẠI HỌC ĐẾN HỆ QUẢN TRỊ TRI THỨC

Tóm tắt: Chất lượng luôn là vấn đề then chốt của một trường Đại học. Cùng với sự phát triển của CNTT, đặc biệt là công nghệ Web, công thông tin điện tử đã trở thành công cụ quản trị giúp trường Đại học phát huy hiệu quả nguồn lực, đạt được lợi thế cạnh tranh trong giáo dục đại học. Bài báo này trình bày về Công thông tin điện tử với tư cách như một hệ quản trị tri thức, là một giải pháp công nghệ cho trường Đại học nhằm hướng tới nền giáo dục thực chất.

Từ khóa: Công thông tin điện tử, hệ quản trị tri thức, Web Portal, Knowledge Management system, knowledge sharing, KMS.