Building the Knowledge Portal for University Libraries in Vietnam

Loan Thuy Bui

Kha Sanya Minh To

University of Social Sciences and Humanities of Ho Chi Minh City
10-12 DinhTien Hoang, District 1
Ho Chi Minh City
Vietnam.

Abstract

Portal Knowledge is a high level system of knowledge management, promoting asynthesis of widely dispersed knowledge resourcesand individual connections in order to provide a "Gateway to knowledge".The purpose of the paper isclarifying the importance of buildingthe knowledge portal for university libraries in Vietnam. Analyzing the survey results of 198 websites of university libraries in Vietnam in 2015. Proposing open source solutions for designing knowledge portal for the university libraries in Vietnam.

Keywords: Knowledge management; Knowledge portal; University libraries; Open source solutions; Vietnam

1. Introduction

According to different approaches to the term "knowledge portal" (KP), some definitions have been given, such as a KP is "*a web site that aims to be an entry point to the World-Wide Web, typically offering a search engine and/or links to useful pages, and possibly news or other services*" (Denis Howe), or "*a web site that functions as an entry point to the Internet, as by providing useful content and linking to various sites and features on the World Wide Web*" (Random House Unabridged Dictionary), or" *A Web page that serves as an entry point or Gateway to resources and services*" (The Sun & Sun, 2002) [1].

In the current context of Vietnam, the aim of the websites of the university libraries just is to provide access to sources of knowledge, but these sources are limited to the internal information resources of the libraries. To meet the requirements for the comprehensive innovation of higher education as established by Vietnam's government, to increase the quality of human resource training, to give impetus for cause of industrialization and modernization; the university libraries in Vietnam need to strengthen transferring, storing, retrieving, integration, utilization of knowledge by timely providing accessibility to relevant knowledge sources to researchers, faculties and students. In many countries, the KP is rapidly involving into broad-based platform, becoming an effective tool to support knowledge workers solving their jobs, especially people working in agencies and organizations that are performing knowledge management functions such as libraries, information agencies, schools, educational centers, etc.

Generally, building the KP for the university libraries in Vietnam is necessary to support users access to dynamic information, from a variety of sources which have been processed by librarians in order to serve many different purposes of researchers, faculties and students. Those sources include various types of information as text, audio, image, and video.

2. Literature Review

KP, a type of portal which functions as a knowledge management system, is a single-point-access software system intended to provide quick, timely, and easy access to various sources of knowledge that allows deepening exploration of internal and external knowledge sources of the agency or organization creating it. So KP can be simply understood as a structured map leading to sources of knowledge.
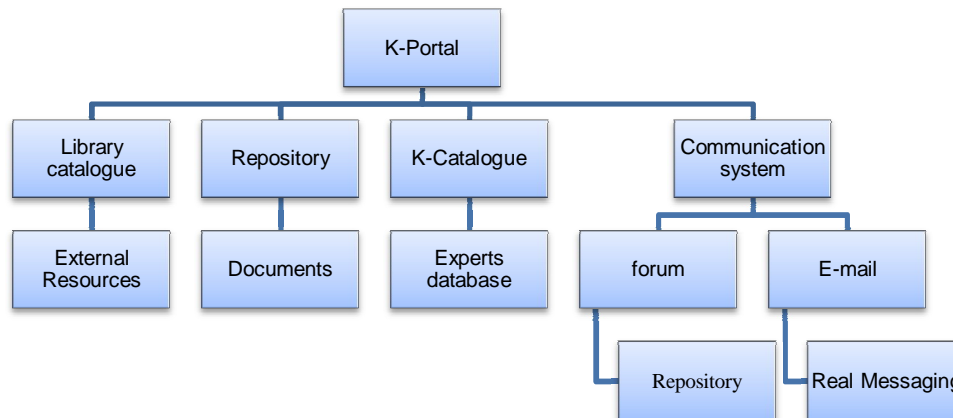
Components of KP:

Figure 1: Components ofKP*(Sharad Kumar Sonker and K.L.Mahawar, 2008)[1]*

Function of KP:

The functions of a Knowledge Portal may be divided into four main categories; process support, teamwork, document management, and personalization. While personalization concerns the entire portal, the other functions may be needed only in some areas of a platform. However, features like search or discussion should be available throughout any platform. [4]

Technology platform of KP[5]

❖ **Building up content**

To build up content in KP, the system requires many typical features, including; document management system integration, site creation wizard, really simple syndication (RSS) feeds, bookmarks and links, web clippings, static web pages, web application integrator, web services for remote portals.

❖ **Web 2.0 advancements**

Web 2.0 technologies not only bring exceptional experiences to users but also enable easier portal construction and administration.

❖ **Mashups**

A mashup is typically represented as a single web pagethat combines or mashes together data or content and tools from multiple sources. In technical terms, "mashup" is a lightweight web application created by combining information or capabilities from more than one existing source to deliver new functions and insights.

❖ **Organization collaboration (E-collaboration)**

Collaboration in KP is one of the main drivers for dissemination of knowledge. Collaboration features of KP system deliver an interactive web-based platform, providing users with more effective and cost-efficient ways of accessing information, sharing ideas, communicating and working together via a personalized composite portal.

❖ **Organization learning (E-learning)**

An E-learning environment helps libraries to increase cost efficiency of user training and also helps students to save their money and effort via online courses.

In September 2015, Google's search trend analysis tool shows that the keyword "Knowledge portal" is used more and more for searching for information on the internet, specially in the US and India.
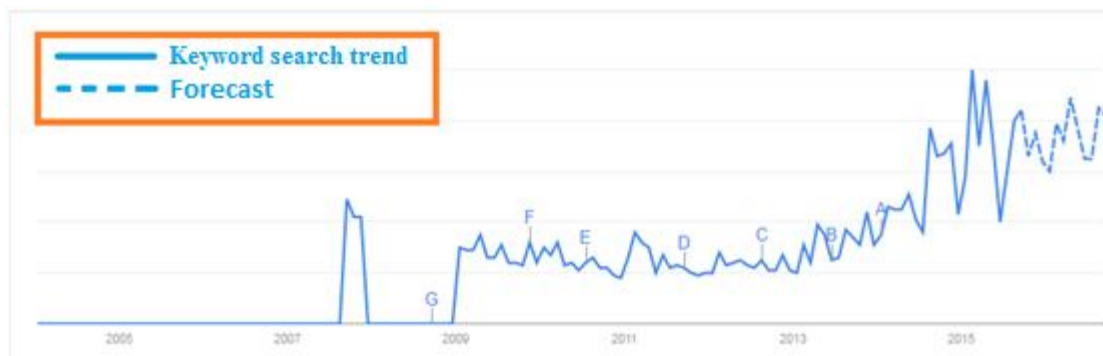
Figure 2:Trend of searching keyword "Knowledge Portal" on Google Trends [8]

The role of knowledge portal for the university libraries

For the university libraries, the KP is a access point to a library'sinformation resources, such as the library catalog (OPAC), databases, collections, multimedia sources, etc.The KPis becoming an increasingly important part of the information technology infrastructure ofthe libraries. The KP is not only a source ofknowledge but also anopen working environment with a lot of utilities,bringing higher work efficiency. With the KP, university libraries will be more capable of integrating vast intellectual resources within a central virtual space,thatresearchers, faculties and students can easily access via a web-based interface. The KP is also the tool which supports librarians performing their work tasks, such as creating, management, distribution and evaluation of knowledge sources, implementation of communications and interaction with users.

When accessing the KP, the users of the university library are granted access to available sources of knowledge and implicit knowledge sources that are not limited by geographical barriers, or other constraintsthatimpact the receiving and discovery of new knowledge. The KPalso providesstrong support for the library users' learning, research and work. The users are able to interact, communicate together, receive knowledge from other individuals anddistribute knowledge through utility applications. With the KP, teachers are able to distribute information (including notifications), lectures or materials to their students; the students are able toexploit and receive information or documents from the teachers andschoolmates; the individuals in study groupare able to exchange, collaborate with each other through virtual environment.

3. Research Methodology

By using survey method,the authors directly surveyed 198 university library websites in Vietnam in mid-September 2015. Based on the survey results, the authors analyzedthe accessibility to the library websites, bidirectional interoperability between library and users, multi-directional interoperability between users with each other; analyzed and evaluatedthe contents on the university library websites,recognized what kinds of needed information are required in order to integrate into the KP system. The paper also used secondary data ofscholarly documents, such as articles of journals, lectures, presentations, conference proceedings and information on the internetto identify the roles and advantages of the KP, demonstrate the necessity of building the KP for the university libraries in Vietnam and thereby proposing solutions for designing the KP forthe university libraries in Vietnam.

4. Data collection

Survey results of 198 university library websites in Vietnam Period:September 2015		
Survey objects	**Frequency**	**Percent**
- University libraries	198	100%
-- University library websites exist but are inaccessible	13	7%
-- University libraries are without websites	66	33%
-- University library websites are accessible	119	60%
--- Accessibility to administrative information	101	85%
--- Accessibility to announcement /internal event information	87	73%
--- Accessibility to internal collections	116	97%
--- Accessibility to external collections	86	72%
--- Accessibility to useful site links	89	75%
--- Accessibility to library and librarianship news	42	35%
--- Accessibility to current news	15	13%
--- Accessibility to specialized news	8	7%
--- Accessibility to opportunity information (jobs, scholarships, study abroad)	4	3%
--- Accessibility to sources of free software downloads	2	2%
--- Accessibility to forum	8	7%
--- Being able to use livechat tools	39	33%
--- Bidirectional interoperability between library and users	89	75%
--- Multi-directional interoperability between users with each other	8	7%

5. Results and Discussions

5.1. Survey results of 198 university library websites in Vietnam shows:

 - There are 119/198 universities providing accessibility to the library website, accounting for 60%. Among them,89 websites (75%) providebidirectional interoperability between library and usersthat mainly focus on the livechat, comments, requests feature; 8 websites(7%) providingmulti-directional interoperability between users with each other thatmainly focus on discussion forum features. However, the forumsare hardly used effectively, the posts mostly are "frequently asked questions" (FAQs), users ask - library reply, not seeing the information and knowledge exchange between the users together.

- Contents of knowledge on the websites of the university libraries in Vietnam is mainly focused on administrative information and information resourcesservingusers'learning and research needs,with little focus on other information needs. Specifically,the rate of library websitesprovidingaccessibility to administrative information is 85%;accessibility to announcement/internal event information is 73%; accessibility to internal collections is 97%; accessibility to external collectionsis 72%; accessibility to useful site links is 75%;accessibility to library and librarianship news is 35%;accessibility to current newsis 13%;accessibility to specialized news is 7%; accessibility to opportunity informationis 3%; accessibility to sources of free software downloads is 2%.

5.2. With the KP, Vietnam university libraries will get what? [3],[6]

- Dissemination of various types of information (events, reports, programs), knowledge, ideas, messages and data.
- Utilization of available resources to enhance the competitiveness and productivity of librarians.
- More effective implementation ofcontent management tasks, such as creating, collecting, storing, processing and dissemination of contents.
- Reduction ofthe time delay in handing out tools, caused by difficulties in contacting the relevant individual.
- Build up and development of a dynamic learning environment for the library users.
- The ability to share all internal documents, best practices, policies and procedures, expertise and experience of individual and external documents.

- Enhancement of the security of the contents, because KP allows access on the single platform which is protected to view or manipulate.
- Integration of various applications into the single database so that the relevant information can be obtained when required.
- Creation of a content browsing and searching structure, which will facilitate easy access to information for library users.
- Reduction of time costs, effort and money for libraries and library users**[5],[6]**

5.3. The necessity of investing in buildingthe KP for university libraries in Vietnam

The KP has many advantages but also requires significant investment, as suchVietnam university libraries need toconsider their capacity and plans for building it. The building and maintenance costsof the KP include the cost ofpurchasing modern technology and equipment, the cost of hiring experts, the cost of training users, etc.Building and using the KP typically require broad and deep understanding of technology and information literacy, because knowledge willbe concentrated and dispersed throughout the system. Besides, due to the KP's updating of content from many relevant objects, including administrators, librarians and library users,the system's management andcontent control can be highly complex.

Being a gateway to various sources of knowledge, diverse forms andrich content, the KP of university librariesisdifferent from the ordinarywebsites of libraries.The KP providesthe multi-directional interoperability between library and users, and between users with each other. With that basic difference, the KP supports the explorationand exploitation of the potential knowledge of the KP's user community,including the faculties, students, trainees,researcher.Thatknowledge can be circulated on the KP system without going through librarians.

5.4.Requirements of building the KP for university libraries in Vietnam

- The KP must contain all the basic features of a portal, including; personalization, content aggregation, content syndication, multidevice support, single sign-on, portal administration andportal user administration.
- The sources of knowledgein the KP must be abundant andsupport the library in meeting essential needs for learning, teaching and the researching and working of user community in the university.
- The sources of knowledge in the KPsystem must be organized logically so that users can easily access and use it.The structure of the sourcesmust be orientedandbe integrated via a capablesearch engine and other tools, whichhelpingusers to read and construe knowledge.
- The KP must be assured of the multi-directional interoperability between the users and the library and between the userswith each other.
- The KP must be open structure, easy to expand and capable of integrating applications to suit the changes in external conditions.
- The KP must be assured of data security for the whole system andfully equipped with hardware and software to prevent intrusion from the outside, it must back up data automatically and continuously, authenticate users.

5.5. Open source solutions for building the KPfor medium and small university libraries in Vietnam

Utilization of open source software is the technology solution being widely used because ofitsmany advantages. Open source software is available in source code form, free of charge and users are able to modify, improve, develop or upgrade according to some general principles stipulated in the licenses of open source software.

Building the KP for medium and small university libraries in Vietnamwill not require the use of commercial software. Some open source software can be used to build the KP, such as Matadot, Gluecode Advanced Server, Liferay Portal, Joomla, Moodle, etc.

The current solutions for buildingthe KP are focused on designs based on standard J2EE running on server system as WebSphere of IBM, or WebLogic model of BEA, or standard .Net (Dot NET) of Microsoft, or a combination of those. The solutions must meet therequirements for integration capabilities, high security capabilities, etc.

There are 3 ways to buildthe KP [10]:

1) Build the KP based on a specialized softwaresystem (APS - Application Platform Suite).
2) Build the KP based on using a resource planning software system.
3) Reorient information flows throughout an available portal which was built before.

5.6. Proposing a KP design for the medium and smalluniversity libraries in Vietnam.
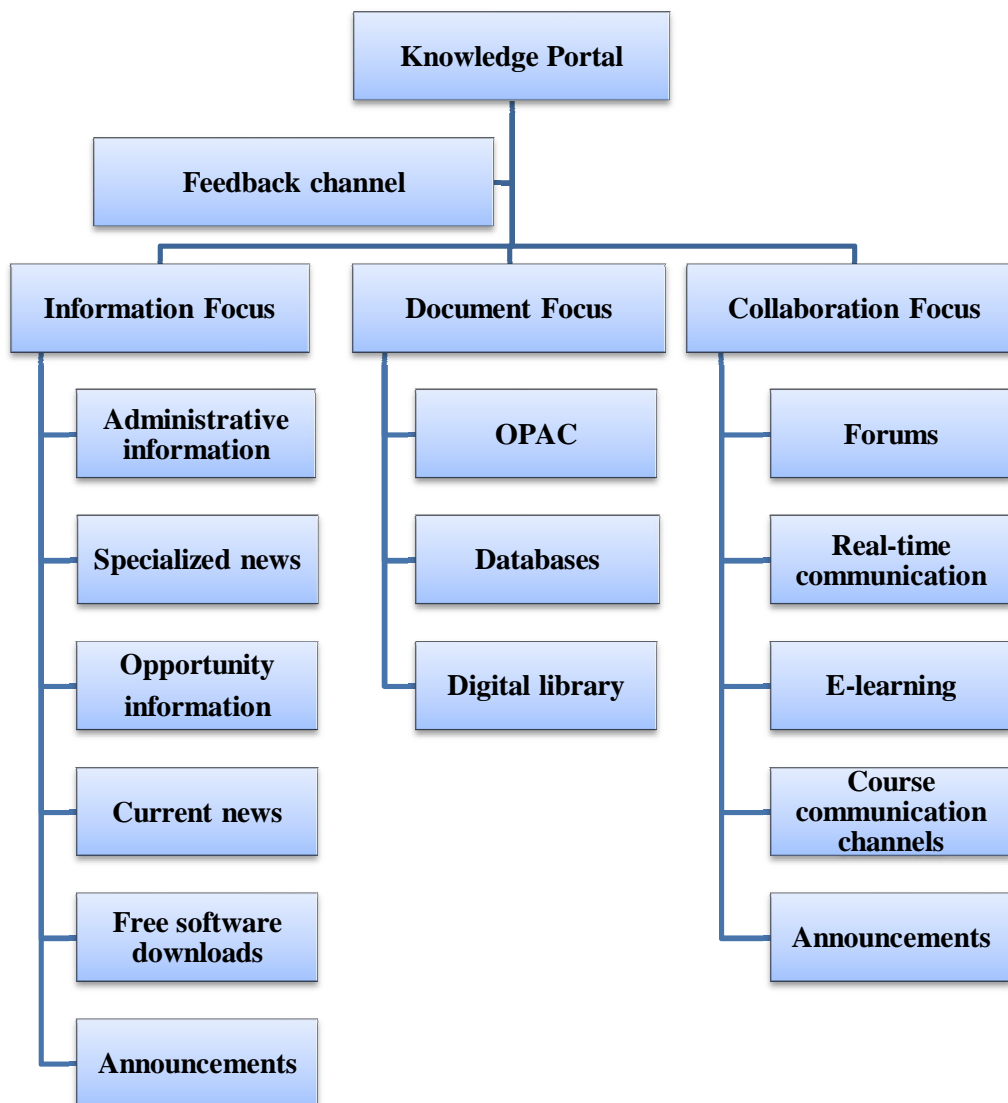

Figure 3: Knowledge portal model for university libraries in Vietnam

Description

Feedback channel

This is a channel to receive feedback and idea contributionsof the users using the KP, the channel records andrecognize users' needs and satisfaction. The feedback and contributions will be stored and transferred to the KP administrator. The administratoris responsible for regularly checking and replying through various channels. The feedback channel will be integrated into the main interface of the KP.

Information focus

- *Administrative Information*: Provides information about the organizational structure, personnel, resources, rules,images and contact details of the Library.
- *Specialized News*: Updates the latest news in the scientific fields related to the majors of the university.
- *Opportunity Information*: Provides information on scholarship opportunities, study abroad opportunities, full-time/part-time job opportunities for users who are studying at the university.
- Current news: Updates the latest news from the legal online newspapers by using the really simple syndication (RSS) feeds.
- *Sources of free software downloads*: Provides links to sources of free software or applications whichare popularly used and suitable.
- *Announcements*: Updates the common notificationsof library.

22

Document focus

- *Online public access catalog(OPAC):* Provides a search engine to support the retrieval of metadata ofthe library collections, locating the materials, determining the status, accessibility and usability of the materials.
- *Databases*: Provides accessibility and exploitation of electronic collections of the Library or other sources, including the internal resources of the library, the external databases which the library have paid for access andfree access databases on the internet.
- *Digital Library:* Provides accessibilityto the digital resources of the library. These digital resources are updated and organized according to specific criteria consistent with the conditions and habits of the usersof the library.

Collaboration focus

- *Forum:* Provides a online academic environment for faculties and students according to the majors of the university. The forum members are divided into groups, in each group, members can share information and knowledge for each other.
- *Real-time Communication*: Providesreal-time communication toolsfor users, such as live chat tools,chat/discussion rooms,messenger tools, etc.
- *E-learning:* Provides an e-learning environment, including online courses. This provides a high cost efficiency,especially for user training.
- *Course communication channels:*Creates an environment for communication between faculties and students in a course. Faculties can update the notification, upload the documents andgive the assignments to the students enrolling in the course. Theseare also channels thatdirectly support the course reserve services provided by the library.
- *Announcements:* Updates the notifications related to the collaborationfocus.

5.7. Choice of open source solutions

❖ **The information focus: Open source solution "Joomla"**

In addition to providing a variety of information sources, the information focusprovides the main   interface for the wholeofthe KP.The reasons for choosing Joomla:

- Joomlagreatly facilitatesthe buildingof a content management system and design web-based interface. Joomla is full of essential features for building the information focus, and those features can be easily utilized without requiring the designer to have professional skills.
- Joomla is open source software, highlystable, easy to install, customized andupheld, is highly secure, runs stably and has a lot of powerful extensions and available templates. Moreover, the user community of Joomla is also an important source of support for the designer to build the KP.

❖ **The document focus: Open source solution "KOHA"**

Koha is the first open source integrated library systemin the world, developed by a growing community of users collaborating to achieve their technological goals. As such, the features of Koha have evolved and are expanded day to day to meet the needs of its users. In library operation, Koha is built using library standards and protocols, such as MARC 21, UNIMARC, z39.50, SRU/SW, SIP2, SIP/NCIP, ensuring interoperability between Koha and other systems and technologies, while supporting existing workflows and tools.Koha's OPAC, management and self-checkout interfaces are all based on standards-compliant World Wide Web technologies–XHTML, CSS and Javascript – making Koha a truly platform-independent solution.Koha includes modules for acquisitions, circulation, cataloging, serials management, authorities, flexible reporting, label printing, multi-format notices, offline circulation for when Internet access is not available, and much more. The modulescan also be customized according to Koha'saccess permissions which are logical and flexible. Koha is an effective tool for building metadata databases and digital collections, controlling the quality of bibliographic records according to the MARC21 format, exporting, importing andretrieving data. [7]

❖ **Collaboration Focus: Open source solution "Moodle"**

Moodle is a software system that provides the solution to buildingan electronic learning environment, fully meeting the needs of designing a KP withacollaboration focus. The reasons for choosing Moodle:

- Moodle is a software that is encouraged for use in education in Vietnam,through Circular No. 08/2010/TT-BGDĐT named "List of free open source software encouraged to use in the education" promulgated by Minister of Ministry of Education and Training on March 1, 2010. This Circular encouraged theuse of Moodle for building theE-learning management system. Moodle is widely used in educational environments, not only in Vietnam, but also around the world. According to the statistical results, Moodle has been used for 83,687,447users of 67,941 sites in 223 countries and translated into over 70 languages. [9]

- Moodle is open source software, easy to download and use, it is free of charge and thus saves on the costs of building the KP. The open source provides deep accessibility to the source code and thus provides the potential for customizationwhen necessary.

- Moodle provides a full range of essential features for building the collaboration focus, such as forums, real-time communication tools, E-learning environment and other utilities, which can be used easily and conveniently. Moodle also helps to enhance community interaction, creatinga virtual space supporting for userson working and studying.

- Moodle has quickly become used across a broad range of organizations worldwide, such aseducation experts, computer professionals, software program designers, all of whom are Moodle's users involved in developing Moodle. The focus on collaborative efforts makes it easy to get support from the people who have been using Moodle for some time and provides access to their experiences, tips, guides, utilities, available codes, etc.

6. Conclusion

Building the KP for university libraries in Vietnam is necessary because theKPprovides access to a new kind the electronic information access and environment. The implementation of the KP represents a required evolution in the structure of university library websitesin Vietnam. Building the KP through open source solutions will greatly alter the methods of accessing, disseminating and sharing knowledge at the libraries. This will surely provide many benefits to its users, and increases the efficiency, exploration and exploitation of knowledge resources. In the future, the KP will be one of the driving forces that completelychanges the face of the university libraries in Vietnam and the way people use them. These positive changes will help libraries fulfill their role in the provision of knowledge and the facilitation of development in our society.

References

Sharad Kumar Sonker, K.L.Mahawar (2008)**. Knowledge Portal: An Innovative Approach to Libraries**. Presentation. India: Babasaheb Bhimrao Ambedkar University.

Claudia Loebbecke, Kevin Crowston (2012). **Knowledge Portals: Components, Functionalities, and Deployment Challenges**.Orlando, Conference Proceedings.International Conference on Information Systems.

D. K. Shrivastava (2014). **Knowledge Portal as a New and Innovative Approach for The Public Libraries in a way of Self Service Application: a Study of Offshoot Technology**. *Library Science,* Vol.3, No.6, pp. 106-110.

Goswami, Tarini Dev (2007). **Knowledge Portal: Challenges Before Library and Information Professionals**. Inflibnet Center. pp.107-115. At http://ir.inflibnet.ac.in/bitstream/1944/1031/1/11.pdf. Access on 03/01/2016.

Adolphus Minu. **Discoverying the value of Knowledge Portal.** Presentation. IBM Software Group. At http://www-07.ibm.com/hk/e-business/events/archives/downloads/governmentpitch_intranet_v2.pdfAccess on 03/01/2016.

Dr. Dan (2000). **Knowledge Portals.** At http://it.toolbox.com/wiki/index.php/Knowledge_Portals. Access on 03/01/2016.

About KOHA.Athttps://koha-community.org/about/. Access on 03/01/2016.

Google Trends. At https://www.google.com.vn/trends/?hl=vi. Access on 03/01/2016.

Moodle statistics. Athttps://moodle.net/stats/. Access on 03/02/2016.

Lê Thu (2004). **Portal: Lựa chọn nào thích hợp?**. PC World VN. At http://www.pcworld.com.vn/articles/cong-nghe/cong-nghe/2004/11/1186920/portal-lua-chon-nao-thich-hop/. Access on 03/01/2016.