



# The Impact of Digital Library (DL) in Academic Library Perspectives: A Case Study of University Tun Hussein Onn Malaysia (UTHM) Library

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## Abstract

Nowadays, the nature of Digital Libraries has been shaped to fulfill customer needs in order to reach the information. The traditional/classic library has gone steadily. This study focused on the impact of Digital Library (DL) in academic library perspectives. Furthermore, this study explores the issues and challenges of Universiti Tun Hussein Onn Malaysia (UTHM) library essential in establishing their digital content. These digital materials exist in different variants such as text files, digital sound and video and it's availability in dynamic or archival repositories. Conclusively, it is hope that DL has significant impact in order to establish digital resources.

**Keywords:** *Digital library, Universiti Tun Hussein Onn Malaysia (UTHM) library, Digital materials, Digital resources*

## 1. Introduction

At present, the higher education is experiencing extraordinary growth. This trend of education has primarily resulted of new enabling technologies that have facilitated the virtual delivery of academic programs in universities. One of the impacts led to the library becoming a key success factor in virtual academic environment. The emerging of digital libraries has conveyed a level of scholarly participants from many existing areas of research around the world. A digital library is really a very simple thing which content and provided through digital services. Visualizing the digital library is not easy as people or professional visualize. It needs to be integrated with the suitable system which could help libraries to capture the information insight. There are no walls, no shelves, no checkout lines and others. However, people or users want a digital library to be more like a traditional library. As librarians, we experienced that providing digital services is significant to the library users. Through survey and observation in UTHM library, for example, patrons like to use digital content because

it provides a consistent, easy to use, and also value-added experience. We could ask ourselves or library users how many digital libraries are easy to use as Yahoo®, Google®, AltaVista® and others.

## 2. Defining the Digital Library

There are various definitions about a digital library defined by scholarly and professional interests in digital libraries. Several definitions of digital library are available in the literature while such definitions complement each other and there are some counter arguments too. Digital library consists of a networked collection of multimedia information typically available in one location. It also consists of storage and communication, equipments with the content and software needed to reproduce, emulate and extend the services provided by conventional libraries based on paper and other material means of collecting, cataloguing, finding and disseminating information (Chowdhury & Chowdhury, 1999; Alireza & Behrooz, 2008; Mittal & Mahesh, 2008).

Recent technology also has stimulated new expectation about digital libraries. The digital library (DL) of the future will be ever-expanding systems, i.e. the content, the services and the usage modalities will evolve to meet new requirements and opportunities. It indicates that new technology and services provided by a digital library will be added to satisfy and stimulate the usage of the systems (Castelli & Pagano, 2003). In this definition, the elements in the construct subject or candidates for evaluation are:

- i. Electronic resources – digital data in any medium;
- ii. Technical capabilities for creating, searching and using information
- iii. Information retrieval;
- iv. Metadata and
- v. Community of users their information needs and uses.

To meet this definition, UTHM library needs to identify a major portion of library activities and to establish a digital library which is use technology support toward their collections. It is not undeniable that libraries today are using advanced technology to have an incredible impact to boost up the collections. Marchionini and Maurer (1995) agreed that the library has tremendous physical components such as space, equipment, and storage media. It also has intellectual components such as collection policies that determine what materials will be included and others. Still, there has been tremendous progress in adapting new technologies in UTHM library since a digital library has established globally.

## 3. Related Work

As discussed earlier, digital libraries (DL) began to appear on the campus in the early 1990s. UTHM library started to shift and develop a digital library in early 2004. With the huge funding and financial support from the University, UTHM library launched the project phase by phase. Information Technology (IT) Librarian was involved in initial phase, which focused on digitization technology, data management, digital preservation and video streaming. Borgman (1999) supported that digital library are viewed as databases of rich content which consists of full text image, or combinations of media and representations. Bawden and Vilar (2006) revealed the evidence from

such studies which suggests that the typical expectations of digital library services are:

- i. *Comprehensive* – include everything;
- ii. *Accessible* – everything immediately available;
- iii. *Immediate gratification* – speed our response;
- iv. *Following of data* – seamless;
- v. *Ease of use* – single interface; and
- vi. *Multiple formats* – text, images, sound and others.

These capabilities are certainly not expected from “Conventional Libraries”, for example, not all services in UTHM library in digital based. Realizing these capabilities, library management characterizes this experimental project as the “Digital Library Concept”, exploring new opportunities and developing new competencies. With this knowledge in mind, library management suggests that DL project needs to be enhanced with embedded current technologies.

As these projects mature and led the way toward practical library implementations, UTHM library began to take more central role and responsibility. With the advancement of the Internet, people expectations in accessing information are highly increased. It is no longer practical or acceptable for people in travelling to a specific library at certain hour to get information. Based on survey and observation which conducted by UTHM library, indicated that library patrons are not satisfied with library services. Patrons expect the request materials to arrive in front of the doors, which library could not offer from any location, at any time and from any device. This scenario is unfeigned and other countries already offer these services. This is the main objective that UTHM library must fulfill. Notwithstanding, patrons in digital library would able to:

- i. Access to the holding of libraries worldwide through automated catalogs
- ii. Identify and locate a physical and digitized version of scholarly materials
- iii. Maximize searches on the Internet, commercial databases, and library collections
- iv. Accessing digital content or locate additional items of interest.

All of these capabilities are available from desktop to others web devices such as Personal Digital Assistant (PDA) and mobile phone, which patron can customize by his or her information requested. However, UTHM library is still in the early stages of establishing a digital library.

#### **4. Establishing Digital Library (DL) in UTHM Library**

Recently, libraries such as public library, academic library, children's library and others were operational based on their activities and planning. UTHM library's activities are based on the following principals which involved free access, information skill classes, services improvement and others. Free access (i.e. Internet) is one of the core values of libraries around the world. It's like a heart which more important to users to retrieve needed information. Therefore, access can be divided into two ways which are widely accessible and narrowly access. Widely access involved of every document should be delivered to every individual or person without

cost. Narrowly access refers to every each document should be available to every individual or person with reasonable costs collected (Saarti, 2005).

A library should have basic collections for its patrons which can be used for free and at the same time library should provide access to other documents which is not in its own collections. The traditional way of borrowing or loaning materials took a long time to of loaning and return books and loaned books were often misplaced or even damaged. Furthermore, through new digital technologies it could help patrons and make this kind of services possible and become easier. According to Falk (2003), some of the most revealing insight about the digital future comes from experience of academic libraries. All the scholarly journals play a central role and it has been sweeping transition to electronic journals and available in other digital collections. One of the core process involve in UTHM Library's is serial materials. It consists of printed and electronic materials, providing access to different types of online (databases and portals) and information services (information searches, teaching and patron consultation). The growths of information which UTHM library must specialized and try to find appropriate strategies to guarantee the best services for their patrons.

There are several issues creating effective digital libraries poses serious challenges are listed as following:

#### *4.1 Technical Architecture Issue*

The technical architecture issues are most important underlies in any digital library system. According to the survey by Yao and Zhao (2009) reveals that most of libraries create their own integrated searching system to provide gateway services which include searching/browsing database of electronic resources, cross searching systems of bibliographic databases or other databases (i.e. Common interface, authentication, logon, user's profile and etc.). In spite of that, libraries need to enhance and upgrade their current technical architecture to meet digital contents. The architecture will involves components such as:

- i. High-speed Local Area Network (LAN) with fast connection to Internet;
- ii. Upgrade version of relational databases that support a variety of digital formats;
- iii. Full text search engine to provide access to resources;
- iv. Variety of servers (i.e. Web servers, FTP servers and etc.) and
- v. Electronic Document Management (EDM) function that could help overall management of digital resources.

To overcome this issue, UTHM library's take steps to upgrade ILMU system from PERINTIS to Sirsi Dynix system. The process of upgrading the library system is hopefully will support the management of library collection in efficient ways.

#### *4.2 Digitization Issue*

Digitization is another issue central to the development of digital libraries. Bansode (2008) defines digitization is the conversion of an item, which in printed text, manuscripts, image, film and video recording from one format (usually print or analogue) into digital. As we know, from Library of Congress to academic libraries,

public libraries, special and organizational libraries, digitization today is part of the routine work of many libraries in the world. Liu (2004) reveals in his study that one third of academic libraries and a quarter of public libraries are involved in digitization efforts. However, many of these libraries do not have policies but some of them have to control the format and execution of such efforts. Lopatin (2006) suggests that project team needs to determine if the materials to be digitized warrant the time and expense of transferring the digital files to new formats every few years as technologies change. Therefore, the libraries need to decide or identifying what parts of a collection can be digitized.

To overcome this issue, UTHM library has created a group of digitize team which consists of four staffs to support digitization process. There are a number of materials need to be digitize such as exam papers, UTHM publications, newspaper cutting and etc. Supporting with the latest technological scanning device in the market, the digitization process was become easier.

#### *4.3 Library Automation Issue*

For decades, libraries have used the catalogue card to seek and find all materials in the library. It is so hard and takes time to retrieve the information needed. In 1990s, libraries started with the process of automation early are not necessarily those that have successfully completed the process. Dawson (2004) in his study notes that the digital library content needs to be search engine friendly. The use of MARC catalogue record in the library system might store several different forms of a title, but it is searchable collectively via a single title index. The use of dumb terminal like DOBIS/LIBIS could cause the library users or patrons do not enjoy seeking the materials. Therefore, with the new development of the library automation in the market, library users can interact with other people using search engine. Based on the issues occurred, UTHM library should dares to change their system as to ensure better services and support to their users. By implementing a new library automation system, users or patron could use the search engine without restriction. It is just simply the same with anyone who typically uses Google®, AltaVista®, Yahoo® or any other search engines on the Internet.

#### *4.4 Preservation Issue*

Many of the library trends and challenges surrounding digital libraries are corollaries with these basic library principles. Preservation is one of the important activities and also become one of the largest challenges to the library. Altman (2006) notes that archivist face with a new paradigm in the digital age, which both hardware storage media and software file format are constantly evolving into digital. A study done by Cleveland (1998) shows that the integration of digital media into the traditional collection will not be straightforward such as video and audio tapes because of the unique nature of digital information. The preservation of these materials is less fixed, easily copied and etc. Hamilton (2004) in his study argues whereas the preservation of printed materials harbors several specific and well-known problems, these issues differ from those encountered with digital materials, where there exist many technical issues, ultimately solvable by technical means but with few standard solutions available.

UTHM library is also confronted with these issues as discussed by Altman (2006) and Cleveland (1998). To overcome these issues, UTHM library at the same time need to

reformatted objects (i.e. video and audio tapes) in order to ensure that no intellectual significance of information is lost during reformatting process. All the reformatted materials such as video, audio tapes, DVD, VCD and others need to be kept in isolation room with the controlled. The isolation room must be free from dust, germs and others controlled by the humidifier and also must be clean and properly managed.

#### 4.5 Copyright Issue

Copyright is also an issue in digital libraries. The problem for libraries is that, unlike private business or publishers that own their information. UTHM library cannot simply keep information without permission and notice as UTHM library does not own the copyright of the materials. Even more, UTHM library digitize and keep the information for internal references only to their users. It is unlikely that UTHM library may simply or freely digitize all the information. A study done by Ang (2001) stated that once the copyright owner had authorized the making of copies, the further dealing with the legitimate copy is subject only to some further exclusive right of the copyright owner. Therefore, libraries have to develop functional mechanisms as to manage their copyright, which allow libraries to provide information without violating copyright.

To overcome this issue, UTHM library should use internal references by sharing and distributing the copyright information. The students outside the campus are not allowed to access because of copyrighted information was blocked by firewall. Therefore only the students who access within the campus or in the library can get the copyright information.

### 5. Key components

In order to developed and maintain digital contents, several functional requirements and key components must be fulfilled. As shown in figure 1, the development of digital library involves the following elements are listed below.

- i. Initial stage conversion of content from physical to digital;
- ii. Creation or extraction of metadata or indexing information about content to facilitate searching and discovered the digital content;
- iii. Storage of digital contents and metadata in appropriate multimedia repository in digital library;
- iv. Client services for the searching and browsing;
- v. Content delivery via file transfer (FT) or media streaming;
- vi. Patron access through a browser or dedicated client; and
- vii. A private or public network access.

To interoperate with the existing library infrastructure, the digital library must be designed to work with existing catalogs standards, formats, and protocols. Therefore, these digital components must be personalized to capture, encode, and deliver information according to the standards adopted by the libraries. It is because of the fast technological change, some standards are concrete and some others are emerging.

Another study done by Abdullah and Zainab (2007) taken new approach which introduce by Fuhr, Hansen, Mabe, Micsik, and Solvberg (2001) as shown in figure 2, involves four major dimensions in framework examining digital libraries, namely data/collection, system/technology, users/uses and usage

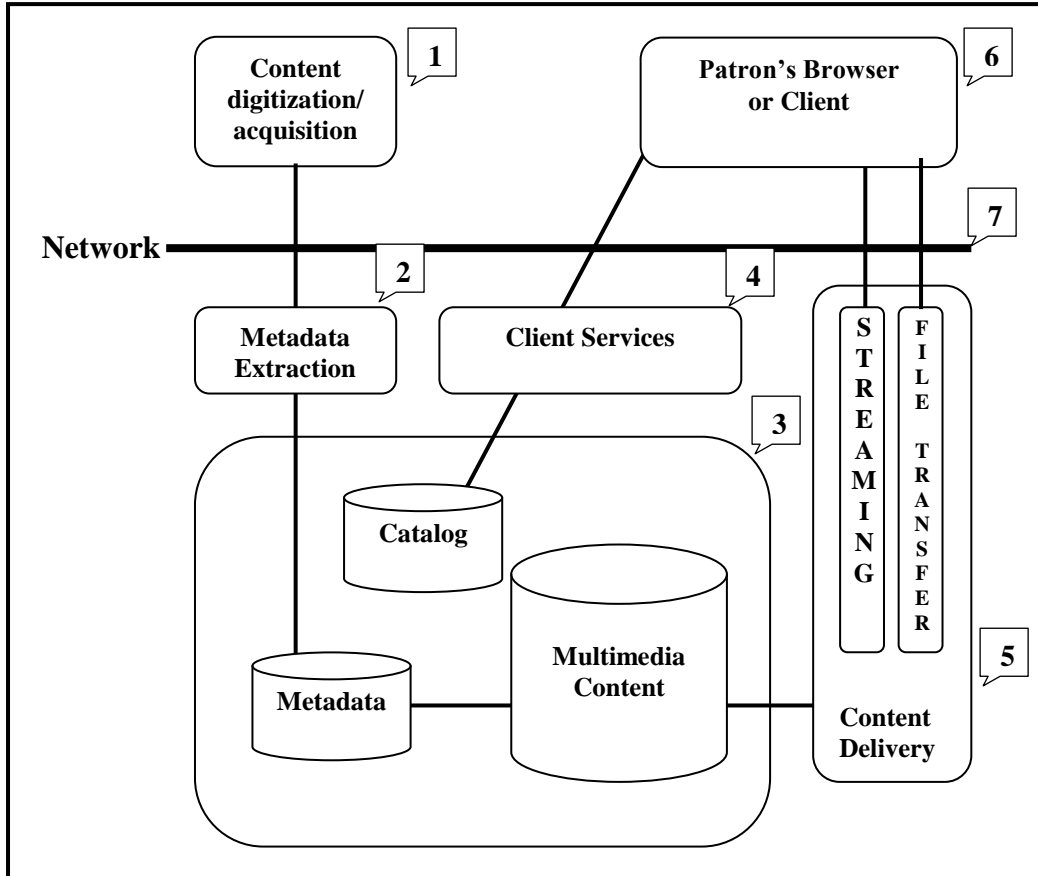
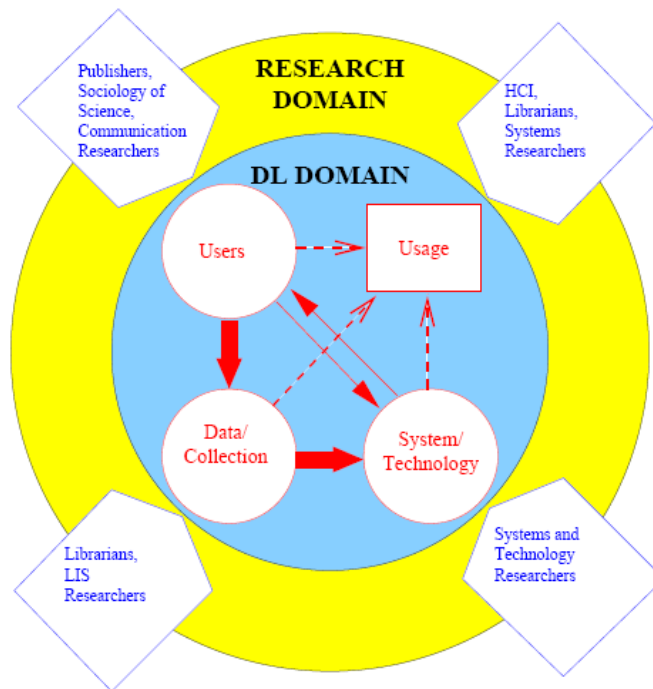


Figure 1. Functional components of a digital library in UTHM Library



Source: Adapted from Fuhr, et al. (2001)

. Figure 2. A generalized schema for a digital library

## 6. User expectations of digital libraries

It is not easy to convert conventional libraries to digital libraries. Librarians must implant their skills and experience in handling digital materials. The entire requirement (i.e. hardware, software, skill and etc.) must be add and develop to become a digital library. User expectation is one of the major concerns in the library especially in providing services. It is because users put higher expectation to the library, which they hope that the library could provide services anytime they want. Therefore, usability of the system needs to be measured whether the system could help users regarding what they need and don't. Ferreira and Pithan (2005) indicate that the approaches focus on the user's problems using the library and on the production of meaning, pointing out the efficiency of the information recovery depends on the integration of the results with the user's life.

A previous study has been conducted by UTHM library reveals that users or patron points to the existence of various feelings during information searching. They put a demand to retrieve needed information using the library system but users can feel the anguish and uncertainty accessing the system via the Website. Tamaro (2008) in her study reveals the priority uses of digital resources are the OPAC catalogue, online databases and electronic journals. For example, users in UTHM library also mainly use the online catalogue (OPAC) and the online databases as well as electronic journals (e-journals) and audio visual materials. The impact of digital resources give largely advantages to the digital library such as the speed of access to digital resources, huge number of digital resources available and personalization. All of these can make user put their expectation to the library higher, which library users want to be more independent in conducting or searching information need by their own.

Designers must aware that digital library utility is measured by getting more sophistication from users. To make DL services more helpful, designers have to learn and study more about users' needs and try to fulfill them. For example, in designing user interfaces, designers need to investigate from the users whether DL interfaces are designed in a user-friendly manner. It is because only users may have interaction with the interface of the systems provided by the library (Kani-Zabihi, E., Ghinea, G., & Chen, S. Y., 2006). The author reveals in his study that in order to establish digital library, the online system is part of it and very important things to be considered. Therefore, librarians and especially users need to know how to hits and use the systems provided by the library to retrieve needed information at anytime, anywhere.

In the related previous work of Stelmaszewska and Blandford (2004) undertook a study in order to understand better people's interaction and their needs in the context of a traditional and physical library. The results of the studies showed that the first attempt at finding information in a library was to search the OPAC by the title keyword. Whilst, users need to be familiar with a physical library environment to find information that they are searching for.

Through all studies that have been done by scholarly researchers and professional shows that only expert user of digital library (DL) are more successful at finding information needed rather than non-expert users. Thus, it's supporting views that DL design has to take into account the IT skills of the users.



## 7. Conclusions

Libraries around the world have been working hard facing the digital library issues and challenges. With the several years experience librarians discovered that, they should seriously focus on legitimate copy and digitization. It is not an easy task for the libraries (i.e. UTHM library) to establish a digital library without embedded current technology. From the reviews, we can conclude that the key of library services to the remote users are universal and must be addressed to meet successfully the needs of patrons. In order for UTHM library establish a digital resource, several points must be considered which are:

- i. UTHM library needs to have more online resources including electronic journals, full text database, digitized collections, e-books and others.
- ii. UTHM library needs to have an effective method to reach document delivery services if the students are accessing resources that not available in online.
- iii. UTHM library must have an online assistant in any format such as online tutorial, online references, emails, and other online resources that enhance student's information literacy.

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