

**PART 1:**  
**LIBRARY SPACES: *REMODELED AND***  
***REORGANIZED***

## Chapter 1

# Managing the Transformation to a Library for Today: Bringing a Vision to Reality

Tomalee Doan  
Purdue University, USA  
[tdoan@purdue.edu](mailto:tdoan@purdue.edu)

Hal Kirkwood  
Purdue University, USA  
[kirkwood@purdue.edu](mailto:kirkwood@purdue.edu)

Linda Rose  
Purdue University, USA  
[lrose@purdue.edu](mailto:lrose@purdue.edu)

**Abstract.** *The Roland G. Parrish Library of Management & Economics at Purdue University underwent a 4 year 3 phase renovation into a cutting edge, student centered learning and collaborative space. It was transformed into a 21st Century library space that has impacted the university in a number of ways.*

**Keywords:** Academic Library, Business Library, Renovation, Collaborative Space, Student-centered

### 1. Introduction

In a climate where peer institutions were closing business libraries, our goal in creating what would become the Roland G. Parrish Library of Management and Economics was to transform a traditional library into a space that reflects today's students' expectations, facilitates new teaching pedagogies and supports a variety of learning styles. The design and services of the new library would also be influenced by the ever-increasing amount of information and variety of means by which it is disseminated. Before renovation, the two floors, 31,500 sq. ft., Management and Economics Library (MEL) housed a large print collection including bound journals, books and government documents; study tables; and a circulation/reference service desk that stood at the entrance.

### 2. Strategic Planning

We initiated the project that would span from 2008 until 2012 by meeting with the deans and head of the School of Management to learn what each faculty member was working on and how our collections and space could best support their needs. We also held discussions with Library staff, conducted benchmark studies with other peer libraries, administered student and alumni surveys, and ran faculty and student focus groups in order to determine how our user groups would want to use the space. The responses to our inquiries and a desire to support the University and Library's strategic goals guided our vision of a student/learner-focused renovation strategy. We had also learned from our stakeholders that a multi-functional space would best suit their needs as they would like to use the space for both collaborative and individual study, relaxing, and group meetings. These quotes from the student focus groups summarize their attitude toward the existing library and make obvious the dramatic change we came to realize would be needed:

“Like I’ll go up there if the drawing room is pretty crowded . . .”

“I use MEL [the management library] for a lot of studying, not so much for information.”

“For me, zero [use]. I don’t really like it.”

We began the strategic planning of the renovation by creating a task force comprised of Libraries and management school faculty. This group created a white paper calling for a user-centered 21<sup>st</sup> century library and stressed the importance of the management library working as a dynamic partner with its constituents. The new library would foster information literacy by providing access to and delivery of information to its constituents, regardless of location or time, while providing training and guidance to its users in the access and use of all information sources. These goals were based on what we had learned from the student surveys as well as student and faculty focus groups and visits to recent library renovations at Ohio State and Penn State. Doan and Kirkwood had directly participated in the Libraries strategic planning process giving them a clear understanding of the Libraries future direction. We strengthened our knowledge and understanding of effective and innovative space design by attending the Maya Design’s User Interfaces for Physical Spaces and the *Library Journal* 1st Annual *Design Institute: The Changing Design Landscape for Libraries*. The strategic plan states that the Libraries envision themselves as “. . .leading in innovative and creative solutions for access to and management and dissemination of scholarly information resources, and for the provision of information literacy and the creation of leading edge learning spaces, both physical and virtual.” Learning remained of strategic importance. In the Libraries annual newsletter, Kirkwood explains that the library “is no longer just a repository of information, but a place where learning, exploration and knowledge creation takes place.” (Kirkwood, 2012). We communicated our vision through grant applications, donor visits, fundraising, tours, and presentations to the Library Dean’s Advisory Council and to the Undergraduate Libraries Council.

### **3. Process Management: Focus on our Customers**

We knew that to support the Libraries strategic goal of establishing relationships with cross campus units, effective collaboration among a number of diverse entities would be necessary for the success of our project. Sometimes breaking down departmental silos was necessary. In order, for example, to provide all of the technologies included in the renovation, it was necessary to bring together for the first time three separate groups involved in campus technology: University Information Technology (ITAP), School of Management Information Technology (KCC) and Libraries Information Technology (ITD). In addition to working with contractors and architects throughout the entire four year process we had to work with University entities, including the University Project Manager and University Purchasing, to make sure these external parties followed University building and budget requirements and procedures.

During Phase 2, we opened up a dialog with the Undergraduate Management Advising Office to provide space within the Parrish Library for their leadership Communication Center. We made a conscious decision to try to become more integrated into the lives of the Management student and the culture of the school. This has been a tremendous success for both parties by providing a new premium space for the Center and for driving a different stream of traffic into the Parrish Library.

We determined that the sweeping transformation that the goals established for the renovation would require could best be managed through budget reconsiderations and collection management strategies. The easy, anytime access that our respondents requested could be addressed by increasing the digitalization of Libraries resources which would render unnecessary the large floor space of the present library. To help generate the funds that would increase the usability of the retained library space, a portion of the original floor space was allocated to the School of Management for its undergraduate advising offices and to the Department of Agricultural Economics for study space and graduate student offices. Budget concerns also made impractical the renovation of the entire management library at one time. We believed that a phased approach would alleviate the immediate cost while allowing our vision to have a physical reality that could serve as a model for all to see and would also allow us to analyze the space for its successes and problems before designing the next phases. As we hoped, phase one of the project attracted the interest of donors, and, Roland G. Parrish, a Purdue Krannert School of Management alumnus, did in deed step forward and earned the privilege of having

his name attached to the exciting new space. Doan chronicles in an article for *The Bottom Line* the year long relationship she and the Libraries dean had with Parrish (Doan 2012). Following Parrish's acknowledgement of the importance the library had to him during his academic career, he was given a tour of the completed phase one. In *American Libraries Journal* Pamela Goodes says of the library, "It is the first major Purdue entity named in honor of an African-American alumnus. Parrish, president, CEO, and owner of Parrish McDonald's Restaurant LTD, a chain of 25 stores in north Texas, provided a \$2 million leadership gift to support the \$4.2 million renovation project" (Goodes, 2012).

The LearnLab, included in phase one, was the perfect classroom for new pedagogical styles. It contains a work station for each student, large monitors and dry-erase white boards for collaborative work. A digital copy camera enables students to take pictures and thus save their work on the white boards and an instructor's podium allows for control of the room's three large multi-projection SmartBoards. Parrish faculty librarians and staff provide instructional training and support to departmental faculty utilizing the LearnLab. In keeping with the strategic goal of maximizing access to library resources, an electronic sign hanging outside the doors shows when a class isn't scheduled and it may be used for individual study. The LearnLab was made available to all schools and departments on campus for scheduling classes and other instructional sessions. As a result, an increasing number of departments and courses from across campus utilize the space, from entry level courses such as General Studies 175 to upper level management courses (MGMT 415). Organizational leadership, technology and nursing are also among the disciplines represented.

#### **4. Information and Analysis**

The increasing availability and demand for digital resources allowed us to downsize the print collection. After determining the research and curriculum needs of the Schools of Management, Department of Agricultural Economics, Hospitality and Tourism Management and Consumer Science and Retailing, some of the print collection was deselected and the little used and quickly dated reference collection eliminated. Based on usage and demand, much of the collection was transferred to a nearby compact storage area in the School of Management while more highly circulated items remained in the library. To insure that the needs of our users were quickly met, a twice daily delivery service for requested print materials located in compact storage was implemented. The needs of our user groups were also addressed by incorporating meeting rooms into our plans. Phase 1 has a Financial Conference Room with a large corporate style table, ergonomic chairs and technology that allows for easy video conferencing. Phase 3 includes the Hollister meeting room that accommodates smaller, more intimate classes such as those on the PhD level.

In addition to using circulation statistics to help determine where print materials would best be located, data analysis informed other decisions made during the process. We designed the ensuing two phases of the project to accommodate the students' need, as indicated in the surveys, for 24 hour access to the library space. In "Solving the Information Workflow Tracking Dilemma," Doan describes the necessity of using concrete data in making service decisions (Doan, 2006). MEL utilized FootPrints database to help determine library usage. Data from the existing library showed that libraries services were little used after midnight—what was wanted after this time was primarily a place to study and meet with groups—so services were curtailed at this time. To meet the challenge of keeping the space open without staff present, lockable covers were installed on the general collection and reserve book shelves. Large, lockable drawers at the service desk make it easy to store lap tops and other library materials, and pull down gates installed in the ceiling made it possible to close off designated areas. A 24 hour, unstaffed space also presented a security issue. We worked with campus police toward a unique resolution. Members of the student security patrol, trained by campus police, would watch over the space after libraries services ended. These students carry two way radios to communicate vandalism and other types of information to the police.

We also used student data in selecting furniture styles for the renovated space. The surveys and focus group told us that students wanted to use the space in a variety of ways and wanted it to support the many current technologies they would be using. Kirkwood describes the importance of technology to library space design, "Technology changes the way students learn and the way teachers teach, which is why learning spaces are changing to meet new curricula and the way

today's students learn and want to learn.” (Kirkwood, 2012). In response to student requests and in recognition of the importance of technologies, we chose furniture styles that best served these purposes. Plugs for laptops were scattered throughout the space as well as a laptop locker for storage and recharging. In another area of the first phase, MediaScapes (large monitors) are located at D-shaped tables with laptop plug in's to facilitate peer to peer sharing and collaborative study. High stools and tall tables were placed near the café area for relaxing, checking email and having a snack. Instead of traditional enclosed study rooms, high-backed, u-shaped bench seating was placed around moveable tables to provide a degree of privacy in the open space and facilitate collaborative study. Quick stop, stand up computer stations were installed near the library's entrance where students could do a fast check of email or the Library's catalog. Once the project was underway, we continued to solicit student input by placing an array of furniture options in the library for students to actually test and rate. Their responses guided our discussions with the furniture manufacturer who was willing to work with us in designing furniture that suited the students' needs.

## **5. Human Resource Focus**

Along with the goal of serving our users' needs, we wanted a space that would best allow both Libraries faculty and staff to carry out their strategic roles. We used FootPrints to track the number and type of question that came in at the service desk. The collected data not only showed that libraries services were little used after midnight but that most questions were directional or required only basic reference skills. Doan and Kirkwood explain why in “The Learning Commons as a Locus for Information Literacy” the traditional, one-shot instructional session is no longer the best way to introduce library resources: “It is more effective to use the library's time and resources in embedded librarianship, information literacy for-credit courses, partnership in curriculum development to create appropriate assignments using resources, and co-teaching class sessions” (Doan and Kirkwood, 2010). To free up faculty to serve as embedded librarians in specific courses and provide business information literacy instruction, we determined that they didn't need to be physically at the desk as they had been in the old model of customer service. Instead of library faculty spending time at the desk waiting for users with questions who may or may not show up, we implemented a reference triage system. The staff and graduate assistants, who work at the new service desk, called the iDesk, have reference training and are trained to direct those with more complex questions to the subject faculty librarian who can best assist them.

Staff member job responsibilities and operational roles as well as the changing faculty roles were also considered in the renovation. Rather than enclosed offices, desks were located in an open area to facilitate collaboration. Break out rooms with large monitors were installed adjacent to the faculty work area to allow for small group meetings. The staff duties that had been associated with the large print collection were replaced by responsibilities that were appropriate for the transformed library. These included supporting users of the LearnLab and meeting rooms by scheduling these rooms, assisting with the technologies in the rooms, and cleaning the now more frequented space. Following the attrition of some staff members, position descriptions were rewritten to better reflect the technology and service skills required in the new library. Acknowledging the importance to our users of the Libraries virtual presence, a digital reference queue dedicated to the Parrish Library allowing users to email, instant message, or text message their questions was purchased. Support staff members as well as faculty provide DigRef service.

## **6. Service Results**

With its blending of formal and informal learning spaces and support of information literacy and current technologies, the completed Parrish Library has become a prototype for redesign of library space across campus. The LearnLab has served as prototype classroom and impetus for IMPACT (Instruction Matters: Purdue Academic Course Transformation), a cross campus movement that has as its goal to redesign foundational courses based on student-centered pedagogy ( [www.purdue.edu/impact](http://www.purdue.edu/impact) ). Doan summarizes the meaning that the Parrish Library has had for Purdue University in VOLUME: “Libraries' spaces, designed in collaboration with campus partners, are serving as incubators to pilot new active learning experiences and environments” (Doan, 2013).

The rapid growth of IMPACT courses has led to some of them being scheduled in the LearnLab while space at the large and popular Hicks Undergraduate Library has is being repurposed to include IMPACT classrooms. Results of a survey of students who had taken a course in one of the new style classrooms indicates their view that the innovative design and technologies of the classroom addressed their learning needs and encouraged their engagement in the course. (See Appendix) An Active Learning Center, which also blends library and classroom spaces, is being planned for the center of campus. The cross campus popularity of the Parrish Library has unexpectedly led to its being sought out as a site to hold events. The LearnLab has naturally become an often requested location for instructional purposes, but the more formal Corporate Study room, designed for quiet individual study, has tables and counter space for serving that have made it a popular event location. A sampling of the events that have been held at Parrish illustrates the diversity of groups from both campus and community that the space serves: Entrepreneurship Boot Camp for Veterans Workshop, Science Bound Freshmen, PU Parents Committee, and Society of Minority Managers.

In a 2011 article Doan and Kirkwood cite the results of student surveys that demonstrate the popularity of the LearnLab and the positive affect that this type of classroom environment has on learning:

Preliminary assessment of students who have taken classes in the LearnLab has been extremely positive. Surveying over seventy-five students produced the following reaction to the LearnLab space:

- 91 percent felt that it was different from any class they have been in.
- 80 percent considered it an exciting room to learn in.
- 79 percent believed the room allows for more collaboration
- 89 percent considered it an environment conducive to learning
- 95 percent would like other courses in the LearnLab.

A student focal group participant, when asked what the new library would have to offer in order to compete with other, larger libraries on campus, responded, “. . .the library’s got to be really out there. It’s got to be this awesome looking place where everything is there.” The visual appeal of the completed Parrish Library fulfills this student’s vision. [insert image]In contrast to the enclosed spaces of the original library, the space is open and filled with light. Rather than the clutter of signage, color is used to demarcate the usage zones—a vibrant red glass tiled column leads the visitor to the service desk while bright green highlights the café area. While the space is impressive, perhaps the most convincing proof of its success is that the renovated library has more than doubled the user rate of the original.

The April 2012 dedication of the Roland G. Parrish Library of Management & Economics culminated a long but rewarding process that began with the 2005 white paper: Customer Derived Vision for the Management and Economics Library. We learned much about management as we addressed the complexities of conceptualizing the project and bringing that vision to fruition. To summarize the innovative ways we solved problems and met our goals for the space:

**Addressed budget difficulties** by developing a three-part phased approach to the project, relinquishing library space to generate funding and cultivating relationships with donors.

**Overcame the obstacles inherent in making resources readily accessible** by moving away from print to digital resources, eliminating entrance security and replacing with pull down gates to allow for 24/5 access to the space;

**Created new workflows** freeing faculty from the service desk, revising staff job descriptions and training staff to support the learning-centered space.

Our leadership in designing the Parrish renovation has been acknowledged across campus. The learning space was so well received by the provost office that it is being used as a model for future class rooms. Doan was invited to participate in the redesign and development of those spaces and serves as a member of the campus wide IMPACT steering committee. Kirkwood and Doan have provided leadership in the library field through scholarly articles and presentations on learning spaces during the duration of the project, which are included in the references below. Quotes from our users, posted on a bulletin board in the Parrish Library, vividly show the success of our renovation project:

“Awesome new space”

“Futuristic. . . love it!!!

“I think I found my new favorite place to study.”

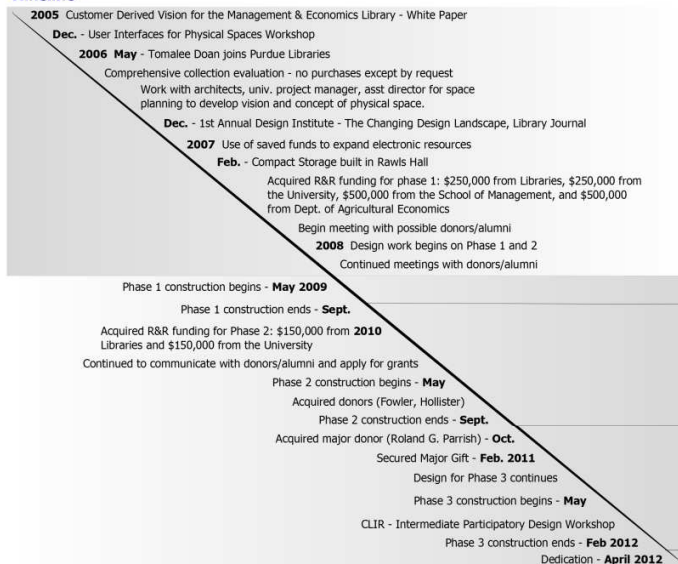
“Looks like an Apple store at night”

## 7. Appendix

### Reconceptualizing and Renovating an Academic Business Library: The Parrish Library of Management & Economics

Assoc. Prof. Tomalee Doan  
Assoc. Prof. Hal P. Kirkwood Jr.  
February, 2012

#### Timeline



**Total project:**  
**\$4,200,000**  
**18,000+ sq ft**

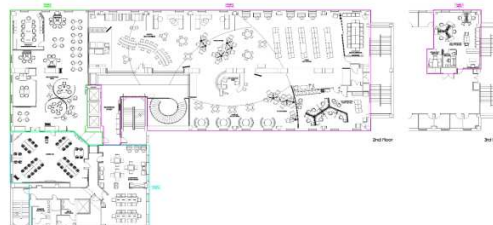
Corporate Quiet Study  
LearnLab  
\$1,000,000  
3745 sq ft

Collaborative Space  
Financial Conference Room  
Undergraduate Management  
Communications Center  
\$850,000  
3083 sq ft

Information Desk  
Cafe/Gathering Space  
Flex Classroom  
Study Areas  
Print Collection  
Faculty & Staff Offices  
\$2,350,000  
11,499 sq ft

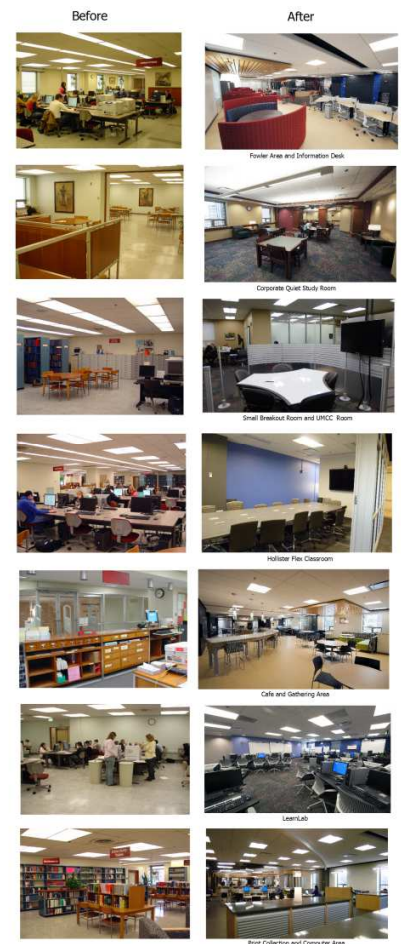
The redesign and renovation of the Parrish Library of Management & Economics' focused on becoming a student-centered space. Key elements include:

- **3 phase renovation:** allowed for creation of unique zones and functional adjacencies as well as iterative design over the project.
- **Student-centered spaces:** provided students with a variety of learning and collaborating spaces to fit the 'Third Place' needs on campus.
- **Innovative design:** impacted space design and placed the Libraries in discussions and planning of learning spaces across campus.
- **All areas multi-functional:** created a dynamic and flexible environment for researching, studying, meeting, presentations, and courses.
- **Connections with constituents:** Provided space to the Undergraduate Management Communication Center to intertwine the Library closer to the School of Management. LearnLab was key for expanding instructional opportunities.



PURDUE UNIVERSITY  
Library Building - Parrish Library  
Phase 1 & 2 Renovation Plan  
March 20, 2012

<http://www.lib.purdue.edu/parrish/renovation/melrenovation2.html>



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## Chapter 2

# Collaborating to Create Space: Tweaking the Resource in Common Model to Share Collections

Wyoma vanDuinkerken

Co-Editor of the Journal of Academic Librarianship (Elsevier)

Associate Professor & Director of the Joint Library Storage Facility, Texas A&M University  
Texas, USA

[wvanduin@library.tamu.edu](mailto:wvanduin@library.tamu.edu)

**Abstract.** *Many libraries in the US turned to developing consortia collection development and print repository agreements. Texas A&M University – College Station (TAMU) and the University of Texas- Austin (UT) built on the relative success of their jointly owned print repository facility introduced the idea of building a second facility to its consortium members. This paper describes the factors considered by two task forces to simplify the workflow, processing needs and workload while utilizing expert knowledge of their individual unit's.*

**Keywords:** Library Space Management, Shared Collections, Prints Repository

### 1. Introduction

In 2011, Texas A&M University – College Station (TAMU) and the University of Texas- Austin (UT) decided to build on the relative success of their jointly owned print High Density Repository (HDR) facility and introduce the idea of building a second facility to its consortium members. Unlike the first facility, which only held material that was owned by the two flag ship institutions, this facility would give all the members of both Texas A&M University System Consortium (TAMUS) and University of Texas System Consortium (UTS) the opportunity to participate in a storage facility endeavor, called the Joint Library Facility (JLF). The TAMUS consortium is made up of 12 institutions and educates more than 120,000 students a year.<sup>1</sup> On the other hand, the UTS consortium is made up of 15 institutions and educates more than 214,000 students a year.<sup>2</sup> The libraries housed within these 27 institutions, have an accumulated collection of well over 12 million volumes which supports the teaching and research mission of these institutions.

Like the previous jointly owned facility HDR, the fundamental idea for building this new facility would be cost savings. Texas, like other States across the United States, was affected by the economic crisis and consequently, it became even more imperative for TAMU Libraries to continue seeking out additional cost saving measures related to space allocation for its collection. One way they could do this was through developing a more efficient Resource In Common (RIC) model than had originally been planned in HDR.<sup>3</sup> Initially, when planning HDR, UT and TAMU planned to make the most of their cooperative storage space by de-duplicate their print collection and achieve their cost saving goal

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<sup>1</sup> The Texas A&M University System: About the A&M System <http://www.tamus.edu/about/> Accessed January 29, 2013

<sup>2</sup> The University of Texas System: Fast Facts 2012 [http://www.utsystem.edu/sites/utsfiles/assets/FastFacts\\_2012.pdf](http://www.utsystem.edu/sites/utsfiles/assets/FastFacts_2012.pdf) Accessed January 29, 2013

<sup>3</sup> vanDuinkerken, Wyoma. (2012), "Lessons Learned: Can a Resource in Common Work?" *New Library World*, 113 (1-2) pp. 65-76.

by housing only one “low usage” print copy “owned” between the two institutions at HDR which they called a Resource in Common.<sup>4</sup>

However, TAMU library processing team, the group responsible for updating the MARC records for the items identified to be shipped to HDR from TAMU, began to identify unexpected challenges that undermined and led to the failure of the original Resource in Common model at HDR. These challenges primarily focused around: the definition of what was a RIC, which led to additional confusion surrounding what defined a “low usage” print copy as well as how processing a RIC would affect all the stakeholders workload. In an attempt to avoid these challenges with the new consortia storage facility, TAMUS and UTS began address these issues early on in the planning stage as a way of ensuring that the RIC model at JLF would be more effective.

## 2. Literature Review

Most of the academic libraries across the United States today are facing budget cuts due to the economic downturn of the nation’s economy. With little hope of a recovery in the economy in the near horizon, libraries need to continue focusing on improving cost effectiveness as a long-term strategy in order to achieve their future library strategic plans.<sup>5</sup> However, according to Maskell et al, when it comes to planning print repositories “cost remains an over-riding factor and the uncertainty of future budgets make commitment to long-term planning difficult.”<sup>6</sup> Nevertheless, Kohl and Sanville believe that libraries can improve on their cost effectiveness four ways: “sharing printed books, storing print materials, providing access to the journal literature electronically, and providing access to electronic versions of library special collections, faculty publications, or university projects through a consortia institutional repository”.<sup>7</sup> Although many libraries are shifting away from print toward the electronic format, Heath stated that: “the flow of printed resources continues unabated with no end in sight.”<sup>8</sup> This continual increase in print library collections calls for libraries to continue needed additional stack space for their newly purchased printed materials. As early as 2004, Holton et al, reported that academic libraries in North America hold over a billion print volumes, and continue to add to their library collections by approximately 25 million more each year.<sup>9</sup> In 2009, Heath supported Holton et al’s statement when he reported that large research libraries, such as University of Texas-Austin, where he has been the Dean of the Libraries since 2003, continues to add as many as 200,000 print volumes annually. This accumulation of print materials to these academic collections creates a shelving demand of almost 10,000 square feet of library space a year.<sup>10</sup> However,

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<sup>4</sup> Heath, F. (2009), "The University of Texas: Looking Forward: Research Libraries in the 21st Century." *Journal of Library Administration*, 49(3) pp. 311-24.

<sup>5</sup> Hamilton, A. (2004), *Handbook of Project Management Procedures*, (Thomas Telford : London).

<sup>6</sup> Maskell, Cathy., Soutter, Jennifer and Oldenburg, Kristina. (2010) “Collaborative Print Repositories: A Case Study of Library Directors' Views.” *Journal of Academic Librarianship*, 36(3) pp. 242–249.

<sup>7</sup> Kohl, D.F., Sanville, T. (2006), "More Bang for the Buck: Increasing the Effectiveness of Library Expenditures Through Cooperation." *Library Trends*, 54(3) pp. 394-410.

<sup>8</sup> Heath, F. (2009), "The University of Texas: Looking Forward: Research Libraries in the 21st Century." *Journal of Library Administration*, 49(3) pp. 311-24.

<sup>9</sup> Holton, B., Vaden, K., O'Shea, P., Williams, J. (2004), *Academic Libraries: 2004*, National Center for Education Statistics, US Department of Education, Washington, DC, NCE 2007-301,

<sup>10</sup> Heath, F. (2009), "The University of Texas: Looking Forward: Research Libraries in the 21st Century." *Journal of Library Administration*, 49(3) pp. 311-24.

despite this increase in need of stack space, print collections are not growing at the same rate it did in the early 2000s. This is due primarily to the necessity to economize and purchase only one format of an item. As a result, libraries are purchasing more and more electronic material over print.

There are a number of reasons why space needs for print collections continue to grow along side the increase in electronic collection development. One reason is quite simple. Not everything is available electronically and since the mission of most academic libraries is to maintain the scholarly record so that researchers can have access to the most up to date material, print only material will need to be purchased even if academic libraries have an electronic preferred collection development policy in place.<sup>11</sup> Case and Thorp Ingram support this by agreement by stating: “the much touted adage ‘EVERYTHING can be found on the Internet’ has proved to be wishful thinking. Books continue to be an important resource for curriculum support. As a result, many libraries are sharing a common situation. There is little or no room to add more books onto the shelves.”<sup>12</sup> Another issue, related to this revolves around the libraries’ mission. Since most academic libraries, for example, have a mission to maintain the scholarly record,<sup>13</sup> material (print or electronic) needs to be close at hand. As a result, this has led some libraries to turn their backs on developing consortia collection development and print repository agreements. When libraries do develop consortia collection development agreements they tend to purchase multiple copies of the same items so that they can meet the needs of their users. Consequently, this duplication continues to increase the need for stack space despite the common misconception that because there is an increase in collection shift from print to electronic this change would decrease the need for increasing stack space in libraries.<sup>14</sup>

Adding to the space issue is the need for libraries to “increasingly house technology labs, multimedia rooms, group study rooms, and cafés”<sup>15</sup> to meet the needs of their patrons. Today, this is commonly known as the “library as place movement”. According to Payne, “the ‘library as place’ movement has redefined what space within the library should be used for. As a result, libraries are coming to be seen primarily as centers for independent and collaborative study and learning rather than as housing for physical collections.”<sup>16</sup> O'Connor and Jilovsky believe that the ‘library as place movement’ and not the arrival of the electronic book is the primary driver behind the current directions of library

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<sup>11</sup> vanDuinkerken, Wyoma. (2012), “Lessons Learned: Can a Resource in Common Work?” *New Library World*, 113 (1-2) pp. 65-76.

<sup>12</sup> Case, Jackie L., and Ingram Thorp, Marion. (2006) “Stacks Management: An Organic Approach to Growing Space” *Journal of Access Services*, 4 (3/4) pp. 137-152.

<sup>13</sup> DeGeorge, D., Seaman, S. (2002), “High-density remote storage: the Ohio State University Libraries Depository”, *Public Services Quarterly*, 1 (1) pp.87-90.

<sup>14</sup> vanDuinkerken, Wyoma. (2012), “Lessons Learned: Can a Resource in Common Work?” *New Library World*, 113 (1-2) pp. 65-76.

<sup>14</sup> vanDuinkerken, Wyoma. (2012), “Lessons Learned: Can a Resource in Common Work?” *New Library World*, 113 (1-2) pp. 65-76.

<sup>15</sup> Maskell, Cathy., Soutter, Jennifer and Oldenburg, Kristina. (2010) “Collaborative Print Repositories: A Case Study of Library Directors' Views.” *Journal of Academic Librarianship*, 36 (3) pp. 242–249.

<sup>16</sup> Lizanne Payne, *Library Storage Facilities and the Future of Print Collections in North America* (Dublin, Ohio: OCLC Online Computer Library Center, 2007): 16, [www.oclc.org/programs/publications/reports/2007-01.pdf](http://www.oclc.org/programs/publications/reports/2007-01.pdf) Accessed January 29, 2013.

physical space.<sup>17</sup> In order to create these needed user spaces, libraries are looking at their current facility to see where they can re-purpose areas. With the increasing belief that users prefer the electronic format over print, particularly print journals, libraries have looked at the print collection footprint within their facilities as an obvious place to create needed user spaces. However, the question arises, since there is little to no money to build new libraries, library administrators are moving their low used print materials to storage.<sup>18</sup>

As early as 1942, as a way of creating needed space, some libraries built off-site print storage facilities devoted to storing low-use print materials.<sup>19</sup> In the 1980s off-site storage facilities were being built at a continual rate, and by 2007 there were 68 library storage facilities built all over the USA and Canada.<sup>20</sup> However, it was not until 1986 when Harvard University built its storage facility was the standard high-density storage facility, known as the 'Harvard Model' created.<sup>21</sup> "Not only did Harvard build a high-density storage unit with 37 feet high stack ranges, they shelved the material on these stacks by size in an attempt to store the largest amount of material."<sup>22</sup> Organizing material by size rather than call number in these high density shelving units increased material storage by seven times and decreased the cost of storing the item. According to Murray-Rust, "the cost per volume for construction is \$3.75 for a high-density facility versus \$13.39 for a standard on campus library construction."<sup>23</sup>

This cost saving could be also be increased depending on the type of high density storage unit built. For example, approximately 79 percent of the 68 library storage facilities which Payne reported to have been built were institutional storage facilities built to house only one library's individual collection. Rarely do institutional facilities consider what other storage facilities were holding and as a result multiple copies of the same items were being stored in multiple storage units. Despite this duplication, Genoni reported that the increase interest in long-term storage of print collections has led libraries to realize that "the traditional paradigm based on the widespread duplication of items

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<sup>17</sup> O'Conner, Steven and Jilovsky, Cathie(2008) "Approaches to the Storage of Low Use and Last Copy Research Materials" *Library Collections, Acquisitions, & Technical Services*, 32 (3-4) pp. 121–126

<sup>18</sup> Maskell, Cathy., Soutter, Jennifer and Oldenburg, Kristina. (2010) "Collaborative Print Repositories: A Case Study of Library Directors' Views." *Journal of Academic Librarianship*, 36 (3) pp. 242–249.

<sup>19</sup> Austin, B. (2002), "Establishing Materials Selection Goals for Remote Storage: A Methodology", *Collection Management*, 27(3-4) pp.57-68. Bailey, J., Radnor, M.C. (2009), "Cooperative Remote Storage: Challenges for Resource Sharing", *Journal of Interlibrary Loan, Document Delivery and Electronic Reserve*, 19 (3) pp.227-33. Heath, F. (2009), "The University of Texas: Looking Forward: Research Libraries in the 21st Century." *Journal of Library Administration*, 49(3) pp. 311-24. vanDuinkerken, Wyoma. (2012), "Lessons Learned: Can a Resource in Common Work?" *New Library World*, 113 (1-2) pp. 65-76.

<sup>20</sup> Payne, L. (2007), "Library Storage Facilities and the Future of Print Collections in North America", report commissioned by OCLC Programs & Research, available at: [www.oclc.org/programs/publications/reports/2007-01.pdf](http://www.oclc.org/programs/publications/reports/2007-01.pdf) Accessed January 31, 2013.

<sup>21</sup> Seaman, S. (2005), "Collaborative collection management in a high-density storage facility", *College and Research Libraries*, 66 (1) pp.20-7.

<sup>22</sup> vanDuinkerken, Wyoma. (2012), "Lessons Learned: Can a Resource in Common Work?" *New Library World*, 113 (1-2) pp. 65-76.

<sup>23</sup> Murray-Rust, C. (2011), "High density storage for libraries", available at: <http://www.orbiscascade.org/rlsc/Storage.html> Accessed January 31, 2013

intended for long-term storage is becoming unsustainable.”<sup>24</sup> This is one reason why shared storage facilities models are continually being developed. These four models are known as: Cooperative, Collaborative, Regional, and Repository. However, according to Payne, these different types of shared facilities typically do not operate as a jointly owned collection. Instead, these shared facilities, were similar to secondary shelving space for the individual member libraries where they could house items from their individual collections without considering if these items were duplicated in the storage facility.<sup>25</sup> Despite that fact that the majority of these 68 storage unit’s immediate shelving space issues were solved, these libraries could have increased their cost sharing if they had considered to no longer store multiple copies of the same item within their storage units. Instead they could have combined their print collection with each library sharing ownership of the single item held in the storage unit. This arrangement would move away from the five traditional categories of library storage units and create a new type of storage unit: a resource in common storage unit.<sup>26</sup>

### 3. What was a Resource In Common in 2008?

Initially, in 2008 when the RIC definition was agreed upon by UT and TAMU, it was defined as “an item deposited in the shared storage facility shall be marked as a Resource in Common (RIC) when TAMU Libraries or the UT Libraries discards all duplicates of that item from its local collection and registers the item as a RIC.”<sup>27</sup> What this meant was that if a volume was deposited into HDR by UTA, and if that volume was also held in TAMU’s library collection, then TAMU could ask the manager of HDR that the item be classified as a RIC. HDR would contact UTA to see if they agreed that the volume could be a RIC. Once UTA agreed that the volume could be a RIC, TAMU and UT would withdraw all duplicates of the volume from both their collections. The single volume housed in the storage unit would then be shared by both university libraries and both would continue to count the single volume as part of their available collections for Association of Research Libraries (ARL) statistical reporting purposes.

What is interesting about ARLs idea of shared counting is according to ARL’s Supplement Statistics 2009-2010 Worksheet; the definition of volumes held collectively focus on the volumes withdrawn from individual collections, rather than the numbers shared in the storage unit. According to ARL:

“The defining criterion for this number is that the library formerly devoted financial resources for the purchase of these items and is now taking responsibility for their availability through participation in a cooperative that supports shared ownership. The library may demonstrate commitment to shared ownership through a shared storage facility, or similar collaborative arrangements, by supporting a consortium financially through a legally binding arrangement. Report here volumes originally held that were withdrawn from the local collection beginning with fiscal year 2003-04. Note that this is not

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<sup>24</sup> Paul Genoni (2012): Storage of Legacy Print Collections: The Views of Australasian University Librarians, *Collection Management*, 37 (1) pp. 23-46

<sup>25</sup> Payne, L. (2007), "Library Storage Facilities and the Future of Print Collections in North America", report commissioned by OCLC Programs & Research, available at: [www.oclc.org/programs/publications/reports/2007-01.pdf](http://www.oclc.org/programs/publications/reports/2007-01.pdf) Accessed January 31, 2013.

<sup>26</sup> vanDuinkerken, Wyoma. (2012), “Lessons Learned: Can a Resource in Common Work?” *New Library World*, 113 (1-2) pp. 65-76.

<sup>27</sup> TAMU Libraries and the UT Libraries (2008), *Memorandum of Understanding Related to Library RIC*, internal publication (August 23, 2006; revised November 12, 2008),

the number of volumes held in a shared storage facility but literally volumes withdrawn from your collection.<sup>28</sup>

This made de-duplication of the exact item (within the same collection) even more appealing because, the multiple copies of the duplicated items would continue to count for ARL statistics as jointly owned. Consequently, this de-duplication added to UTA and TAMU's plan to save space in their collections. In addition, both libraries went a step further and decided not to hold any copy of the same item in the Library Storage Unit and the item chosen for the shared collection needed to be considered "low usage". However, what was lacking from the plan was the actual definition of low usage versus high usage of an item, as well as the understanding of the increased workload associated with processing an item for RIC and how it affected all the stakeholders involved. These problems created a need for all stakeholders to reconsider what the RIC model would look like at the new Riverside facility. Working together with several of its participating consortia members, UT and TAMU began reconsidering the RIC model as a way to address some of the past issues which plagued their original HDR RIC model.

#### **4. Developing a new Resource In Common model**

When the decision was made to build a second shared storage facility on TAMU's Riverside Campus, the first thing TAMU did was to encourage more involvement from the participating system libraries as a way of addressing some of these past struggles before the new storage facility was opened. This was done by create two taskforces, (Policies and Procedures and Technology and Access) which were made up of stakeholders from members of the participating system libraries who had indicated to TAMU that they were, not only going to send materials to JLF but also participate by claiming RIC items. These taskforce members came from a variety of departments from these participating libraries and had practical day to day workload and process knowledge of their units.

#### **5. Taskforce on Policies and Procedures**

The first taskforce called The Taskforce on Policies and Procedures was responsible for establishing the basic policies and procedures for items going into JAL. Two fundamental policies which this taskforce was assigned to develop revolved around what a RIC was and what items JLF could ingest. It was hoped that this taskforce would develop additional policies that would address the past issues revolving around what a RIC was and how to claim an item as a RIC. It was agreed upon by the committee that the RIC definition would need to change based on the past challenge of what defined "low usage." As stated above if a library wanted an item to be registered as a RIC, then it first needed to own the exact item and then it needed to get the library who placed the item into the storage unit to not only agree to allow the item to be registered as a RIC but also had to agree to discard all its duplicates of that item from its local collection. This is where the problem with how "low usage" was defined. Initially, although one departmental library may have placed the item into the storage unit because they considered the item to be of "low use" to their library, it may not have been considered 'low use' to all other departmental libraries. As a result, not all departmental libraries wanted to remove their copy from their collection because they considered the item to be of "high use" to their patrons. Consequently, the definition of what a RIC was changed.

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<sup>28</sup> Expenditures- ACRL Academic Library Trends and Statistics  
[http://www.google.com/url?sa=t&rct=j&q=%22the%20defining%20criterion%20for%20this%20number%20is%20that%20the%20library%20formerly%20devoted%20financial%20resources%20for%20the%20purchase%20of%20these%20items%22&source=web&cd=2&ved=0CDMQFjAB&url=http%3A%2F%2Facr1.countingopinions.com%2Fdocs%2Facr1%2FACRLFY2011\\_Worksheet.xls&ei=8IoKUf\\_nKsWxqQGVgYHwBA&usg=AFQjCNHektgS-1\\_fWuLkMCmVJyEviq8txg&bvm=bv.41642243,d.aWM&cad=rja](http://www.google.com/url?sa=t&rct=j&q=%22the%20defining%20criterion%20for%20this%20number%20is%20that%20the%20library%20formerly%20devoted%20financial%20resources%20for%20the%20purchase%20of%20these%20items%22&source=web&cd=2&ved=0CDMQFjAB&url=http%3A%2F%2Facr1.countingopinions.com%2Fdocs%2Facr1%2FACRLFY2011_Worksheet.xls&ei=8IoKUf_nKsWxqQGVgYHwBA&usg=AFQjCNHektgS-1_fWuLkMCmVJyEviq8txg&bvm=bv.41642243,d.aWM&cad=rja) Accessed January 31, 2013.

Now any item deposited in the shared storage facility would be automatically marked as a Resource in Common (RIC) and there would be no reason to have to request permission from the library that initially place the item into JLF for the item to be considered a RIC. Instead a library only needed to claim the item as a Resource-in-Common. To claim an item the library must have already acquired the title for its library's collection and must withdraw at least one locally held copy of the item from its collection. What this meant was that each departmental library could define what it thought "low use" of an item was and each definition had no bearing on other departmental libraries definition.

Along the same venue, the Taskforce on Policies and Procedures also developed a guideline for selecting materials to go to JLF. This guideline was developed in order to avoid misunderstand and to help libraries identify what items could and could not be ingested into the facility<sup>29</sup>. This guideline highlighted specific acceptable/unacceptable formats, while indicating that "materials with significant chemical deterioration that could lead to high flammability or materials needing special preservation/conservation environment, mold abatement, or pesticide treatments"<sup>30</sup> would not be accepted into the facility. This guide was also supported by a second guide called Condition Review and Requirements. This supportive guideline considered the physical condition of an item and if its condition was acceptable or unacceptable for ingestion into the facility. The guideline also indicated what would occur if something unacceptable, such as a moldy or bug infested book was received at the storage facility. It was hoped that this guideline would clearly define what each library could and could not send to JLF and thereby help reduce the participating libraries workload by only processing the items that could be ingested into the facility.

## **6. Taskforce on Technology and Access Infrastructure**

The second taskforce called The Taskforce on Technology and Access Infrastructure was primarily responsible to advise TAMU which inventory and interlibrary loan software to purchase for the facility's collection. This software would not only be used to manage the collection at JLF, but also communicate what was in the collection to its members and the larger library community. It was hoped that his communication would help reduce the workload amongst the members of the consortia by having only one OPAC for the member so search instead of a possible 27 when trying to identify items already in the facility. As stated above, the processing of items going to HDR, including a RIC item, created an unexpected increase in the stakeholder's workload and as a result made processing RICs impossible. One unexpected task which increases the workload initially for the processing team was the verification that an item was not already located in HDR since storing a duplicate item was not allowed. HDR did not have its own OPAC and as a result, in order to perform the duplication check, individuals need to search each other's OPAC to see if an item was indicated as being located at the storage facility. For JLF, it was recognized that the workload of checking all possible 27 libraries' OPACs for duplication of items in HDR was too much. Consequently, the taskforce recommended that JLF have its own basic OPAC with the sole purpose so that the participating libraries could search one location instead of a possible 27 OPACs. The basic OPAC would be developed by Generation Fifth Applications so that it could talk directly to the GFA Library Archival Software which was being used within the facility to track location of items on the shelf. In order to avoid having two contributors processing the same title simultaneously, a communication model made up of excel spread sheets was created so that participants would know what titles they can process.<sup>31</sup>

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<sup>29</sup> Guidelines and Criteria for Selection of Materials <http://library.tamu.edu/pdfs/JLF-%20Guidelines%20and%20Criteria%20for%20Selection%20of%20Materials.pdf> Accessed January 31, 2013.

<sup>30</sup> Guidelines and Criteria for Selection of Materials <http://library.tamu.edu/pdfs/JLF-%20Guidelines%20and%20Criteria%20for%20Selection%20of%20Materials.pdf> Accessed January 31, 2013.

<sup>31</sup> Guidelines and Criteria for Selection of Materials <http://library.tamu.edu/pdfs/JLF-%20Guidelines%20and%20Criteria%20for%20Selection%20of%20Materials.pdf> Accessed January 31, 2013.

In addition, in order to communicate that there would be an increase in workload for items being processed for JLF, the taskforce on Technology and Access Infrastructure also created for the participants a Recommendation for Processing Materials for JLF Accessioning.<sup>32</sup> This recommendation, not only specified what steps the facility needed from each participating library to preform before an item was shipped to the facility but also what the facility would be doing to their items. This guide also spelled out a number of expectations and best practices for sending items to JLF. It began very basic focusing on non-RIC submissions and then progressed into the recommended processing steps to submitting a RIC into the facility. As stated above, one of the biggest changes between HDR and JLF was that unlike HDR, the Director did not have to contact the library who placed the item into the storage unit to see if it was ok to declare the item a RIC. It was agreed upon by all the participating libraries that all items going into JLF were automatically to be RIC and therefore no permission was necessary. Consequently, items placed into JLF could not be permanently relocated out of the JLF without approval of all libraries sharing the RIC item.

The Recommendation for Processing Materials for JLF Accessioning spelt out to the participants how the new facility, like the previous HDR facility, would storage items. It highlighted that items would be arranged according to size and not call number on a shelf and as a result all items would need to have scan able items barcode which would the only identifier for where the item sat on a shelf. Consequently, every item going into the storage would need to have a scan able item barcode which was why it was recommended that libraries should consider having qualified staff test the barcode to make sure it was truly a scan able barcode before sending it to the facility. It was recognized that requiring scan able barcodes on each item would create an immense amount of work for each technical services department that was sending items to JLF, it was hoped that by communicating the need participants would be able to prepare themselves and their technical services units for the increase in workload.

## **7. Conclusion**

The plan for the new joint library storage facility is set, the building is almost erected and although late purchased the software implementation has begun. If all continues to go well, the facility with open in May 2013 and item ingestion will begin soon after in early July 2013. It is clear that there will be a considerable workload increase involved for all who are participating in placing items into the storage unit. The taskforces have attempted to simply workflow and processing needs while communicating requirements that will have a direct impact on each participant's workload. In order to accomplish this early communication goal, the members of the taskforces were chosen for their expert knowledge of their individual unit's day to day workflow and could communicate to their fellow colleagues how processing items for JLF would increase their workload. It is hoped that by increasing communications and participation during the initial planning stages, the workload problems will have been identified and addressed earlier to meet the needs of the RIC dream.

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<sup>32</sup> Transfer Processes Recommendations for Materials Going to the Joint Library Facility (JLF) <http://library.tamu.edu/pdfs/JLF-%20Recommendations%20for%20Processing%20Materials%20for%20JLF%20Accessioning.pdf> Accessed January 31, 2013.

## Chapter 3

# Research Libraries, Collections and Spaces: the rise of offsite storage among US libraries

Aruna P. Magier

South Asia Librarian, New York University, USA

[aruna.magier@nyu.edu](mailto:aruna.magier@nyu.edu)

**Abstract.** *US research libraries have run out of collection-growth space and moved materials to offsite storage facilities. Issues relating to the use of offsite storage facilities are examined, including operational considerations, decision-making and planning, selection criteria, implementation strategies, advantages and disadvantages, impacts on user services and measures taken to counteract them.*

**Keywords:** Library Spaces, Offsite storage

### 1. Introduction

In recent years, a new trend in library collection management has emerged, in which many research libraries, having run out of collection-growth space, have chosen to move significant portions of their collections to offsite storage facilities. In this paper, issues relating to the use of offsite storage facilities in academic libraries are examined, including operational considerations, decision making and planning, selection criteria, implementation strategies, advantages and disadvantages of offsite storage, impacts on user services, and measures taken to counteract them. The paper does not deal with physical or technical aspects of design and environmental planning for offsite storage, but rather focuses on issues of collection management, access and user services.

### 2. Definition and Background

Libraries store and maintain their collections in a number of different ways. For the purpose of this study, we use the term "offsite storage" to refer to "collections of more than 50,000 items housed in facility away from the rest of the collection to which the materials belong." (Merrill-Oldham and Reed-Scott: page i).

How and why have libraries come to store their collections away from their main campus? In 1902, the idea of a secondary storage facility for Harvard University Library was proposed by William Eliot, then President of Harvard University. On the other hand, William Coolidge Lane, the Library Director at the time, proposed a cooperative repository to be operated by Harvard, the Massachusetts State Library, and others. These proposals were controversial at the time, and it was not until 40 years later that the New England Repository was opened as a cooperative research facility. (Block: page 185).

Another cooperative storage facility was the Midwest Interlibrary Center, which opened in Chicago in 1949, and later became the Center for Research Libraries. This was a cooperative shared-storage venture of 13 research libraries. (Block: page 186).

During the 1960s and 1970s, there was a boom in academic libraries, with ample funding and rapidly growing collections. (Paquette: page 3). From 1975 onward, librarians began to notice that this trend was creating a shortage of space in their libraries. At a 1975 library meeting in San Francisco, a panel discussion was held on the topic "Running Out of Space: What are the Alternatives?" One of the alternatives raised at this meeting was the idea of offsite storage. (Boll 1980: page 7). Urban academic libraries have more specific problems relating to space and physical environment

than academic libraries in general. As a result of problems facing urban libraries, such as scarcity of land, capital costs of purchasing more urban land, overcrowding, security and land use restrictions, etc., managing space in these urban settings poses complex challenges (Pearson and Rapp: page 232). The space crunch of the 1980s led to a new trend in major academic libraries, with the emergence of high-density offsite storage facilities, such as the Harvard Depository Library in 1986. For the urban libraries, these offsite storage facilities have typically been located beyond the city in suburban regions with less expensive land and greater flexibility for construction, zoning and land-use. Of course, the farther away the storage facility is from the user, the more challenging it is to get the materials quickly back to the users who need them.

### **3. Rationale, Goals and Strategies of Offsite Storage**

These days, there are many popular misconceptions about electronic information, most notably the myth that printed books (or even libraries!) are no longer needed and will shortly cease to exist. But the reality is that, in spite of the availability of vast and increasing quantities of electronic information in many formats, books and printed materials have not lost their place in scholarly communication and in academic libraries. There are many reasons for this, which have nothing to do with the supposed "generation gap" or the "old fashionedness" of senior researchers and their research habits. The fact is that much of the worlds' intellectual output is still being produced only in analog form, and its research use is not frequent enough to make commercial digital conversion or republication commercially viable. Much has been written on the persistence of print in research libraries and on the necessity of preserving it and keeping it accessible to scholars. This topic, however, will not be treated further here. It is sufficient for purposes of this paper to point out that electronic information, in itself, has not provided a solution to the library space crunch. "Remote storage provides a compelling solution," says Dan Hazen (page 176).

The main reasons for research libraries to send their books for offsite storage are: to make the most cost-effective use of limited space, to make sure they can continue to add new books and journals while preserving older or less-used collections and keeping them easily accessible when needed, and to repurpose some of the space in the library for new uses according to changing trends in how library patrons do their work. Examples of the latter include reader space and study rooms, group study and research spaces, instructional spaces, consultation and reference spaces, zones for providing new library services (such as digital humanities research needs, digitization on demand, statistical and data research support, etc.), multimedia viewing spaces, spaces with infrastructure and equipment for working with new information technologies, etc.

"As a research library, we are adding collections; if we have to add more books, we need to get space for them. Unless we move the less used books elsewhere to a cost-effective, controlled-environment offsite storage facility, we cannot acquire the books that our users want as we do not have space to put them" says Michael Stoller, Director of Collections and Services, Bobst Library, New York University (personal interview). "People understand that we need to make room for new collections," says Robert Wolven, Associate University Librarian for Bibliographic Services and Collection Development at Columbia University Libraries, "and that's a key -- that we're still building our collections." The bigger the collection, the greater the amount of storage it's going to need, on campus or off. (Howard).

In planning for offsite storage facilities, the goal is to create a cost-effective, high-density facility, serving preservation needs and providing effective user services, while also resolving the space-crunch problem. For example, the mission statement for the Harvard Depository library states, "The mission of the Harvard Depository is to support the University's commitment to housing library and archive collections and administrative records in an efficient, secure, environmentally sound space: and to provide access to those materials through timely and reliable retrieval systems" (Merrill-Oldham and Reed-Scott: page 77). Likewise, the goals of the University of Texas Austin Library Storage facility (formerly referred to as "the Library Storage Warehouse") are,

"...for planned remote storage of permanent, important, but little used library materials, including archives and records, from the general Libraries of The University of Texas at Austin. The Warehouse was designed and constructed to provide high density shelving for library materials, an excellent environment for preserving materials, and an inventory and retrieval system for easy and sure access to materials for library users". [Merrill-Oldham and Reed-Scott: page 44].

In seeking "quality academic library space", two major areas of consideration are user space and material storage space, in addition to space for staff, display areas, special access for the disabled, etc. But there is no single space solution for best storage of materials. According to Miller (pages 1-2), all libraries must address the need for maintaining most convenient access to traditional materials.

According to Cohen (page 15), three elements vital for effective planning of useful library space are *function* (goals and services to support the goals), *content* (collections of materials), and *behavior* (interactions between staff, users and content). He fears that the library building might become just a storage facility, where service elements get sidelined due to conflicts between content and function when collections increase enormously. Cohen (page 15) also feels that removing content to off-campus storage, in many cases, actually helps provide better access to the content that remains on campus in the library. This can be seen particularly in the case of open-stacks libraries with vastly overcrowded shelves, books frequently misplaced or shoved into corners (where they can never be found), and books piled onto temporary shelves or rolling book-trucks because there is no room to re-shelve them after use in their proper sequence in the stacks. (David Magier, personal interview). And it can be taken for granted that removing lesser used books to closed-stacks offsite storage facilities will decrease their likelihood of getting misplaced.

#### **4. Shared Repositories and cooperative storage**

Shared and cooperative offsite storage projects, where a common space for storing their offsite materials is shared by partnering institutions, have been taken up by various research libraries in the US. Examples include RECAP (a high-density storage facility in New Jersey shared by Princeton University, Columbia University, and New York Public Library), a facility shared by Texas A&M University and the University of Texas-Austin, and another high-density storage facility shared by Kansas State University and University of Kansas.

The reasoning behind having a shared repository can range from simple economy of scale and cost savings on the construction and operation of the shared facility, to an integrated vision of sharing the remotely stored-collections themselves. The complexity of providing appropriate bibliographic access and timely delivery of the materials to the users multiplies dramatically with the number of participating institutions in the shared collections model. On the other hand, the potential benefits, from access to broader collections of materials, and the economics of coordinated collection development, can make this approach attractive. Princeton University, Columbia University and New York Public Library are currently exploring the feasibility of transitioning their ReCAP facility from a shared offsite facility to a shared-collections model. (David Magier, personal interview).

After examining the challenges in implementing the "resource in common model" of the Texas A&M University Library and the University of Texas-Austin Libraries, a case-study of this implementation found that "increased communication" and "early participation in the decision-making stages" are crucial. (vanDuinkerken: page 65).

Kansas State University leases space at the Library Annex, an offsite storage facility owned and operated by the University of Kansas. The challenges involved in maintaining access to remotely stored materials for resource sharing and document delivery purposes, and the variables affecting access in a cooperative storage model are discussed in an article by staff members of the Interlibrary Services Unit at Kansas State University. They stressed that the effective functionality of a document delivery system and interlibrary loan operation is an essential factor in determining the impact on library users and success in meeting the library's service goals. (Bailey and Radnor: page 232)

## 5. Operational Considerations

There are many operational issues to be considered once the decision has been made to implement offsite storage, such as whether it is to be a permanent or temporary arrangement, new construction vs renovation of existing facilities, single-institution or cooperative storage facility (and, if cooperative, how the costs and governance responsibilities are to be divided, as well as ownership in last-copy retention agreements), and issues of security, environmental control (temperature, humidity and lighting), disaster preparedness planning, specialized storage for non-print material, position of offsite storage operations in the overall library budget, etc. (Stockton: page 60; Merrill-Oldham and Reed-Scott: page 4). In this section, the focus is on the operational issues relating to selection, and access and user services.

A library must decide which materials to move to offsite storage. In this kind of selection process, various complexities arise:

- how to create or implement a clear-cut selection policy?
- who does the selection? (bibliographer, subject specialist or faculty?)
- format of material to be relegated? (print, microform, maps, recordings, etc.)
- general collection materials vs rare/special collections?
- basic criteria for selection of material? (e.g. level of usage vs date of last usage; cut off date for serials, etc.)

The overall issue of usage as a selection criterion has been addressed by Boll (1985) as follows:

"Since a large percentage of an academic library's resources receive no use, since resources tend to be less used with age, and since past circulation is a reliable indicator of likely future use, the librarian can relegate with confidence a high percentage (25% to 45%) of an academic library's resources while causing delayed retrieval for a very small percentage of requests (1%, 2%, 3%)." [page 18].

Once selection has been made, a number of collection-management questions must be resolved: shelving of books at the offsite facility (by size, by title, or by call number?), policies regarding shelving of duplicate copies (Stockton: pages 66-67), inventory control systems (e.g. barcoding), and integration versus separation of inventory control systems as part of the library's management system. (Merrill-Oldham and Reed-Scott: pages 9-10).

Access and user services comprise another important aspect to be considered in the management and handling of materials for offsite storage. An effective access and retrieval policy should state clearly the procedures for request, retrieval and delivery, as well as modes of discovery, bibliographic and physical access. If there is provision for transferring material back to the main campus (i.e. reversing an initial offsite selection decision), attention should be paid to devising an offsite facility deaccession policy that would state the circumstances under which materials can be relocated back to campus stacks (e.g. for usage by faculty for research, and for frequent use by others), and specifying the necessary changes to be made in inventory control and bibliographic records. (Merrill-Oldham and Reed-Scott: page 10).

## 6. Selection in Practice

A few details are given here about processes of selection adopted by various research libraries that use offsite storage facilities. At George Washington University Library, an academic library which is a part of the WRLC (Washington Research Library Consortium), bibliographers used to do title-by-title selection of material for offsite storage from among those that had not circulated for the preceding 10 years. This turned out to be very time consuming and has been discontinued. (Alexander: page 129). At Johns Hopkins University, importance was given to the removal of material that would have "the least impact" on users and selectors (Alexander: page 130).

Regarding the faculty role in selection of material for offsite storage, George Washington University Libraries resorted to a public relations campaign to recruit faculty involvement. Although the removal of journal runs from campus met

with some resistance, the library administration made it clear that there is simply no more stack space on the main campus to shelve recently purchased materials, and the faculty were placated with promises of efficient services such as document delivery of copies of articles. (Alexander: page 129). At New York University, according to Michael Stoller (personal interview), bibliographers "keep their ears to the ground" to closely monitor and understand faculty needs. For selecting journals, this led them to select only indexed journals for offsite, since article-level discovery and paging is facilitated by the existing indexes. At Johns Hopkins University, faculty members were allowed to select a few titles as exceptions to the general relegation policies, as a trade off for transferring the others (Alexander: page 130). At Columbia University, where offsite storage facilities have been in use for many years, faculty resistance to offsite storage was diminishing, as faculty members discussed their personal access experiences with their colleagues. (Kendrick: personal interview).

As a measure to promote building trust and to make library operations more transparent to users, there are instances where patrons are involved in the process of choosing the materials to be sent offsite and are encouraged to work closely with their librarians in this task. An example of this is where the librarians at the Stephen Chan Library of the Institute of Fine Arts, New York University directly engaged their primary users in this endeavor. (Lucker, pages 295-286).

Offsite deaccession policies (whereby materials are relocated back to campus from offsite storage) can play an important role in affecting faculty attitudes. Since decisions on what to transfer to offsite are often essentially based on *educated predictions* about lower levels of future usage, a policy that can reverse those decisions in specific cases where the predictions did not pan out can go a long way to restoring faith in the library among its users. An example would be the policies adopted by the UCSRLF (University of California Southern Regional Library Facility), a shared facility which serves five campuses of University of California system. Flexibility is applied at UCSRLF in the sense that they withdraw from the offsite facility any item recalled back to campus by the depositing library or by an individual collection development officer. (Hickey). Libraries can monitor how often given types of materials (by subject, narrow call number ranges, journal runs, or even specific items) are paged back to campus by users, and they have the ability to establish usage thresholds above which the item can be permanently relocated back to campus. The policy operates on the assumption that academic interests change over time and there is a possibility for "honest mistakes." This approach makes the task of getting faculty to accept and use offsite storage facilities easier. (Alexander: page 130).

## **7. Advantages and Disadvantages of Offsite Storage**

A range of specific library advantages of offsite storage have been identified in the literature on this topic. These include preservation, since preservation-oriented environmental controls are easier to maintain at high-density closed-stacks offsite storage facilities than at open stacks used by patrons on campus. Despite this clear advantage,

"preservation librarians face both practical and fundamental challenges when moving preservation operations from the main library to an off-campus location. Practical issues include transporting materials and staff safely and securely between facilities, hiring and retaining student employees, and communicating effectively between geographically dispersed library units. Fundamental concerns include how to continue providing high-quality services and maintain productivity in the remote location." [Martyniak: page 183]

Other advantages usually mentioned are cost effectiveness (since the unit cost of maintaining books at offsite storage, where they are only infrequently handled or moved, can be much less than on campus), efficient use of space (since removing little-used materials from campus stacks allows the latter to be more efficiently organized and operated), and the freeing up of additional space on campus which can be allocated for other important uses. Kendrick (personal

interview) points to the dramatic renovation of Columbia University's Butler Library – with its more efficient and broader range of uses of space – as a clear example of the value of freeing up campus library space by utilizing offsite storage.

On the other hand, there are many disadvantages as well. The idea of offsite storage itself can reduce users' motivation to make use of the valuable materials stored there. (Pacquette: page 5). Sometimes, under urgent pressure to create more space on the overcrowded main campus, libraries are forced to implement their offsite storage facilities very rapidly, and these short-term priorities can conflict with the overall mission of the library, leading to a sacrifice of appropriate bibliographic access to the offsite collection. (Stockton: page 60).

Bibliographic access to offsite collections can be a general problem, especially with regard to browsability. For monographs, as long as they are cataloged, basic bibliographic access can be provided, but offsite storage can make it much more difficult to **browse** a collection. To the extent that users rely on the ability to browse among physically adjacent materials to find what they need, offsite storage puts them at a disadvantage by making browsing impossible. Likewise, for serials not represented in full-text databases and which are not included in indexing and abstracting services, article-level bibliographic access is a general problem, which is usually addressed by patrons physically browsing the tables of contents. But when such serials are removed to offsite storage, access to articles is seriously hampered. On the other hand, with regard to the often-cited need for browsing, Pacquette (page 15) agrees with Boll (1980) that for large research collections, browsing is often not very valuable for research anyway, and she points out that removing low-use items can itself render campus collections more browsable. Many open-stacks library users are familiar with the experience of browsing a collection, and consider the loss of browsability as a drawback. This is why programmers and library discovery systems designers have been developing innovative capabilities to replicate that experience through "virtual browsing" (Lynema, Lown and Woodbury).

## **8. Strategies for Reducing the Impact of Offsite-Storage Disadvantages**

The disadvantages cited above have been evident to the librarians and administrators involved in planning for offsite storage facilities, and they have been seeking measures to reduce their impact on users and library operations. According to the 1999 Yale University Library Shelving Facility website, offsite storage facilities must

"accommodate future collection growth as cost effectively as possible, provide sound environmental conditions for collections, provide excellent online bibliographic access to all of the library collection, and maintain browsable shelving on campus of the most frequently-used parts of the collections".

To counteract the disadvantages that result from loss of direct physical browsing, additional efforts are being made to provide enhanced bibliographic access in various ways. Some libraries (e.g. Yale) have determined that only materials that have been fully cataloged in their OPACs (Online Public Access Catalogs) may be removed to offsite storage. (Yale University Library Shelving Facility: website). Some OPAC systems allow a type of "online browsing" in which adjacent call numbered items are displayed, so that one can find other books on similar topics to the one that has been searched. Library instructional programs for assisting users in enhancing their abilities to locate materials can also alleviate some of their problems. A further trade-off for browsability is efficient delivery service. For example, at Princeton University, patrons can request 24-hour electronic document delivery of articles and book chapters from the ReCAP facility. (ReCAP website; ReCAP PowerPoint presentation).

## **9. What Else Needs to be Done?**

To expand means of "online browsability", several measures can be taken. For monographs and edited volumes, full analytic data (including full table of contents information) should be included in the bibliographic record itself. For unindexed serials at offsite storage, some members of the ReCAP consortium have begun preliminary explorations in

creating their own low-cost table-of-contents database. This is being accomplished through simple scanning of tables of contents, and mounting the page images in a website browsable by serial title. (David Magier, personal interview). For newspapers and special collections, good detailed finding aids should be devised before . Digital technologies can also be used to add searchable title pages, tables of contents and keywords to bibliographic databases. (Hazen: page 182). As an example of how this kind of data can be deployed to improve discovery and retrieval, see this record for a Korean language journal from Columbia University's OPAC:

<http://clio.cul.columbia.edu:7018/vwebv/holdingsInfo?bibId=4803953>

and the "Table of Contents" link it contains:

<http://www.columbia.edu/cgi-bin/cul/toc.pl?4803953>

By delivering "user-centered" services that are fast, reliable, economical, sustainable, convenient and accurate, libraries can partially 'compensate' users for the inconvenience caused by off-site shelving. (Nitecki and Kendrick: page 2).

Options to improve delivery services to make offsite storage more palatable to users would include technologies for expediting delivery, such as transmitting text directly to the user's computer. To the extent that it is possible to treat the offsite facility as a kind of branch library, rather than an inaccessible warehouse, it will improve the users' attitude. (Seeds: page108). In particular, faculty and students should not get the impression that the collections and materials they care about are being "banished" or "exiled". Given the pristine, enhance preservation environment typical of such closed-stacks facilities, and their much tighter inventory control to prevent the loss, theft or misplacement of materials, thoughtful library patrons can be helped to understand that the materials selected for offsite are actually more "privileged", getting the real "red carpet treatment" (David Magier, personal interview).

## 10. Conclusion

It should be expected that research libraries will make more and more use of offsite storage arrangements as time goes on. In order to counteract the accumulation of disadvantages and negative politics that would result, libraries will become more and more creative in finding new solutions and technological approaches to improve bibliographic access, integrated discovery, browsability and delivery services. It can also be expected that as libraries gain more experience with offsite storage, and learn from earlier ventures, such as the Harvard Depository Library (which, in its inception, had no earlier model to work from [Kendrick: personal interview]), they will become better at engaging all components of the university community in the development of the concepts, planning and implementation, right from the beginning of the process. In this regard, publicity will be a growing consideration, not only to reduce resistance to the idea of offsite storage, but also to promote efficient usage, and active patron involvement.

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## Chapter 4

### “BNU Nouvelle” : The rejuvenation of France's second largest library

Frédéric BLIN

Head of Heritage Collections, Preservation and Digitisation

Member of the Governing Board of IFLA

National and University Library of Strasbourg, France

[Frederic.Blin@bnu.fr](mailto:Frederic.Blin@bnu.fr)

The National and University Library (“Bibliothèque nationale et universitaire” - BNU) of Strasbourg in the Alsace Region in the east of France is with over 3 million items the second largest library in the country<sup>33</sup>. It was founded in 1871 by the German Emperor William 1<sup>st</sup>, after Prussia conquered the Alsace Region from the war with France 1870-1871. During that war, on August 24<sup>th</sup>, 1870, the two libraries of Strasbourg, famous for their very large and very precious collections of medieval manuscripts, incunabula and other early-printed books, were burnt down. Soon after, a call was published by Karl August Barack, librarian of the german princes of Fürstenberg, inviting libraries and private persons all over Europe to donate books in order to recreate a new library in Strasbourg. Already by the date of the official inauguration of the new “Imperial University and Regional Library of Strasbourg” in august 1871, 200 000 volumes had been received in the capital of the new german region of Elsass-Lothringen. After a few years, the Palais Rohan in which the collections were stored proved to be too small, and a new library was built on the “Kaiserplatz” or “Imperial Place”, just in from of the imperial palace, besides the regional Parliament's building, 500m away from the new imperial university, in the center of the newly created “Neustadt” or “New Town” erected by the Germans.



*Illustration 1: The Library in 1895 (coll. and picture BNU Strasbourg)*

This new library opened in 1895.

The first main renovation of the library – who got its actual name in 1926 after the Alsace region was regained by France in consequence of the First World War – happened after the Second World War, when the library had been partially damaged during a bombing. In particular, new stacks were installed, whose metallic frames, empty in the middle, went vertically through the 8 levels of the library. In the early 2000s, this structure was a serious problem: fire

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<sup>33</sup><http://www.bnu.fr/eng>.

could have spread along this empty metallic structure and burn the library down again, in less than 15 minutes...

So it was decided to undertake a complete renovation of the library, not only to solve this security issue, but also to create a more modern and functional library.

Ten major objectives were set for the complete architecture program:

1. Having a modern building, resistant to fire and possible earthquakes, and using green technologies like thermal regulation through natural water energy;
2. Increasing the library's storage capacity;
3. Increasing the number of works available for free access from 30 000 documents to 200 000;
4. Increasing the number of seated places, from 500 to 660;
5. Reorganising the services to the public, in particular by gathering all reading rooms into this new building;
6. Maintaining better preservation conditions for the collections;
7. Enhancing the library's assets by preserving two floors of storage space in one wing of the building as they were initially and by creating a library museum;
8. Creating a 140-seat auditorium and a 500m<sup>2</sup> exhibition space;
9. modernising professional practices, particularly by using particularly effective technologies of the RFID type;
10. Integrating the building in an overall urban enhancement scheme, since it is one of the best examples of German architecture in Strasbourg and is a decisive feature in the application made by the City of Strasbourg for UNESCO classification.

However these ambitious goals, this project was made particularly difficult by the fact that the external facades as well as the cupola are a real landmark of the city and are thus protected as historical pieces of architecture. For that matter, only the inside spaces were concerned, and in fact quite completely destroyed, and a whole new library was built within the historical walls and under the preserved cupola. The future library, which will open to the public during the autumn 2014 after 4 years, will be a modern, light, functional one, with new services and historical pieces of architecture preserved at the same time, articulated around a central staircase letting natural light into the building.



*Illustration 2: The central staircase of the new library (photo. AN.*

But “*BNU Nouvelle*”, the name given to this ambitious rejuvenation programme, is much more than just an architectural concept: it intends to be an overall and strategic change of the library's identity for the best of its users, students, researchers and the general public as well. The development of an ambitious digital library is for instance one of the major projects undertaken during the past years, in conjunction with the National library of France (BnF)<sup>34</sup> or Europeana, the European Digital Library<sup>35</sup>. The institutional cooperation with other local and regional institutions, first of all the University of Strasbourg library and research institutes, is also a priority for the BNU, in order to develop common tools, research projects and even infrastructures, build collaborative competences and of course serve the academic public in the best possible way. To cite just some of the common initiatives that are under way or in planning, let us mention the creation of a Institute dedicated to book, library and archives studies, with a strong digital component, where the BNU will hold a leading role; the coordination of libraries' opening hours in the city and the implementation of a shared distribution of books; the common licensing of digital resources and the redaction of a

<sup>34</sup> Numistral ([www.numistral.fr](http://www.numistral.fr)), the Digital library of the BNU, will open in September 2013, based on the tools developed by the BnF for its own digital library Gallica (<http://gallica.bnf.fr>).

<sup>35</sup> [www.europeana.eu](http://www.europeana.eu). The BNU is participating in the *Europeana Collections 1914-1918* project (<http://www.europeana-collections-1914-1918.eu/>).

shared collection development policy; the creation of a regional preservation centre for libraries' collections; the extension of Numistral, BNU's digital library, to the digital collections of all the alsacian academic libraries and even some public libraries, and the building of a digitisation centre with regional missions within the BNU; or a collaborative LibQual+ study conducted in 2010, that helped us define the needs and dreams of the public for what will be the new library landscape in Alsace after the reopening of the BNU in 2014.

All these projects are not only intended to serve the 80 000 + students and academic community in Alsace in the best possible way, but also to give alsacian libraries a strong position in the national landscape of scientific information and infrastructures, which is currently being completely redefined by the Ministry for Higher Education and research. The BNU, as a national institution, is one of its kind in France, and in this position, was invited by the Ministry besides the main research institutions (like the National Center for Scientific Research – CNRS) and representatives of the University communities, to actively participate in the construction of BSN – “*Bibliothèque scientifique numérique*” (“Digital Scientific Library”), infrastructure which is going to frame the whole national policy on scientific information in the years to come<sup>36</sup>. The BNU will especially exert a leadership role concerning digitisation, co-chairing a group of expert institutions whose mission will be to coordinate the diverse local digitisation initiatives, launch projects of national interest, promote the adoption of good practices, work in close relationship with the BnF, and in the final run give a global visibility of all research and cultural projects involving digitisation that are taking place in French universities, academic libraries and research institutions.

“*BNU Nouvelle*” means “the new BNU”. And in fact, it will be a new institution that will reopen its main doors in autumn 2014, rejuvenated in its walls, in its institutional identity, in its regional, national and international visibility, in its scientific and cultural dynamism, for the empowerment of all its users, in the Alsace region or elsewhere in the world.

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<sup>36</sup> <http://www.bibliothequescientifiquenumerique.fr>.

## **PART 2:**

**LIBRARY USERS: *EMPOWERED AND CHANGED***

## Chapter 5

# FACILITATING INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) ADOPTION AMONG RESEARCH SCIENTISTS IN GHANA

Lucy Dzandu

Senior Librarian, Council for Scientific and Industrial Research– Institute for Scientific and Technological Information (CSIR- INSTI)

Accra, Ghana

[lucydzandu@yahoo.com](mailto:lucydzandu@yahoo.com)

Perpetua Dadzie

Senior Lecturer, Department of Information Studies, University of Ghana

Legon, Ghana

[psdadzie@ug.edu.gh](mailto:psdadzie@ug.edu.gh)

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**Abstract.** This study examines the impact of Information and Communication Technology (ICT) on information provision for research officers in six selected institutes of the Council for Scientific and Industrial Research (CSIR), Ghana. It seeks to determine the levels of awareness, access to, and use of ICT facilities and services by research officers; the extent to which research officers are given training in the use of ICT and levels of skills acquired; and the effects of ICT use on the research activities of research officers. Questionnaires and interviews are used in the data collection. Questionnaires were administered to 100 respondents. The respondents include the Directors and the Librarians who were interviewed as well. The study reveals that the levels of awareness, access to, and use of computers, the Internet, and databases by research officers are high. The study also shows that generally, the level of skills acquired in the use of ICT was high. The research also reveals that the use of ICT enhanced work performance of the research officers. The basic conclusion of this study is that the use of ICT infrastructure has impacted positively on information provision for research officers in the six selected institutes of CSIR. The study recommends the need for librarians in CSIR to effectively publicize the ICT facilities and services available in their institutes in order to increase awareness and patronage. The study also recommends the need for adequate and continuous training for the research officers in the use of ICT facilities and services.

**Keywords:** Information and Communication Technology (ICT), Research Scientists, Council for Scientific and Industrial Research (CSIR), Ghana, Continuous Education.

### 1. Introduction

Information in the modern context is considered as a strategic resource parallel in importance to land, labour, capital, and entrepreneurship – the traditional economic resources which are vital inputs for national development at all levels. Without information, the very functioning of society would come to a standstill. One institution which plays a vital role in the collection, processing, storage and dissemination of information is the library. Libraries of all types serve as information providers and aim at satisfying the information needs of their clientele. In the present era new information technologies are used to perform library functions. The librarian of today is seen as an information resource provider, a resource centre manager, a human gateway to electronic resources, and a walking encyclopedia of quick reference

sources (Asamoah-Hassan, 2003). This transformation is due to the fact that the librarian is able to use sophisticated gadgets; he/she operates in a modern era where libraries are not limited by walls; and where, with the touch of a mouse, he/she can access necessary information from anywhere in the world.

Adeya (2002) in a United Nations Economic Commission (ECA) report, states that ICTs cover Internet service provision, telecommunications equipment and services, information technology equipment and services, media and broadcasting, libraries and documentation centres, commercial information providers, network-based information services, and other related information and communication activities. He simplified the definition by describing ICT as an 'electronic means of capturing, processing, storing and disseminating information'. Alemna and Sam (2006) quoting Bartlett (2002), state that 'ICT refers to systems for producing, storing, sending and retrieving digital files'. ICT can thus be described as a diverse set of technological tools and resources used for creating, storing, managing and communicating information electronically. Generally, ICT is a tool that any sector can use to deliver its services. The ICT revolution has turned the whole planet into a 'Global Village' where communication among people has become independent of physical distance and time. ICTs, especially the Internet in which they all converge as a huge network, are transforming all human activities that depend on information, including library services. In this digital era therefore, the most appropriate technology used by libraries to enhance information provision is ICT.

In the library set-up, ICT has brought about considerable improvement in information provision. It has become cheaper to digitally store, process and access large amounts of information at greater speed. ICT has controlled the information explosion 'bomb' to such an extent that it is now possible to obtain information from any library anywhere in the world regardless of the geographical position of the user and the library. There is no need for any library to attempt to acquire all publications. This is because, with suitable computer software, telecommunication equipment, memory facilities and input-output devices, a researcher in a remote outpost of civilization would be able to search the comprehensive electronic databases in the advanced developed economies, and be able to obtain needed information in electronic or hard copy format (Effah, 2002).

ICT facilities and services available in libraries include computers, access to the Internet and its resources, Local Area Networks (LANs), Compact Disc-Read Only Memory (CD-ROM) databases, online databases, Online Public Access Catalogues (OPACs), fax machines, photocopiers, Inter Library Lending and Document Delivery (ILL/DD) services, computer laboratories, scanners, printers, micro-fiche readers and telephones, among many others.

## **2. Purpose Of Study**

This study examined the impact of ICT on information provision in six selected institutes of CSIR. The institutes involved in the study were the ones based in the capital city of Ghana, Accra namely: Animal Research Institute (ARI), Food Research Institute (FRI), Institute of Industrial Research (IIR), Institute for Scientific and Technological Information (INSTI), Science and Technology Policy Research Institute (STEPRI), and Water Research Institute (WRI). The participants were the research officers in the selected institutes.

On the whole, CSIR has thirteen institutes, in different regions of Ghana. The role of CSIR is to generate and apply innovative technologies which efficiently and effectively exploit science and technology (S & T) for socio-economic development in the critical areas of agriculture, industry, health and environment and improve scientific culture of the civil society (CSIR, 2008). The mandate of CSIR includes among others:

- To co-ordinate all aspects of scientific research in the country and to ensure that the Council, the research institutes of the Council and other organizations engaged in research in Ghana, co-ordinate and co-operate in their research efforts;
- To review, monitor and periodically evaluate the work of the institutes administered by the Council, in order to ensure that research being carried out by the institutes directly benefit identified sectors of the economy and is within the national priorities;

- To institute a system of contract research to ensure that research being carried out in the Council is relevant and cost effective;
- To encourage and promote the commercialization of research results; and
- To undertake or collaborate in the collation, publication and dissemination of the results of research and other useful technical information.

The Council for Scientific and Industrial Research (CSIR) as an organization has not been left out in the ICT revolution. The Council, since 1990, has invested a lot of resources into ICT infrastructure building in the various institutes, and in the institutes' libraries to enhance communication and information provision. However, a preliminary investigation revealed that the availability of some of services such as Inter-Library Lending and Document Delivery (ILL/DD) has not been publicized enough to create awareness among the research officers.

Another problem is the lack of adequate training and skills to enable the research officers access and use the ICT facilities and services available. In addition, some of the research officers cannot, by themselves, search the various online and CD-ROM databases to retrieve required information necessary for their work. It is against this background that this study is being undertaken, to assess the impact of ICT on information provision in six selected institutes of the CSIR. The ICT components studied were computers, the Internet, databases, Inter Library Lending and Document Delivery (ILL/DD) and Online Public Access Catalogue (OPAC).

### **3. Significance Of Study**

The study is significant because previous studies on ICT use in Ghana have focused mainly on institutions of higher learning, university libraries, the health sector, and the banking sector. These include studies by Hinson and Amidu (2006), Amekuedee (2002), Afari-Kumah (2005), and Abor (2005). A few of the studies conducted in research institutions were undertaken outside Ghana. No study has as yet been cited on use of ICT by research scientists in CSIR. The research gap established, that requires to be filled, therefore, is the need for more studies on ICT-related issues in research institutions in Ghana. This study would contribute to knowledge, as no work has been carried out on ICT and information provision in CSIR. The findings of the study may also help other research institutions in Africa trying to enhance use of ICT among their researchers.

### **4. Objectives Of The Study**

The objectives of the study were:

- To determine the levels of awareness, access to, and use of ICT facilities and services by the research officers of the six institutes selected for the study;
- To find out the extent to which the research officers are given training in the use of ICT facilities and services and to determine the levels of skills acquired; and
- To determine the effects of ICT use on research activities.

### **5. Literature Review**

A number of studies have been conducted on ICT in research institutions in developed countries and in some developing countries outside Ghana. An attempt has been made to review some of the literature relevant to this study, with reference to the themes in the objectives of the study.

A study by Said (2006) investigated users' knowledge and awareness of the resources in a digital library program. The finding revealed that users were aware of the various databases available to them and used them to enhance research activities. Cobblah (2002) in his paper asserted that academics and researchers were aware of the ILL/DD service available to them, and therefore patronized it. Obioha (2005) also reiterated that researchers of the Nigerian Institute for Oceanography and Marine Research (NIOMR) have considerable awareness and exposure to ICT and its tools. She

stated that some achievements recorded by the institute in its research activities are partly credited to ICT use, which has played an immense role for the researchers of the institute in seeking out information through the Internet, the World Wide Web, and CD-ROM databases.

Gleeson (2001) in her study on the information-seeking behaviour of scientists and their adaptation to electronic journals stated that 'the Internet is basically a space and time destroyer; it shrinks distance and time to zero; it's as if all the world's scientists are in one room, available at one computer; this is having a profound impact on the way science is done'. She asserted that computer networking was developed as a tool for scientists and engineers, and that, e-mail and file transfers have supported collaboration among scientists and engineers. She also mentioned that, shared databases, intranets, and extranets have helped geographically separated scientists and engineers to work together. This view is corroborated by DCITA (2005) which contends that 'ICT impacts on the communities in which we live and the way individuals, businesses, government, and civil society interact and develop'.

Bii and Wanyama (2001) in their study found out that most people had computers for their official use; and majority of those who did not have their own computers were able to gain easy access to other terminals within the library. Adebayo and Adesope (2007) also stated that it is only when research scientists are aware of, have access to, and can use modern ICTs that they can effectively discharge their functions. They found out from their study that female researchers were aware of ICT but did not have adequate access to ICT facilities. They also found out that the types of ICT needed by female researchers included World Wide Web (WWW), e-mail, e-spreadsheet, word processing, CD-ROM, projector, computer, web design, and chat room. Osuagwu (2005) in his study on the new technologies and services in Internet business also reported the use of e-mail, Microsoft PowerPoint, the World Wide Web, spreadsheets, and web page editing and development as being very common among the research scientists.

Similarly, Zawani and Majid (2000) observed that electronic resource usage had substantially increased, and they attributed the increase to the availability of more and better electronic resources, desktop access through networked workstations, and user-friendly interface design. They asserted that generally, researchers have come to prefer electronic access as opposed to traditional information resources. This view is shared by Obioha (2005) who stated that sometime between 1994 and 1996, there was a shift in favour of electronic resource usage by research scientists; and the shift could be attributed to the increase in popularity and usability of the Internet itself, as well as the resources it contained.

Additionally, a study by Armah (2003) focused on the extent of awareness and use of IT services in the university libraries and extent of training received by the users. The findings revealed that CD-ROM databases for instance, provide a lot of literature for research work, and users find them very useful. Amekuedee (2002) also stated that most journals which used to be in print format are now available online and can be accessed electronically. He added that the role journals play in teaching, learning and research cannot be over-emphasized. An article by Adanu and Amekuedee (2009) reported that the UGCAT (University of Ghana Catalogue) was accessible to the library staff, researchers, the university community and the entire public via the Internet using the URL "<http://library.ug.edu.gh>".

Dulle et al. (2004) conducted a study to examine the extent to which collections at Sokoine National Agricultural Library (SNAL) meet the information needs of the research scientists. The findings revealed that, although the ICT facilities were heavily advertised or publicized over the local area network and on notice-boards within the institute, statistics on the use of online journals was very low. They indicated that the few researchers who use the ICT facilities gain access to electronic journals by means of support from the International Network for the Availability of Scientific Publications (INASP).

Research scientists need to be given adequate training in order to acquire the necessary skills to enable them use computers and other ICT facilities and services. Chisenga (2004) stated that there was the need for ICT users to be trained in how to use the resources. He reiterated that without such training, the ICT resources cannot be used effectively. Obioha (2005) reiterated the need for continuous training to be given to research officers to enable them use

ICT effectively. Amekuedee (2005) also called for the need for librarians and users to be taught skills to equip them to handle automation issues in their libraries. He emphasized the need for such training programs to be continuous.

In a related study, Bii and Wanyama (2001) reported that most library staffs had received training on various computerized library applications to ensure effective use of ICT. Similarly, Omotayo and Fadehan (2005), Cobblah (2002), and Markwei (2002), all indicated that some form of training should be given to researchers and librarians to equip them with some level of skills in the use of ICT. All of them emphasized the importance of continuous training in the use of computers, software, the Internet, databases, ILL/DD and OPAC among other ICT tools to ensure the effective use of these ICT facilities and services.

Contrary to the common view that training in the use of ICT is virtually inadequate for research scientists, Adebayo and Adesope (2007) and Said (2006) indicated that adequate training had been given to the research scientists and they had acquired sufficient skills in the use of ICT.

With reference to the effects of ICT use on research activities, Obioha (2005) stated that some of the achievements that could be ascribed to ICT tools usage include quick search and easy access to information, varieties of information, ease and speed in processing information, and increased knowledge. She stated that some achievements recorded by the institute in its research activities are partly credited to ICT use, which has played an immense role for the researchers of the institute in seeking out information through the Internet, the World Wide Web, and CD-ROM databases. However, some problems cited that militate against the effective use of ICT include inadequate funding; lack of adequate and stable power supply; constant breakdown of computers; Internet problems, inadequate training, and inadequate ICT centres among others (Amekuedee, 2005; Armah, 2003; Chisenga, 2004; and Obioha, 20005).

## 6. Research Methodology

A research strategy based on the case study approach was adopted. This study carried out in October 2009 used questionnaires and interviews to elicit information from the respondents. There were questions on the awareness, access to, and use of ICT facilities and services; training and skills acquired by the research officers in the use of ICT facilities and services, and finally, effects of ICT use on the research activities of research officers. Interviews were held with the directors and librarians of the institutes. The interviews were conducted to corroborate the views or to detect any inconsistencies in the responses from the questionnaires.

The total population for the study was two hundred. To ensure a fair distribution of the respondents across the six institutes, the selection of the respondents was done proportionally to the population; that is, 50 % of each population was selected for the study. This resulted in a sample size of one hundred as shown in Table 1.

**Table 1: List of institutes and the number of research officers sampled**

| Name of Institute                                              | Population | Sample Size |
|----------------------------------------------------------------|------------|-------------|
| Animal Research Institute (ARI)                                | 28         | 14          |
| Food Research Institute (FRI)                                  | 34         | 17          |
| Institute of Industrial Research (IIR)                         | 38         | 19          |
| Institute for Scientific and Technological Information (INSTI) | 22         | 11          |
| Science and Technology Policy Research Institute (STEPRI)      | 10         | 5           |
| Water Research Institute (WRI)                                 | 68         | 34          |
| Total                                                          | 200        | 100         |

Source: Field survey, 2009.

## 7. Results And Discussion

A total of one hundred questionnaires were administered. Out of the one hundred questionnaires, eighty were returned, giving a response rate of 80%. The response rate is illustrated in Table 2.

**Table 2: Institutes of Respondents and Response Rate**

| <b>Institutes of Respondents</b>                               | <b>Frequency</b> | <b>Percent</b> |
|----------------------------------------------------------------|------------------|----------------|
| Animal Research Institute (ARI)                                | 11               | 13.8           |
| Food Research Institute (FRI)                                  | 13               | 16.2           |
| Institute of Industrial Research (IIR)                         | 13               | 16.2           |
| Institute for Scientific and Technological Information (INSTI) | 11               | 13.8           |
| Science and Technology Policy Research Institute (STEPRI)      | 5                | 6.2            |
| Water Research Institute (WRI)                                 | 27               | 33.8           |
| Total                                                          | 80               | 100.0          |

Source: Field survey, 2009.

All the six directors were available for the interviews, and this resulted in a response rate of 100%. Eight out of nine librarians were available for the interviews, resulting in a response rate of 88.8%.

### Access to Computers

The researchers sought to find out whether the research officers had personal computers for their official duties. In response, the majority (88.8 %) affirmed they had computers for their official duties. In the interviews with the directors, the researchers also enquired if every research officer had a computer to work with. The response to this question was to corroborate the question in the questionnaire which enquired from the research officers whether they had computers for their official duties. In response to this interview question, all the 6 directors answered in the affirmative. It was found out that the majority had access to computers for their official duties.

### Publicity of ICT Facilities and Services at the Institutes

We sought to find out from the respondents the various means through which the ICT facilities and services were publicized. All the options provided in the questionnaire - posters, seminars, institutes' websites, brochures, newsletters, demonstrations, flyers, colleagues – were ticked as means through which ICT facilities and services were publicized. The majority, however, indicated that they became aware of these through seminars and their colleagues.

The librarians were also interviewed on issues relating to publicity of electronic resources. They were asked if they publicized the electronic resources available in their institutes in order to create awareness among the research officers. The responses showed that all the librarians did publicize the electronic resources so as to create awareness among the research officers and increase patronage of the resources.

### Use of ICT Facilities and Services and Frequency of Use

The question required respondents to indicate whether they used ICT facilities and services; and if yes, to indicate the frequency of use of the facilities and services. A high proportion (98.8 %) indicated they used computers. On the frequency of use, an overwhelming majority (96.2 %) stated they used them daily; whilst very few (3.8 %) said they used them every other day.

With reference to the Internet, the majority (97.5%) said they used it. Out of this number, most of the respondents (96%) said they used it daily, whilst a few (4%) said they used it every other day.

With regard to databases, a reasonable number of respondents (72.6 %) indicated they used them. On frequency of use, 46.2 % said they used them daily; 35.9 % said they used them every other day; whilst 17.9 % said they used them twice a week.

For ILL/DD service, fewer respondents, (40 %) indicated they used the services. Out of this number, 10 % said the service is used daily; 40 % said they used it every other day; and 50 % said they used it twice a week.

With regard to the OPAC, a lower number of respondents (40.5 %) indicated they used it. On frequency of use, 40 % of this number said they used it daily; 10 % said the service is used every other day; and 50 % said they used it twice a week.

A cross-tabulation table was used to illustrate the responses as shown in Table 3

**Table 3: Frequency of Use of ICT Facilities and Services in the Institutes**

| <b>Frequency of Use</b> | <b>Computers</b> | <b>Internet</b> | <b>Databases</b> | <b>ILL/DD</b> | <b>OPAC</b>  |
|-------------------------|------------------|-----------------|------------------|---------------|--------------|
| Daily                   | 75 (96.2 %)      | 72 (96.0 %)     | 18 (46.2 %)      | 1 (10.0 %)    | 4 (40.0 %)   |
| Every other day         | 3 (3.8 %)        | 3 (4.0 %)       | 14 (35.9 %)      | 4 (40.0 %)    | 1 (10.0 %)   |
| Twice a week            | -                | -               | 7 (17.9 %)       | 5 (50.0 %)    | 5 (50.0 %)   |
| Total                   | 78 (100.0 %)     | 75 (100.0 %)    | 39 (100.0 %)     | 10 (100.0 %)  | 10 (100.0 %) |

The majority of the respondents indicated that they used computers, Internet services and databases; and virtually used them every day. On the contrary, the ILL/DD and OPAC appeared to be rarely used by the research officers, and most of them did not respond to the questions relating to ILL/DD and OPAC.

#### **Relevance and currency of databases, and availability of full text materials in the databases**

We also enquired whether the databases available to the research officers were relevant to their specific area of interest, and whether they were often updated and therefore current. The respondents were also required to state whether full text documents were most often available in the databases.

As regards the relevance of the databases to their specific area of interest, majority of the respondents, (69.9 %) responded in the affirmative. With regard to currency, quite a number (66.7 %) responded positively. As to whether there were full text documents available in the databases, most of them, (56.1 %) answered in the affirmative. This is illustrated in Table 4 as a cross-tabulation table.

**Table 4: Relevance and Currency of Databases, and Availability Of Full Text Materials in the Databases**

| <b>Databases</b> | <b>Relevance</b> | <b>Currency</b> | <b>Availability of Full Text Materials</b> |
|------------------|------------------|-----------------|--------------------------------------------|
| Yes              | 51 (69.9)        | 42 (66.7)       | 37 (56.1)                                  |
| No               | 9 (12.3)         | 8 (12.7)        | 19 (28.8)                                  |
| No idea          | 13 (17.8)        | 13 (20.6)       | 10 (15.2)                                  |
| Total            | 73 (100.0)       | 63 (100.0)      | 66 (100.0)                                 |

It was found out that majority felt the databases were relevant and were often updated and therefore current. Most of the research officers also stated that the databases contained full text documents.

### **Responses to Information Requests through ILL/DD**

This question required the respondents to indicate whether they usually received quick response to their information requests through the ILL/DD service. In response, only a few, (23.8 %) stated 'yes'. Most research officers probably did not use the ILL/DD service and therefore did not respond to the questions. The few who used it indicated they did not receive quick responses to information requests through this service.

### **Training and Skills Acquired in the Use of ICT**

We sought to elicit information about ICT training provided to the research officers and the skills acquired in the use of ICT. The librarians were also interviewed on issues relating to training provided to the research officers to enable them to easily access and use the electronic resources.

### **Adequacy of Training Received in the Use of ICT**

Respondents were required to indicate whether they received any training in the use of ICT facilities and services and if yes, to indicate further, the adequacy of the training received. More than half of the respondents, (64.1 %) indicated they received training in the use of computers. In response to the question on adequacy of the training received in the use of computers, a simple majority (53.1 %) said it was very adequate; 38.8 % said it was adequate; whilst very few (8.2 %) said it was fair.

With regard to the Internet, a reasonable number of them (57.9 %) said they received some form of training. On the adequacy of training received, a few of the number, (34.8 %) said it was very adequate; a greater number, (56.5 %) said it was adequate; very few, (6.5 %) said it was fair; whilst 2.2 % said it was inadequate.

As regards the databases, more than half, (55.6 %) said they received some training. Out of this number, 31.4 % said the training received in the use of the databases was very adequate; 40 % said it was adequate; 7.2 % said it was fair; 5.7 % said it was inadequate; whilst 2.9 % said it was very inadequate.

With regard to ILL/DD, less than half, (24 %) said they received some training. On the adequacy of training received, 17.6 % of the number said it was very adequate; 23.5 % said it was adequate; 41.2 % said it was fair; 11.8 % said it was inadequate; whilst 5.9 % said it was very inadequate.

With reference to the OPAC, only a few of the respondents, (20.4 %) said they received some training. Out of this number, 30.8 % said training received in the use of the OPAC was very adequate, and the same percentage said it was adequate; 15.4 % said it was fair, and the same number said it was very inadequate; 7.7 % said it was inadequate. A cross-tabulation table was used to illustrate the responses as shown in Table 5.

**Table 5: Adequacy of Training Received in the Use of ICT**

| <b>Adequacy of training</b> | <b>Computers</b> | <b>Internet</b> | <b>Databases</b> | <b>ILL/DD</b> | <b>OPAC</b> |
|-----------------------------|------------------|-----------------|------------------|---------------|-------------|
| Very adequate               | 26 (53.1 %)      | 16 (34.8 %)     | 11 (31.4 %)      | 3 (17.6 %)    | 4 (30.8 %)  |
| Adequate                    | 19 (38.8 %)      | 26 (56.5 %)     | 14 (40.0 %)      | 4 (23.5 %)    | 4 (30.8 %)  |
| Fair                        | 4 (8.2 %)        | 3 (6.5 %)       | 7 (20.0 %)       | 7 (41.2 %)    | 2 (15.4 %)  |
| Inadequate                  | -                | 1 (2.2 %)       | 2 (5.7 %)        | 2 (11.8 %)    | 1 (7.7 %)   |

|                 |            |            |            |            |            |
|-----------------|------------|------------|------------|------------|------------|
| Very inadequate | -          | -          | 1 (2.9 %)  | 1 (5.9 %)  | 2 (15.4 %) |
| Total           | 49 (100 %) | 46 (100 %) | 35 (100 %) | 17 (100 %) | 13 (100 %) |

Most of the respondents indicated that they received some form of training in the use of computers, the Internet, and databases. They stated further that the training was generally adequate. Very few research officers, however, stated that they received some training in the use of ILL/DD and OPAC. In their estimation, the training was generally adequate. The responses also revealed that the majority did not respond to the second part of the question, that is, the adequacy of the training received.

### Frequency of Training in ICT

The researchers sought to find out how often training in ICT was provided. 1.8 % stated that they received training four times in a year, another 1.8 % said they received it three times in a year; and 3.6 % indicated they received it once in a year. As many as 85.7 % indicated that the training was provided occasionally; whilst 7.1 % said they never received any training. The responses revealed that training was provided occasionally. This is shown in Table 6.

**Table 6: Frequency of Training Given to Research Officers**

| Frequency of Training | Frequency | Percent |
|-----------------------|-----------|---------|
| Four times in a year  | 1         | 1.8     |
| Three times in a year | 1         | 1.8     |
| Occasionally          | 48        | 85.7    |
| Once in a year        | 2         | 3.6     |
| Never                 | 4         | 7.1     |
| Total                 | 56        | 100.0   |

To cross-check with the responses from the questionnaires, the researcher enquired from the librarians in an interview whether they organized training programmes for the research officers to enable them search the electronic databases and also access the libraries' catalogues relatively easily. They were also required to state the forms the training programmes took. All the respondents indicated that training programmes were organized for the research officers, but they added that these were occasional. In other words, the programmes were organized when the libraries had new resources. They all indicated that the training took the form of demonstrations, seminars, workshops, and hands-on practical sessions.

### Level of Skills in Accessing and Using ICT Facilities and Services

The views of the respondents were sought as to whether they had acquired enough skills to enable them access and use ICT facilities and services. If they had, they were to rate the level of skills acquired. The majority of respondents (83.6 %) replied in the affirmative.

In response to the question on level of skills acquired, 36.4 % indicated it was very high; 43.9 % said it was high; 16.7 % said it was medium; whilst 1.5 % respondent each said it was low, and very low. This is illustrated in the table below

**Table 7: Level of Skills in Accessing and Using ICT**

| Level of skills | Frequency | Percent |
|-----------------|-----------|---------|
| Very high       | 24        | 36.4    |
| High            | 29        | 43.9    |
| Medium          | 11        | 16.7    |
| Low             | 1         | 1.5     |
| Very low        | 1         | 1.5     |
| Total           | 66        | 100.0   |

It was found that the majority had acquired enough skills to enable them access and use ICT facilities and services. Most of them were also of the opinion that the level of skills acquired was generally high.

#### **Extent to which ICT Use has Enhanced Work Performance**

The respondents were required to indicate whether the use of ICT facilities and services had positively affected their work performance; and if yes, to state the extent to which it had enhanced their work performance. An overwhelming majority, (98.7 %) stated that the ICT facilities had positively affected their work performance. Respondents were then asked to indicate the extent to which ICT facilities had enhanced their work performance. In response, a reasonable number, (65.8 %) said the facilities had enhanced their work performance to a large extent; 29.1 % said ‘to an appreciable extent’; and 5.1 % felt that the extent to which ICT facilities had enhanced their work performance was average. This is illustrated in Table 8.

**Table 8: The Extent to which ICT Use has Enhanced the Work Performance of Research Officers**

| Extent to which ICT Use has Enhanced Work Performance | Frequency | Percent |
|-------------------------------------------------------|-----------|---------|
| Large extent                                          | 52        | 65.8    |
| Appreciable extent                                    | 23        | 29.1    |
| Average extent                                        | 4         | 5.1     |
| Total                                                 | 79        | 100.0   |

Thus, the majority were of the opinion that the use of ICT facilities and services had positively affected their work performance. Most of the respondents also stated that the use of ICT facilities and services had enhanced their work performance to a large extent.

#### **Impact of ICT Use on the Research Activities of Research Officers**

The researcher sought the opinion of the respondents as to whether the use of ICT facilities and services had impacted positively on their research activities. They were expected to agree or otherwise, to the statement: “ICT has been very useful to me; the use of ICT facilities and services has impacted positively on my research activities”. The responses revealed that 59.5 % strongly agreed to the statement that the use of ICT facilities and services had impacted positively on their research activities; 39.2 % agreed with the statement, and 1.3 % indicated that he/she did not know.

Majority of the respondents strongly agreed with the statement that the use of ICT facilities and services had impacted positively on their research activities.

## 8. Discussion

From the study, it was found out that most of the research officers were aware of, had access to, and used computers, Internet service and databases. This evidence supports the findings of Said (2006), Armah (2003), Zawani and Majid (2000), Bii and Wanyama (2001) and Obioha (2005); who all indicated that when users are aware of, have access to, and use modern ICTs, their work performance would be enhanced. Research scientists are expected to undertake research as part of their work. The ability to perform this task effectively is dependent on the availability of some ICT facilities and services.

The findings also revealed that most research officers used databases available to them. This assertion is confirmed by Armah (2003) and Amekuedee (2002). Also evident from the study was the fact that databases available to the research officers were relevant to their specific areas of interest. It must be emphasized that priority attention needs to be given to the information needs of the research officers. As such, in addition to ensuring that the databases are relevant and current, the librarians should also provide selective dissemination of information (SDI) services to the research officers. This can be done when the librarians keep profiles on their research interests so that from time to time; searches are done for the research officers. This can go a long way to ensure that current and timely information is made available to them to enhance their research activities. Also, since it is almost impossible for anyone library to be totally exhaustive and have every literature required by all their users, an efficient inter library lending and document delivery service would help the librarians deliver quality service to the research officers.

The findings also revealed that most of the research officers had received some form of training in the use of computers, the Internet, and databases. The findings of the study however established that the training was provided occasionally. This evidence is corroborated by the findings from the interviews with the librarians who indicated that they organized training for research officers but added that the training was occasional and most often organized when the libraries had new resources. The findings showed that research officers desired that training should be continuous. Further probing during the interviews showed that the librarians also wished the training programmes were organized regularly and frequently, to update and upgrade the skills of both the providers and the users of the information. This confirms the findings of Chisenga (2004), Amekuedee (2005), Omotayo and Fadehan (2005), Markwei (2002) and Cobblah (2002), who all indicated the need for continuous training.

Also evident from the analysis is the fact that only a few research officers had received any training in the use of ILL/DD services and OPAC. In the estimation of these few respondents, the training they received was generally adequate. The adequacy of training received as established in this study is in contrast with the findings of Chisenga (2004), and Amekuedee (2005), who stated that the training given in OPAC to researchers, librarians and users of ICT was inadequate and subsequently, called for adequate training to be given to users of ICT. It must be emphasized that, although training in the use of ICT facilities and services may be adequate as expressed by some of the respondents; revolutionary changes brought about by ICT require that training provided in the use of ICT should be continuous to ensure adequate skills at all times.

The findings of the current study further revealed that the use of ICT facilities and services had positively affected the work performance of the research officers and enhanced their research output. This evidence is supported by the findings of Armah (2003), Chisenga (2004), Amekuedee (2005), Obioha (2005), and Said (2006) who all stated that the use of ICT generally enhances the activities of academics and researchers; and consequently results in increased productivity. Interestingly, the findings of the study revealed that irrespective of the difficulties encountered in the use of ICT facilities and services, most research officers would still patronize the services. Four respondents provided the following responses as the reasons why they would continue to use ICT facilities and services even when they face challenges: *'I can't work without computer and Internet'*; *'they are necessary evil for research work'*; *'ICT cannot be disregarded in modern R & D'*; and *'benefits of ICT as compared to conventional services are tremendous'*.

## 9. Recommendations

Though recommendations here are made for CSIR it is expected that the experiences would benefit other researchers in developing countries.

- The librarians of the CSIR institutes should effectively publicize the ICT facilities and services available in the institutes so that patronage of the services would be increased.
- Adequate training should be given to the research officers in the use of the ICT facilities and services
- The institutes should ensure that the training programs are provided frequently rather than occasionally.

The institutes should endeavour to provide modern ICT equipment such as printers, scanners, and photocopiers, among others, in addition to the computers to enhance the work performance of the research officers.

## 10. Conclusion

An overwhelming majority of the respondents were aware of ICT facilities and services in the institutes. Most of the respondents had access to and used the ICT facilities and services to enhance their research activities. Although most of the research officers had received training and had acquired some level of skills in the use of ICT facilities and services, it is important that such training programmes are conducted regularly to constantly update the knowledge of the research scientists. The use of the ICT facilities and services would, as a result, positively impact or affect the research activities and work performance of the research officers. It can be concluded from the findings of the study that the use of ICT facilities and services has impacted positively on the information provision for research officers in the six selected institutes in CSIR.

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## Chapter 6

### A Survey of Rate of Factors Affecting Usage of Electronic Journals

Elahe Hosseini

Graduate Student, Knowledge and Information Science Dept., Al-Zahra (PBUH) University

Tehran, Iran

[Elahehosseini65@gmail.com](mailto:Elahehosseini65@gmail.com)

Amir Ghaebi

Assistant Professor, Al-Zahra (PBUH) University

Tehran, Iran

[Ghaebi@alzara.ac.ir](mailto:Ghaebi@alzara.ac.ir)

Roya Baradar

Assistant Professor, Al-Zahra (PBUH) University

Tehran, Iran

[R\\_baradar@alzahra.ac.ir](mailto:R_baradar@alzahra.ac.ir)

**Abstract.** The purpose of the present study is to survey the rate of effective factors on the use of electronic journals from the perspective of graduate students of Alzahra University.

Research method is analytical-survey. Library study has been used to gather factors, criteria and indicators in order to develop the questionnaire to measure the importance of them. Research community is all of the MA/MS students who are studying at Alzahra University(2011). Sampling method is comparative stratified random and 266 graduated students participated in research totally as sample. A questionnaire as a research tool has been used.

The questionnaire's findings were analyzed by SPSS software (version 18). Results have been indicated that "computer literacy", "Add-ins", "help", "content customization capability" and "search capability" **are the most important criteria**. On the other hand, "search in title", "full text access level", and "advanced search", "computer literacy" and "search in subject" **are the most important criteria**. "Browse by author's name" and "browse by issue" have **the less importance** from the students' view. More than %70 of students **does not know** the rate of importance of all indicators much and very much.

On the other hand, the findings showed that **between** "search capabilities" **and** "search techniques" and also **between** "Add-ins" **and** "computer literacy" a **strong** significant relationship exists. Students of engineering and science faculties are **the most familiar students** to the concept of electronic journals.

Results also have been indicated on the significant difference **between** the rate of familiarity with the concept of electronic journals **and** giving priority of the most important criteria (computer literacy, Add-in, help, content customization capabilities and search capabilities). On the other side, in giving priority of the most important criteria in different faculties a significant difference exists as well.

**Keywords:** Electronic Journals (E-journals), Users, Evaluation, Criteria, Alzahra University, Iran

#### 1. Introduction

Since journals publish the newest news sooner than books, they have always been concentrated as an intermediate between new and old knowledge by the audiences. With web development and its growth in the 1990s, online full-text articles were available and brought many features and benefits. So that, more features were added over time to the electronic journals of various types that were available.

At this time, different kinds of libraries, especially academic ones to meet their goals and duties welcomed and utilized special features of electronic journals to provide needed information at the least time for their users. Also, printing journals to ease for their users welcomed and paved the way to publish electronic journals by removing challenges and barriers. Electronic journals which are indexed in scientific databases are proliferating rapidly and present a new set of challenges for libraries.

Users' increasing demand for access to electronic journals and the maturing of the electronic journal industry are contributing to the trend of shifting away from print journals to electronic journals. For over a decade traditional print journal collections in all types of libraries have been transitioning into hybrid journal collections. The resulting hybrid journal collections provide access to journals subscribed to as print-only, as electronic-only, or in both print and electronic formats, as well as access to selected, full-text journal articles in aggregator databases (Chandra, 2007).

The growth and availability of electronic journals offer libraries the opportunity to provide end users with quick and easy access to more journals than ever before, thereby creating a complex new workload in academic libraries. (Wendy, West, Heather, 2011).

The growth rate in usage of electronic information resources is sufficiently high and if this trend continues for few more years, a time may come when the print versions will get 'totally eclipsed' (Guruprasad, Nikam, 2010).

Electronic resources have become an integral component of library collections at all academic institutions. Bringing electronic resources to campus and making them available to user communities require knowledge and expertise for selection; testing; funding; licensing; acquisition; cataloging; implementation; training; publicity; evaluation; and technical support, including maintenance (Croneis, Henderson, 2000).

The current status of the use of university library information resources, helps librarians to understand the information needs of their users more specifically, and provides some guidelines for the efficient and effective management of information resources (XianjinZha , Jing , Yalan , 2012).

Today, due to the use of computers and computer networks, accelerating the usage of them and strengthening the communication infrastructure and somehow decreasing of the telecommunication costs, moreover, the strong lines of communication, publishers' efforts and users' need in order to access large volumes of data, producing, publishing and distributing of journals have been developed in electronic format.(Gilvari,2006).

Thanks to the importance of electronic journals as a source of information on the needs of users, libraries have been spending a high percentage of its annual budget on the subscriptions of journals which are purchased annually (Kidd, 2002; Luther, 2001; Kyrillidou, 2004). In Iran millions of dollars are spent by shopping centers and educational institutions annually. (Shahrzadi, 2005; Omrani, 2006).Between 30 to 70 percent of the total cost of the used materials is spent on the periodic journals in a library. (Taavoni, 2002). On the other hand, what are important in electronic library services evaluation are the endless users. So awareness of the resources and reasons of efficiency and effective use of resources in terms of end users is considered as a valuable tool for assessing library services. Since the mission of libraries and information centers, are meeting users' information needs and their satisfaction on the usage of material.

The assessment criteria in printed journals (standardization, organization, clarity, indexing, etc...) shows that these are clearly identified and defined, in comparison with online resources evaluation criteria (accessibility, browsing, designing and speed) they are still misleading among authors and those related to this topic. A few features clearly defined and organized in relation to these criteria. After several years of rapid growth of electronic scientific journals have shown the presence, but also because of the lack of a special quality standard to set them there, disorder and chaos are all terrible at it. So in an effort to promote this type of information published, these cases make it necessary to define a set of criteria for evaluating electronic journals.( López-Ornelas, Cordero-Arroyo and Backhoff-Escudero 2005).

López-Ornelas, Cordero-Arroyo and Backhoff-Escudero (2005) in a study titled **“Measuring the Quality of Electronic Journals. The Electronic Journal of Information Systems Evaluation”** presented the methodology developed to create a system to evaluate academic electronic journals. According to their framework, several questions were designed to measure each indicator and, as a result, an instrument to evaluate academic electronic journals was built. Then, the instrument was validated by 16 editors of electronic journals of different countries and different areas of knowledge that were considered as judges to. This instrument was distributed by e-mail. The system just covered 3 criteria and 12 indicators. In comparison the framework of this article is not enough completed and comprehensive. .( López-Ornelas, Cordero-Arroyo and Backhoff-Escudero 2005).

Hosseini, Elaheh, Ghaebi Amir and Baradar , Roya in a study presented in a conference (2012) titled **“Evaluation Criteria of Electronic Journals Indexed in Scientific Databases from End User’s View: a Proposed Checklist”** presented present factors, criteria and indicators to evaluate academic electronic journals Indexed in Scientific Databases from the users’ point view. This checklist was developed in two stages. In the first stage, a collection of factors to evaluate electronic journals thorough librarian study was created. The factors and the criteria and the indicators for evaluation scientific electronic journals were selected and defined. In the second stage, the checklist was validated by 7 professionals in electronic journals and scientific databases field to evaluate clarity, importance, relevance and coverage of each factor, criteria and indicators. As a result, 5 factors (main level), 17 criteria (subdivision level) and 83 indicators (sub of subdivision level) were classified. It should be mentioned that these classified factors, indicators and criteria are restricted to end users’ view. (Hosseini, Ghaebi, Baradar, 2012). The questionnaire is developed according to this study. This study is the first one which surveyed end-users’ point view with these kind of comprehensive criteria and indicators.

Central library of Al-Zahra University uses clients’ perspective, agents, publishers, and the internet to identify electronic journals to purchase. Weeding policy is based on the use of the material in the previous year and to present and introduce new services through the vendor and publisher network. (Zaer Heydari, 2004). Finally, purchase is doing as focused through the Konsyran (Consortium for the purchase of scientific journals of Science, Research and Technology ministry).

Thus four groups of publishers, users, librarians, and vendors selling of electronic journals are the main stakeholders. It’s worth mentioning that end user’s point view is the main point at this search .The aim of this study is providing solutions, suggestions, and realizing the affecting factors on using electronic journals from Al-Zahra University graduate students’ point view in the use of electronic journals. As a result, consortium members of the scientific journals could see their needs and estimate specified budget truly and well-informed.

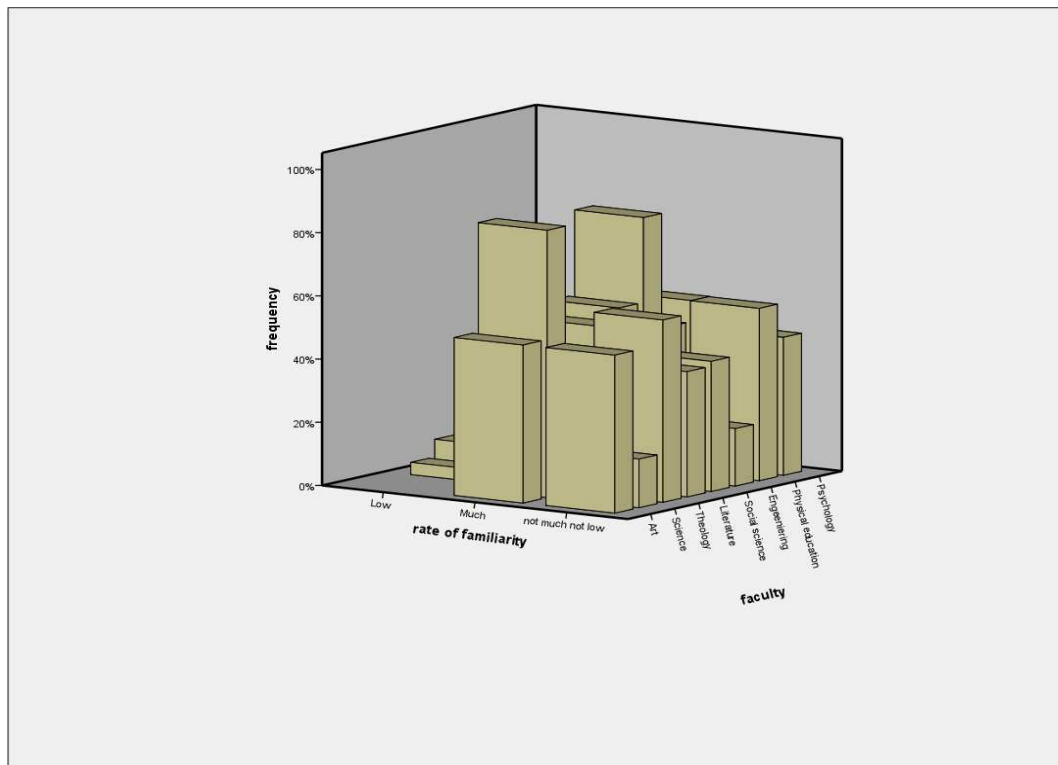
According to the research purpose, the methodology of this study is qualitative. The study methodology is descriptive and analytical. For gathering factors, criteria and indicators Library studying is used. The instrument was found to have adequate content and construct validity as well as internal consistency. The reliability of this study was a preliminary study via a questionnaire. Using free software SPSS and statistical techniques, the Cranach’s alpha coefficient was calculated 0/85, which indicates a research tool has good and acceptable reliability. This research is supposed to answer some questions such as which of electronic journals factors on the use of graduate students have more impact? And what solutions (such) for the qualified use of electronic journals of graduate students are offered?

## **2. Findings**

In total 266 questionnaires have been distributed among the graduate students were acquainted all fields, as a result %9/13 very much, %5/42 much, %5/39 not much not little, %8 little and 4% very little are familiar with the concept of electronic journals.

Figure1 indicates that the students of **engineering and sciences faculties** have the *highest* rate of familiarity with the concept of electronic journals. In this figure 35 majors were divided to 8 faculties and the rate of their familiarity took place in three groups. It's worth mentioning that the rate of their familiarity of much and very much is classified in the group called **much**, little and very little in the group called **little** and not much not little in the group called **not much not little** are categorized.

**Figure 1: faculty students' familiarity with the concept of electronic journals**



### Criteria and indicators ranking

With regard to the average of the mean of criteria, the priority on different criteria in table1 is shown.

**Table 1: criteria ranking**

| Criteria's rank | criteria          | Means' average | Average of cumulative frequency of much and very much |
|-----------------|-------------------|----------------|-------------------------------------------------------|
| 1               | Computer literacy | 5              | 92.90                                                 |
| 2               | Add-ins           | 5              | 85.30                                                 |
| 3               | Help              | 4.75           | 81.10                                                 |

|    |                                       |      |       |
|----|---------------------------------------|------|-------|
| 4  | Content customization capability      | 4.50 | 79.10 |
| 5  | Search capability                     | 4.27 | 77.20 |
| 6  | Save capability                       | 4.25 | 74.87 |
| 7  | Information services                  | 4.25 | 70.85 |
| 8  | Search method                         | 4.12 | 73.27 |
| 9  | links                                 | 4    | 75.35 |
| 10 | Multimedia and graphical environment  | 4    | 65.25 |
| 11 | Different access level                | 3.80 | 54.64 |
| 12 | Related and supplementary information | 3.75 | 63.17 |
| 13 | User interface                        | 3.60 | 54.42 |
| 14 | Browse capability                     | 3.30 | 46.26 |
| 15 | Interaction capability                | 3.25 | 35.37 |
| 16 | Text appearance customization         | 3    | 73.30 |
| 17 | Introduction criteria                 | 3    | 27.81 |

**Table 2: indicators ranking**

| row | indicators             | Percent of cumulative frequency of much and very much |
|-----|------------------------|-------------------------------------------------------|
| 1   | Search in title        | 94                                                    |
| 2   | Full text access level | 93.20                                                 |
| 3   | Advanced search        | 93.20                                                 |
| 4   | Computer literacy      | 92.90                                                 |
| 5   | Search in subject      | 92.90                                                 |
| 6   | Save full text         | 92.80                                                 |
| 7   | Search in full text    | 89.50                                                 |
| 8   | Alert                  | 87.90                                                 |
| 9   | Access to archive      | 87.90                                                 |
| 10  | Help                   | 87.60                                                 |
| 11  | Saved search           | 87.20                                                 |

|    |                       |       |
|----|-----------------------|-------|
| 12 | Search recommendation | 87.20 |
| 13 | RSS                   | 87.20 |
| 14 | Search history        | 86.50 |
| 15 | Search tutorial       | 85.70 |
| 16 | Add-ins               | 85.30 |
| 17 | My favorite journals  | 85    |
| 18 | Saved citation        | 83.50 |
| 19 | PDF                   | 79.70 |

### 3. Hypotheses testing

This research is supposed to survey 4 hypotheses including:

1. More than 70 percent of the students know the importance of each indicator much and very much.

Test is done with the ***Bernoulli distribution of a binominal test*** and with separating of the ranking indicators to two groups. The first group is restricted to *more than the average* (more than 3) and the *other equal and less than the average* (less or equal 3) assumed the exam test. Among them two indicators "*browse by author*" and "*browse by issue*" of "*browse capabilities*" criteria, reject the search hypothesis. This means that with %99 confidence level, the rate of value the P-chlorinated is  $01/0 <$  have caused the rejection theory research and confirm the theory zero. On the other hand, more than %70 of students **does not know** the rate of importance of these two indicators much and very much. The rate of value the P-chlorinated Of 81 indicators  $< 0.01$  and confirm the search hypothesis. This means more than %70 of students knows the rate of importance of 81 indicators much and very much.

2. There is a relationship *between the all criteria* used to evaluate the electronic journals from the perspective of graduate students in Al- Zahra University.

By using the ***Pearson correlation coefficient*** excluded meaningful relations between the 17 criteria of evaluation electronic journals. Between the criteria "*search capabilities*" **and** "*the search method*", between the criteria "*add-ins*" **and** "*computer literacy*" a meaningful relationship is **strong**. Between the criteria "*content customization*" **and** "*help*", between the criteria "*save capabilities*" **and** "*internal and external links*", between the criteria "*help*" **and** "*graphical and multimedia environment*", between "*add-ins*" **and** "*content customization*" there is a **moderate** meaningful relationship.

3. There is a meaningful difference between the rates of students' familiarity with the concept of electronic journal in a prioritization of the most important criteria.

The rate of the students' familiarity has been divided into the three groups (much, not little not much and little). Prioritize the most important criteria from the viewpoint of the students respectively are "*computer literacy*", "*Add-ins*", "*help*", "*content customization capabilities*" and "*search capabilities*".

Considering the fact that the three groups of students' familiarity with the concept of electronic journals is independent of each other, the ***Kruskal- Wallis test*** has been used to confirm or reject the hypothesis.

There is a meaningful difference in prioritizing the most important criteria in the rate of the three groups' familiarity with the concept of electronic journals. The mentioned difference means that students whom the rate of their

familiarity with the concept of electronic journals is much, prioritizing the most important criteria respectively to “content customization”, “search capabilities”, “add-ins”, “computer literacy” and “help”. Students whom the rate of their familiarity with the concept of electronic journals is not the little not much, prioritizing the most important criteria respectively to “help”, “search capabilities”, “computer literacy”, “add-ins” and “content customization”. Students whom the rate of their familiarity with the concept of electronic journals is little prioritizing the most important criteria respectively to “help”, “computer literacy”, “content customization”, “add-ins” and “search capabilities”.

4. There is a meaningful difference between the various faculties’ students of Alzahra University in a prioritization of the most important criteria.

**Kruskal-Wallis test** has been used to confirm or reject this hypothesis. As far as the rate of the criteria for P is less than the 0/5, zero hypotheses rejected and research hypothesis approved. This means that **there is meaningful difference between the various faculties** of Alzahra University in a prioritization of the most important criteria in the use of electronic journals.

The difference is that *education and psychology faculty’s* students prioritize the most important criteria respectively to “search capabilities”, “computer literacy”, “help”, “content customization” and “add-ins”.

Prioritizing the most important criteria from students’ view point of *faculty of Social Sciences and Economy* respectively is to “content customization”, add-ins”, “computer literacy”, “help” and “search capabilities”.

Students of *literature faculty* prioritize the most important criteria respectively “help”, “content customization”, “add-ins”, “computer literacy” and “search capabilities”.

Students of *Faculty of Science* prioritize the most important criteria respectively to “search capabilities”, “content customization”, “computer literacy”, “help” and “add-ins”.

Students of *Faculty of Physical Education* prioritize the most important criteria respectively to “search capabilities”, “add-ins”, “computer literacy”, “content customization” and “help”.

Prioritizing the most important criteria from students’ view point of *faculty of Theology* is respectively to “help”, “search capabilities”, “content customization”, “computer literacy” and “add-ins”.

*Art faculty* students prioritize the most important criteria respectively to “add-ins”, “search capabilities”, “computer literacy”, “help” and “content customization”.

Students of *Faculty of Technical and Engineering Sciences* prioritize the most important criteria respectively to “add-ins”, “computer literacy”, “content customization”, “search capabilities” and “help”.

#### 4. Responding the research questions

- 1- Which factors of electronic journals on the use of graduate students have more impact?

Considering to ranking criteria (table 1) is clear and obvious that “computer literacy”, “add-ins”, “help”, “content customization capabilities” and “search capabilities” criteria are **the most important criteria** from the graduate students’ view point of Al-zahra University. And according to table 2, **the most important indicators** respectively are “search in title”, “full text access level”, “advanced search”, “computer literacy”, “search in subject”, “save full text”, “search in full text”, “alert”, “access to full text in archive”, “help”, “saved search”, “search recommendation”, “RSS”, “search history”, “search tutorial”, “add-ins”, “my favorite journals”, “saved citation” and “PDF”.

## 2- What solutions (such) for the qualified use of electronic journals of graduate students are offered?

Since that “computer literacy” and “help” are common parts of the most important criteria and indicators from their view point, *teaching to users and introducing electronic journals and the scientific information databases* of Alzahra University in the form of training workshops, brochures, the continuous conference and steady and information dissemination in the ground for *holding and also providing booklet and visual tutorials*, *introducing each databases separately*, how to use them with *fluent explanation* on the website of central library freely in order to be familiar with the concepts and applications of factors, criteria and indicators which have significant impact on students’ view point is suggested. According to the high importance of search capabilities and search indicators is offered that through the training of the *search strategies and methods* of to be explained exclusively to users in order to be useful and effective in their utilizing of electronic journals.

## 5. Discussion

This study is done with the main purpose to survey the rate of effective factors on the use of electronic journals from the view point of students (graduate students in all majors) of Alzahra University .So the rate of the importance of 83 indicators examined. Findings showed that more than %70 of the students knows the importance of 81 indicators (except browse by authors and browse by issue) much and very much .***This means most of indicators are confirmed by their perspective.***

On the other hand, with regard to the Mean of the criteria and indicators, the rate of the importance of all of them from the viewpoint of students is much and very much (3 and above 3). ***The most important criteria*** are “computer literacy”, “add-ins”, “help” and *content customization capabilities*”, “search capabilities”. ***The most important indicators*** are included “search in title”, “full text access level”, “advanced search”, “computer literacy”, and “search in subject”. With regard to the fact that “computer literacy” is the most important criteria, ***holding continuous training workshops, providing brochures, search tutorials and uploading them on the library website for users*** would be recommended.

Considering that the “search in title” is the most important indicators of users’ perspective and also there is a strong meaningful relationship between “search method” and “search capabilities”, teaching *search strategies and techniques* in electronic journals and scientific information databases to users are suggested in order to have more effect in their optimal usage of electronic journals and increasing the capabilities of the search and search results with more relevant.

On the other hand, findings also showed that between the criteria “search capabilities” and “search method”, between the criteria “add-ins” and “computer literacy” a meaningful relationship is strong. Between the criteria “content customization” and “help”, between the criteria “save capabilities” and “internal and external links”, between the criteria “help” and “graphical / multimedia environment”, and finally between “add-ins” and “content customization” there is a moderate meaningful relationship.

The results also have been indicated that there is a meaningful difference ***between*** the rates of students’ familiarity with the concept of electronic journal ***and*** in a prioritization of the most important criteria. This means that the rate of familiarity with the concept of the electronic journal ***causes various viewpoints*** in the rate of the importance of criteria and indicators; as a result, it can lead different prioritization among students. So that, ***holding separate training workshops*** for any faculties is suggested.

Findings on the other hand have been indicated that there is a meaningful difference in prioritizing criteria ***between*** students in various faculties. This means that students of various faculties have different perspectives in the rate of importance of criteria in the use of electronic journals. On the other words, ***major*** is one the *non-direct factor* which has significant impact on the use of electronic journals. *Faculty of technical and engineering science* and *faculty of science* have the most familiar perspective with the concept of electronic journals, therefore ***holding educational workshops in various levels*** in order to have better result is offered.

With regard to the fact that "help" criteria is the most important one in priority for students that the rate of their familiarity with the concept of electronic journals is in a little and average (not little not much) level, so **providing help and search tutorial in fluent Persian language** has the most effect on their optimum utilize.

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## Appendix (The questionnaire)

Dear students

This questionnaire is developed to **survey Rate of Effective Factors of Usage of Electronic Journals**. Help me with your answers. Respond through tables that how these indicators are **important** in your viewpoints in the usage of electronic journals. Thanks in advance.

How much are you familiar with the **concept of Electronic journal which are indexed in scientific data bases such as Science direct?**

Very much    Much    not much not little    little    very little

**Major:** ..... **Faculty:**

| <b>Search capabilities</b>                        | <b>Very much</b> | <b>Much</b> | <b>not much not little</b> | <b>Little</b> | <b>very little</b> |
|---------------------------------------------------|------------------|-------------|----------------------------|---------------|--------------------|
| Search in title                                   |                  |             |                            |               |                    |
| Search in author                                  |                  |             |                            |               |                    |
| Search in subject                                 |                  |             |                            |               |                    |
| Search in abstract                                |                  |             |                            |               |                    |
| Search in full text                               |                  |             |                            |               |                    |
| Search in archives                                |                  |             |                            |               |                    |
| Search in one journal                             |                  |             |                            |               |                    |
| Search in no text content                         |                  |             |                            |               |                    |
| Search in multimedia                              |                  |             |                            |               |                    |
| Simultaneous search in several different journals |                  |             |                            |               |                    |
| Free search                                       |                  |             |                            |               |                    |

| <b>Links</b>   | <b>Very much</b> | <b>Much</b> | <b>Not much not little</b> | <b>Little</b> | <b>Very little</b> |
|----------------|------------------|-------------|----------------------------|---------------|--------------------|
| Internal links |                  |             |                            |               |                    |
| External links |                  |             |                            |               |                    |

| <b>Search method</b>              | <b>Very much</b> | <b>Much</b> | <b>Not much not little</b> | <b>Little</b> | <b>Very little</b> |
|-----------------------------------|------------------|-------------|----------------------------|---------------|--------------------|
| Simple/quick search               |                  |             |                            |               |                    |
| Advanced search                   |                  |             |                            |               |                    |
| Using Boolean operators           |                  |             |                            |               |                    |
| Using truncation operators        |                  |             |                            |               |                    |
| Using stemming operators          |                  |             |                            |               |                    |
| Using thesaurus                   |                  |             |                            |               |                    |
| Search limited by year            |                  |             |                            |               |                    |
| Search limited by document's type |                  |             |                            |               |                    |

| <b>Save capabilities</b>       | <b>Very much</b> | <b>Much</b> | <b>Not much not little</b> | <b>Little</b> | <b>Very little</b> |
|--------------------------------|------------------|-------------|----------------------------|---------------|--------------------|
| Save full text                 |                  |             |                            |               |                    |
| Save abstract                  |                  |             |                            |               |                    |
| Save bibliography information  |                  |             |                            |               |                    |
| Representation download volume |                  |             |                            |               |                    |

| <b>Browse Capabilities</b>     | <b>Very much</b> | <b>Much</b> | <b>Not much not little</b> | <b>Little</b> | <b>Very little</b> |
|--------------------------------|------------------|-------------|----------------------------|---------------|--------------------|
| Browse by subject              |                  |             |                            |               |                    |
| Browse by author               |                  |             |                            |               |                    |
| Browse by number of journals   |                  |             |                            |               |                    |
| Browse by title of the journal |                  |             |                            |               |                    |
| Simple browse                  |                  |             |                            |               |                    |

| <b>User-interface</b>       | <b>Very much</b> | <b>Much</b> | <b>Not much not little</b> | <b>Little</b> | <b>Very little</b> |
|-----------------------------|------------------|-------------|----------------------------|---------------|--------------------|
| Language                    |                  |             |                            |               |                    |
| Text format                 |                  |             |                            |               |                    |
| Word & Document Text format |                  |             |                            |               |                    |
| HTML, SGML, XML, GML format |                  |             |                            |               |                    |
| PDF format                  |                  |             |                            |               |                    |

| <b>Graphic and Multimedia environment</b> | <b>Very much</b> | <b>Much</b> | <b>Not much not little</b> | <b>Little</b> | <b>Very little</b> |
|-------------------------------------------|------------------|-------------|----------------------------|---------------|--------------------|
| Graphic environment                       |                  |             |                            |               |                    |
| Multimedia environment                    |                  |             |                            |               |                    |

| <b>Help</b> | <b>Very much</b> | <b>Much</b> | <b>Not much not little</b> | <b>Little</b> | <b>Very little</b> |
|-------------|------------------|-------------|----------------------------|---------------|--------------------|
| Help        |                  |             |                            |               |                    |
| Search tips |                  |             |                            |               |                    |
| FAQ,        |                  |             |                            |               |                    |
| Tutorials   |                  |             |                            |               |                    |

| <b>Interaction capability</b> | <b>Very much</b> | <b>Much</b> | <b>Not much not little</b> | <b>Little</b> | <b>Very little</b> |
|-------------------------------|------------------|-------------|----------------------------|---------------|--------------------|
| Comment                       |                  |             |                            |               |                    |
| Contact us                    |                  |             |                            |               |                    |
| Send to friend                |                  |             |                            |               |                    |
| Emails of authors and editor  |                  |             |                            |               |                    |

| <b>Access Level</b>                   | <b>Very much</b> | <b>Much</b> | <b>Not much not little</b> | <b>Little</b> | <b>Very little</b> |
|---------------------------------------|------------------|-------------|----------------------------|---------------|--------------------|
| Just access to TOC (table of content) |                  |             |                            |               |                    |
| Just access to abstracts              |                  |             |                            |               |                    |
| Just access to TOC and abstract       |                  |             |                            |               |                    |
| Access to full text and image         |                  |             |                            |               |                    |
| Access to back issues (Archives)      |                  |             |                            |               |                    |

| <b>Related and supplementary information</b> | <b>Very much</b> | <b>Much</b> | <b>Not much not little</b> | <b>Little</b> | <b>Very little</b> |
|----------------------------------------------|------------------|-------------|----------------------------|---------------|--------------------|
| Related articles and records                 |                  |             |                            |               |                    |
| See article in other databases               |                  |             |                            |               |                    |
| Citation map                                 |                  |             |                            |               |                    |
| Article type                                 |                  |             |                            |               |                    |
| Related articles from reference works        |                  |             |                            |               |                    |
| The author evaluator                         |                  |             |                            |               |                    |
| Most read articles                           |                  |             |                            |               |                    |
| Most downloaded articles                     |                  |             |                            |               |                    |

| <b>Information Services</b>         | <b>Very much</b> | <b>Much</b> | <b>Not much not little</b> | <b>Little</b> | <b>Very little</b> |
|-------------------------------------|------------------|-------------|----------------------------|---------------|--------------------|
| Alert                               |                  |             |                            |               |                    |
| RSS                                 |                  |             |                            |               |                    |
| Information for readers             |                  |             |                            |               |                    |
| Information for authors             |                  |             |                            |               |                    |
| Information for librarians          |                  |             |                            |               |                    |
| Having printed journal in a library |                  |             |                            |               |                    |

| <b>Introduction of journals</b> | <b>Very much</b> | <b>Much</b> | <b>Not much not little</b> | <b>Little</b> | <b>Very little</b> |
|---------------------------------|------------------|-------------|----------------------------|---------------|--------------------|
| ISSN                            |                  |             |                            |               |                    |
| Publication frequency           |                  |             |                            |               |                    |

|                             |  |  |  |  |  |
|-----------------------------|--|--|--|--|--|
| Subject to coverage         |  |  |  |  |  |
| Publisher                   |  |  |  |  |  |
| Aims and scope              |  |  |  |  |  |
| DOI                         |  |  |  |  |  |
| Sending article instruction |  |  |  |  |  |
| Editorial board             |  |  |  |  |  |

| <b>Content customization</b>             | <b>Very much</b> | <b>Much</b> | <b>Not much not little</b> | <b>Little</b> | <b>Very little</b> |
|------------------------------------------|------------------|-------------|----------------------------|---------------|--------------------|
| My Profile                               |                  |             |                            |               |                    |
| My history search                        |                  |             |                            |               |                    |
| My saved searches                        |                  |             |                            |               |                    |
| SDI: Selective Disseminative Information |                  |             |                            |               |                    |
| My saved Citation                        |                  |             |                            |               |                    |
| My Favorite Journals                     |                  |             |                            |               |                    |
| Save in Endnote                          |                  |             |                            |               |                    |
| Bookmark                                 |                  |             |                            |               |                    |

| <b>Text appearance customization</b> | <b>Very much</b> | <b>Much</b> | <b>Not much not little</b> | <b>Little</b> | <b>Very little</b> |
|--------------------------------------|------------------|-------------|----------------------------|---------------|--------------------|
| Change of color                      |                  |             |                            |               |                    |
| Change of font                       |                  |             |                            |               |                    |
| Change of background                 |                  |             |                            |               |                    |

| <b>Electronic journals' dependence</b> | <b>Very much</b> | <b>Much</b> | <b>Not much not little</b> | <b>Little</b> | <b>Very little</b> |
|----------------------------------------|------------------|-------------|----------------------------|---------------|--------------------|
| Add-ins                                |                  |             |                            |               |                    |
| Computer literacy                      |                  |             |                            |               |                    |

## Chapter 7

# Seeking Online Information Sources among Science Faculties of Developing Countries

Muzammil Tahira  
Ph.D Researcher, Universiti Teknologi Malaysia  
Skudai-81310, Johor, Malaysia  
[mufals@yahoo.com](mailto:mufals@yahoo.com)

Rose Alinda Alias  
Professor, Universiti Teknologi Malaysia,  
Skudai-81310, Johor, Malaysia  
Kanwal Ameen  
Professor, Department of LIS, University of the Punjab  
Pakistan

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**Abstract.** *This study explores the trends and practices of accessing online information of four Science academics of higher education in a developing country. Scientist and technologist differ in their ‘socioeconomic’ background this may have a deep impact on the information needs and seeking behaviors. Literature review reveals that psychological perspective of S&T teachers belonging to various disciplines play different roles, have different needs and respond differently to the same information because of particular psychological attributes (Personality, age skills, style, experience, habits etc.). Activities of basic researcher applied researchers and technologists are not always neatly defined.*

**Keywords:** Online Information, Information Seeking Behavior, Science Information Sources

### 1. Introduction

Scholarly communication is the essence of all scientific work (Gravey, 1979). With the emergence of digital information resources and the internet, the modes of accessing, searching, retrieving and consuming scholarly information have been rapidly changing. This scenario is “effectively transforming science into e-science” (Robert, 2009). The major developments in the scientists’ world are: globalization, exponential growth of S&T literature, increasing tendency of team research (multidisciplinary and interdisciplinary), collaboration at local, national and international level, and rapid disseminations of research results through sophisticated technologies. The direct access to scholarly communication made their practices more productive and collaborative. This scenario has brought certain challenges along with promising opportunities (Tahira, 2010).

The literature reports that science academicians of higher education are heavy users of e-scholarly communication besides traditional sources (Tenopir, 2002; 2003; Smith, 2003; Hiller and Self, 2002; Tenopir and King, 2004; 2001; Jamali, 2008). The advent of scholarly communication and publishing behaviour in open access or subscribed journals have also transformed their behaviour of searching and using digital access (Hemminger, Lu, Vaughan, Adam, 2007; Warlick, 2006; Brown, 2003). All over the world library subscription, online subscribed and unsubscribed sources are playing an important role in meeting their scholarly needs at local, national and international level. Significant changes have been observed during a census survey about current information seeking behavior at University of North Carolina

at Chapel Hill. Basic science and medical science academics were studied. Major changes were increased reliance on web based resources and fewer visits to the library (Hemminger, Lu, Vaughan, Adam, 2007). Life scientists were found the biggest users and OA repositories featured strongly in the ranked lists of life sciences (Nicholas, Clark, Rowlands, Jamali, 2009) “The scientists have high expectation for being able to access all the information they need in the online format” (Jamali, 2008). While, studying the differences in information seeking behaviour of scientists from different subfields of physics and astronomy, he raises question for this community that “What is not available online is not worth reading”. Surridge rightly advocates the importance of web 2.0 as an important mode to meet the scientists’ needs. He says that in principal, this transition to Web 2.0 is perfectly natural. Scientists of the past or present are habitual of “crowd sourcing” of knowledge through open debate and Web 2.0 fits perfectly with the science works (as cited in Waldrop, 2008). The significant increase in the use of electronic modes and systems has a positive influence on the ease of communication without affecting the inherent structure of the process and this initiative is positively debated by faculty members and academic officers at some prestigious institutions by notion “NO” to big deal (Smith, 2007).

The awareness and adoption of e-journals is increasing rapidly while, convenience of use has remained the most important concern for users. However, “the capacity to absorb scientific and technical knowledge is often weak in developing countries, leading to low levels of scientific output and further under-development” (Chan, Kirsop, Costa and Arunachalam, 2005, p.3). Azubogu and Madu found ease of use, convenience, free access to the internet were the main reasons of using internet among Nigerian university teaching staff (2007) .

ProQuest advisory board meeting viewed that permanent access is a big deal, and raised the question to “thoughts on institutional repositories, open access, ILS, and anything else that comes to mind” (Arbor, 2007, May, 7-8). The concept of OA has introduced by Harnad (1999) in a proposal. He suggested to place scholarly pre-prints along with post-prints of peer-reviewed published articles in open archives, and made available for free of cost. “OA is now threatening to overturn the \$6 billion scholarly publishing industry and is forcing even the largest publishers against the ropes” (Poyender, 2004, p.5). A study focused on the impact of ICT on science faculties respondents’ choice pattern for information needs of PU science faculties reflects that both libraries and e-resources are playing important role in meeting respondents’ information needs; direct access to e-sources has slightly decreased the number of their visits to departmental and central libraries; faculty spend comparatively more time on searching web sources than print. General web resources, university libraries and HEC digital library are respectively considered very important resources in search of relevant information and they comparatively spend more time on searching web sources than print sources (Tahira and Ameen, 2010). Their information needs are associated more with the teaching activities followed by research activities. About 68 per cent of science faculty wanted a formal training in the use of online databases (Tahira, 2010).

Providing speedy and reliable e-access to consumers is a fundamental prerequisite for promoting digital culture in a country. This study has been made at a time when the Government of Pakistan initiated significant, concrete efforts by establishing ICT infrastructure in universities and providing e-sources to university libraries in order to meet the changing needs of academicians, especially in the field of Science and Technology (S&T). The Government, through Higher Education Commission (HEC), is spending huge amount of budget for the subscription of online sources and promotion of national digital library programme. This is a unique example of country level subscription of e-sources in the third world (Said, 2006). Right now, HEC is spending huge amount of money in subscribing more than thirty e-databases and 45000 e-books. And it is also providing lending services from different e-repositories (Punjab University Library, n. d.). It provides the broadband facility (at 256Kbps, 512 Kbps and 1 Mbps ) to expand the IT network in education structure. A recent initiative is an open access digital archiving project (journal articles, conference papers, PhD/MPhil theses and dissertations) from HE’s’ institutions of Pakistan.

Library and information services available to the Community of PU are:

1. A central library

2. Institutional/departmental library units

3. HEC National Digital Library on Campus Access (subscribed as well as open access digital sources i.e., e-journals, e-books, links to e-repositories etc.)

These e-databases are searchable at PU campus with one window interface through ELIN (Electronic Library Information Navigator). ELIN integrates data from several publishers, databases and e-print open archives (Punjab University Library, n. d.).

The networked academic environment played a significant role in developing e- culture in public universities. It demands the effective use of these available resources from academics and researchers for competitive teaching and research. They supposed to be able to use effectively the “knowledge @ your [their] fingertips” (Pakistan, HEC, n.d.). At the same time, for LIS professionals it is vital to probe into the pattern and practices of this community regarding seeking and using the digital resources at their disposal.

For the purpose of this study, "OA" and "SA" are defined as:

Open Access: An e-mode to access the information that is digitized, free of charge, copyright and licensing restrictions and available through general online-resources (e.g. Google, Yahoo, Scirus etc., e-links and informal e-communication).

Subscribed Access: HEC, IP based free on campus access to its affiliated institution(s).

## **2. Objectives**

The objectives of this study are to investigate information seeking and usage patterns of Science faculties of PU with special focus on ‘OA’ and ‘SA’ modes to meet their e- information needs.

The key foci are intended to answer the following research questions:

1. What is science faculty preferred e-mode for obtaining journals articles?
  2. Is there any significant difference exist due to the importance assign to ‘SA’ and ‘OA’ in search of relevant information and ‘science faculties’?
  3. Is there any significant difference exist due to the importance assign to ‘SA’ and ‘OA’ in search of relevant information and “respondent’s designation”?
  4. Is there any significant difference exist about the use of ‘SA’ and ‘OA and “science faculties”?
  5. Is there any significant difference exist about the use of ‘SA’ and ‘OA and “respondent’s designation”?
  6. Is there any significant difference to assign level of adequacy of SA” and “science faculties”?
  7. Is there any significant difference to “assign level of adequacy of SA” and “respondents designation”?
- and
8. To explore the major weaknesses of the existing information system.

## **3. Research Method**

Quantitative design of research, based on a self-completion structured questionnaire survey was used (Appendix A). Surveyed population consisted of whole full time S&T teachers working in the 25 institutions/colleges/departments (Appendix B) of all four S&T faculties viz. Sciences, Life Science, Engineering& Technology and Pharmacy. Total response rate was 71% (156 out of 220 existed members). Frequency measure, descriptive statistics (mean ( $\mu$ ) and further, Analysis of Variance (ANOVA) were used to analyse, interpret and draw conclusions. Likert type categorical scale and multiple choices are used to measure the respondents' attributes. One open ended question is designed to get opinion about major weakness of the present system.

The analysis and interpretations of data are described below.

#### 4. Data Analysis and Interpretation

##### 4.1 Population Profile

Population surveyed is consisted of all full time S&T teachers of Science faculties working in the 25 departments/colleges/institutions of PU.

The analysis of faculty wise percentage response in ranking order is presented in Table1. The total academics of four faculties was 267. At the time of data collection, 220 faculty members were present. Percentage response of Engineering and Technology faculty is 83 % (25/30), Science 77% (89/116), Pharmacy 67% (10/15) and Life Science 54% (32/59). Total response rate is 71% (156/220).

Table 1. Response Rate of Science and Technologies Faculties of PU

| Rank | Faculty                  | Total Faculty Members | Present | Respondents | Percentage Response |
|------|--------------------------|-----------------------|---------|-------------|---------------------|
| 1    | Engineering & Technology | 36                    | 30      | 25          | 83                  |
| 2    | Science                  | 138                   | 116     | 89          | 77                  |
| 3    | Pharmacy                 | 22                    | 15      | 10          | 67                  |
| 4    | Life Science             | 71                    | 59      | 32          | 54                  |
|      | Total                    | 267                   | 220     | 156         | 71                  |

The data (Table 2) show percentage response received according to respondent's designation. Majority of respondents are Lecturer 60% (93) followed by Assistant Professor 19% (30), Associate Professor 12% (19) and Professor 9% (14).

Table 2. Frequency Distribution of Respondent's Designation (N=156)

| Rank | Faculty's designation | Frequency | Percent (%) |
|------|-----------------------|-----------|-------------|
| 1    | Lecturer              | 93        | 60          |
| 2    | Assistant Professor   | 30        | 19          |
| 3    | Associate Professor   | 19        | 12          |
| 4    | Professor             | 14        | 9           |

##### 4.2 Preference for E-Scholarly Communication

Table 3 demonstrates variation in positive and negative responses about the respondents' preferences for e-scholarly communication.

Table 3. Preferred E-modes for obtaining Journals Articles

| Faculty                  | Preferred e-modes           | N  | Yes | No |
|--------------------------|-----------------------------|----|-----|----|
| Science                  | Library online subscription | 84 | 42  | 42 |
|                          | Other online sources        | 84 | 50  | 34 |
| Life Science             | Library online subscription | 32 | 21  | 11 |
|                          | Other online sources        | 32 | 21  | 11 |
| Engineering & Technology | Library online subscription | 24 | 16  | 8  |
|                          | Other online sources        | 24 | 19  | 5  |
| Pharmacy                 | Library online subscription | 10 | 10  | 0  |
|                          | Other online sources        | 10 | 7   | 3  |

Frequency measures show that there is much positive response for the preference of "other online sources" in case of Science and Engineering & Technology faculties. However, in case of Life Science, there is equal response for the preferences of both modes of e-sources. On the other hand, all the Pharmacy respondents prefer to consult "library online subscription" to meet their e- scholarly communication.

#### 4.3 Importance of E-modes in Search of Relevant Information

Quality and quantity of information sources have been mounted due to modern ICTs developments and networking environment. Ease of access, least effort in terms of time, money and energy are found important factors that affect the searching, using and quality of information. Due to changing and emerging information needs, respondents' views are analysed about the importance of both types of available e-sources. Table 2 presents the data in this regard.

Data (Table 4) present the opinion of the respondents of all science faculties about the importance of the "SA" sources' and "OA" sources in search of relevant information. Mean values ( $\mu$ ) exhibit that science faculty members consider direct e-access (both modes) 'very important' in searching of relevant information.

Further (Table 4.1) affiliation of Analysis of Variance (ANOVA) indicates that there is no significant difference among 'science faculties' and the 'consider importance' of SA ( $F = .756$ ,  $Sig = .520$ ) and OA ( $F = 1.122$ ,  $Sig = .342$ ).

Table 4. The Importance of Subscribed and Open Access Sources in Search of Relevant Information

| Faculty                  | Sources              | n  | Mean= $\mu$ | Std. Dev. |
|--------------------------|----------------------|----|-------------|-----------|
| Science                  | HEC digital sources  | 87 | 2.9         | 0.963     |
|                          | Other online sources | 84 | 3.2         | 0.822     |
| Life Science             | HEC digital sources  | 32 | 3.1         | 1.008     |
|                          | Other online sources | 32 | 3.4         | 0.499     |
| Engineering & Technology | HEC digital sources  | 23 | 3.3         | 1.054     |
|                          | Other online sources | 24 | 3.5         | 0.721     |
| Pharmacy                 | HEC digital sources  | 10 | 3.2         | 1.033     |
|                          | Other online sources | 10 | 3.1         | 0.994     |

Extremely Important = 4; Very important = 3; Important = 2; Some what important = 1; Not important = 0

Table 4.1. ANOVA Table of Responses among Science Faculties

| Importance of Online sources | F     | Sig.  |
|------------------------------|-------|-------|
| HEC digital sources          | 0.756 | 0.520 |
| Other online resources       | 1.122 | 0.342 |

The mean difference is significant at the .05 level

Table 5. Designation and Importance of Subscribed and Open Access Sources in Search of Relevant Information

| Faculty 's' Designation | Importance of online sources | n  | Mean= $\mu$ | Std. Dev. |
|-------------------------|------------------------------|----|-------------|-----------|
| Lecturer                | HEC digital sources          | 91 | 3.0         | 1.024     |
|                         | Other online sources         | 91 | 3.3         | 0.761     |
| Asst. Prof              | HEC digital sources          | 29 | 3.3         | 0.897     |
|                         | Other online sources         | 27 | 3.2         | 0.943     |
| Associate Prof          | HEC digital sources          | 18 | 3.2         | 0.984     |
|                         | Other online sources         | 18 | 3.5         | 0.618     |
| Professor               | HEC digital sources          | 14 | 3.1         | 0.949     |
|                         | Other online sources         | 14 | 3.5         | 0.518     |

Extremely Important = 4; Very important = 3; Important = 2; Some what important= 1; Not important= 0

Table 5.1. ANOVA Table of Responses by Designation

| Importance of Online sources | F     | Sig.  |
|------------------------------|-------|-------|
| HEC digital sources          | 1.499 | 0.217 |
| Other online resources       | 1.063 | 0.367 |

The mean difference is significant at the .05 level

Descriptive statistics mean values ( $\mu$ ) (Table 5) on the basis of designation imply that they consider both modes of e-access important.

However, affiliation of ANOVA (Table 5.1) responses among science faculties revealed no substantial evidence of significant difference among 'respondent's designations' and the 'consider importance' of both SA ( $F = 1.499$ ,  $Sig = 0.217$ ) and OA ( $F = 1.063$ ,  $Sig = 0.367$ ).

#### 4.4 Frequent Use of E-Sources

Descriptive statistics about the frequent use of e-sources (Table 6.) divulges that all the science faculties' often use "OA" to meet their academic and research information needs. "SA" is often used ( $\mu = 2.8$ ; 2.6) by Pharmacy and Life Science faculties. Whereas, the respondents of Engineering & Technology and Science are occasionally ( $\mu = 2.4$ ; 2.4) used these databases.

Further, affiliation of ANOVA (Table 6.1) about the often use of both e-modes provides no evidence of significant difference among 'science faculties' and the 'use' of) SA ( $F = .392$ ,  $Sig = .759$  and OA ( $F = .182$ ,  $Sig = .908$ ).

Table 6. Often Use of E-Sources by Science Faculties

| Faculty       | E-Sources              | N  | Mean = $\mu$ | Std. Dev. |
|---------------|------------------------|----|--------------|-----------|
| Science       | HEC subscribed sources | 86 | 2.4          | 1.144     |
|               | Other web sources      | 77 | 3.0          | 1.083     |
| Life Science  | HEC subscribed sources | 29 | 2.6          | 1.178     |
|               | Other web sources      | 29 | 2.9          | 1.060     |
| Engineering & | HEC subscribed sources | 24 | 2.5          | 1.382     |
|               | Other web sources      | 19 | 3.0          | 1.062     |

|            |                        |    |     |       |
|------------|------------------------|----|-----|-------|
| Technology |                        |    |     |       |
| Pharmacy   | HEC subscribed sources | 10 | 2.8 | 1.033 |
|            | Other web sources      | 9  | 2.8 | 0.972 |

Very often = 4; Often = 3; Occasionally = 2; Rarely = 1; Never = 0

Table 6.1. ANOVA Table of Responses among Faculties

| Use of Online sources  | F    | Sig. |
|------------------------|------|------|
| HEC subscribed sources | .392 | .759 |
| Other web sources      | .182 | .908 |

The mean difference is significant at the .05 level

| Use of Online sources  | Sig  | F    |
|------------------------|------|------|
| HEC subscribed sources | .392 | .759 |
| Other web sources      | .182 | .908 |

Descriptive statistics mean values (Table 7) about the often use of online sources by designation indicate that "OA" is often used by all of them. Whereas, 'Assistant Professor' ( $\mu = 2.2$ ) and 'Associate Professor' ( $\mu = 2.2$ ) occasionally use "SA" to meet their academic and research information needs.

Affiliation of ANOVA (Table 7.1.) revealed that data provide no substantial evidence about the often use of both e-modes and there is no significant difference existed between 'faculty's designation' and the 'use' of SA ( $F = 2.381$ ,  $\text{Sig} = 0.072$ ) and OA ( $F = .621$ ,  $\text{Sig} = 0.603$ ).

Table 7. Often Use of E-Sources by Designation

| Designation         | Use of online sources  | N  | Mean= $\mu$ | Std. Dev. |
|---------------------|------------------------|----|-------------|-----------|
| Lecturer            | HEC subscribed sources | 86 | 2.5         | 1.111     |
|                     | Other web sources      | 77 | 3.0         | 1.017     |
| Asst. Professor     | HEC subscribed sources | 29 | 2.2         | 1.343     |
|                     | Other web sources      | 29 | 3.0         | 0.868     |
| Associate Professor | HEC subscribed sources | 24 | 2.2         | 1.214     |
|                     | Other web sources      | 19 | 2.6         | 1.277     |
| Professor           | HEC subscribed sources | 10 | 3.0         | 0.997     |
|                     | Other web sources      | 9  | 2.8         | 1.371     |

Very often= 4; Often = 3; Occasionally = 2; Rarely =1; Never = 0

Table 7.1. ANOVA Table of Responses among Faculties

| Use of online sources  | F     | Sig.  |
|------------------------|-------|-------|
| HEC digital sources    | 2.381 | 0.072 |
| Other online resources | 0.621 | 0.603 |

The mean difference is significant at the .05 level

### Adequacy level of HEC Subscribed Sources

When responses are examined about the adequacy level of HEC subscribed sources, the data (Table 8.) present that the respondents of three faculties 'Science', 'Life Science' and 'Pharmacy' are to moderate extent ( $\mu = 1.8; 1.7; 1.6$ ) satisfied from HEC subscribed sources. Mean values also depict slight variation among their responses. Whereas, the faculty members of Engineering and Technology are only 'to some extent' ( $\mu = 1.4$ ) satisfied from these sources.

Table 8. Faculties and adequacy level of Subscribed Sources

| Faculty                  | n  | Mean= $\mu$ | Std. Dev. |
|--------------------------|----|-------------|-----------|
| Science                  | 83 | 1.8         | 0.797     |
| Life Science             | 32 | 1.7         | 0.693     |
| Engineering & Technology | 22 | 1.4         | 0.670     |
| Pharmacy                 | 10 | 1.6         | 0.699     |

To great extent = 3; To moderate extent = 2; To some extent = 1; Not at all = 0

Table 8.1. ANOVA Table of Responses among Science Faculties

| Adequacy level of subscribed sources | F     | Sig.  |
|--------------------------------------|-------|-------|
| HEC digital sources                  | 1.182 | 0.319 |

The mean difference is significant at the .05 level

However, affiliation of ANOVA (Table 8) provides evidence that none of science faculties found "SA" adequate enough to meet their information needs. Data (Table 8.1) indicate that no significant difference ( $F = 1.182$ ,  $Sig = 0.319$ ) exist between 'adequacy level of HEC digital sources' and 'science faculties'.

Descriptive statistics mean values (Table 9) indicate that faculty members by designations found "SA" to moderate extent adequate enough to meet their e-information needs. Further, analysis by ANOVA (Table 9.1) provide evidence that there is no significant difference existed between 'adequacy level of HEC digital sources' ( $F = .076$ ,  $Sig = 0.973$ ) and 'faculty's designation'.

Table 9. Designation and Adequacy level of Subscribed Sources

| Designation         | n  | Mean= $\mu$ | Std. Dev. |
|---------------------|----|-------------|-----------|
| Lecturer            | 88 | 1.7         | 0.713     |
| Asst. Professor     | 29 | 1.6         | 0.897     |
| Associate Professor | 17 | 1.8         | 0.831     |
| Professor           | 13 | 1.7         | 0.630     |

To great extent = 3; To moderate extent = 2; To some extent = 1; Not at all = 0

Table 9.1. ANOVA Table of Responses by Designation

| Adequacy level of subscribed sources | F    | Sig.  |
|--------------------------------------|------|-------|
| HEC digital sources                  | .076 | 0.973 |

The mean difference is significant at the .05 level

#### 4.5 Major Weaknesses of Information System

Lack of up-to-date training of library staff' (N = 18), no promotion of library activities/services (N = 50) and low level of staff motivation towards library services (N = 39) were second and the 'lack of user interaction with library staff' (N = 23) were three major weakness pointed by respondents.

Table 10. *Frequency Distribution of Major Weaknesses of the present information Systems of PU (N=156)*

| Rank | Major weaknesses                                            | N   | Science<br>(N = 5) | Life<br>Science<br>(N = 23) | Engineering<br>&Technology<br>(N = 21) | Pharmacy<br>(N = 6) | Frequency |
|------|-------------------------------------------------------------|-----|--------------------|-----------------------------|----------------------------------------|---------------------|-----------|
| 1    | Lack of up to date training of library staff                | 106 | 22                 | 14                          | 10                                     | 4                   | 50        |
| 2    | Improper marketing/promotion of library activities/services |     | 19                 | 8                           | 9                                      | 3                   | 39        |
| 3    | Low level of staff motivation towards services              |     | 9                  | 7                           | 5                                      | 2                   | 23        |
| 4    | Lack of user interaction with library staff                 |     | 11                 | 5                           | 3                                      | 1                   | 20        |
| 5    | Inadequate internet connectivity speed                      |     | 4                  | 5                           | 2                                      |                     | 11        |
| 6    | Lack of awareness regarding existing information services   |     | 5                  | 2                           | 2                                      | 1                   | 9         |
| 7    | Lack of S&T subject back ground of library staff            |     | 3                  | 2                           |                                        | 2                   | 7         |
| 8    | Non user friendly system                                    |     | 2                  |                             | 1                                      | 2                   | 5         |
| 9    | Lack of standardization                                     |     | 2                  | 1                           | 2                                      |                     | 5         |
| 10   | No-resource sharing among libraries                         |     | 1                  | 1                           | 2                                      |                     | 4         |
| 11   | Finance is major problem                                    |     | 2                  |                             | 1                                      |                     | 3         |
| 12   | Interrupted power supply                                    |     |                    |                             |                                        | 1                   | 1         |

#### 5. Findings

The focus of the study was to assess the trends and practices of Science faculties of university in seeking both e-modes (OA and SA) of online sources to meet their e-scholarly information needs. The following findings are made on the basis of analysed data.

To meet their e-scholarly communication needs, Science and Engineering & Technology respondents prefer to consult "OA" slightly more than others. Whereas, respondents of Life Science give equal preferences for both modes and Pharmacy respondents showed their preferences for "SA" in obtaining e- journals articles. The study also explores trends and practices of these faculties towards the importance and use of e-modes. It discloses direct e-access 'very important' for searching the relevant information and 'often use' to meet their e-information needs. Further, affiliation of ANOVA depicts that there is no substantial difference exists in terms of the 'importance' and 'use' of both e- modes

and 'Faculties'. In the same vein, no significant difference exist in terms of 'importance' and 'use' of these modes and the 'respondent's designations'. The same fact is found true regarding their perception of the adequacy level of "SA".

## 6. Discussion and Conclusion

Faculties of sciences are seeking both e-modes to meet their information e-scholarly information needs. Though these are not using up to the optimum level. Even though, subscribed sources by parent body are considered of high quality, but these pricey databases are also not fully exploiting. Comparative analyses show no significant difference in the importance and use of both modes of online sources. The discipline, experience, and purpose of use do matter a lot in seeking any kind of sources. Palmer (1991) clustered scientists IB (Information Behaviour) into five groups of seekers and non-seekers according to discipline and experience in the field. The way they involves/participate (take on) these activities may slightly vary according to discipline (Ellis, Cox & Hall, 1993). Scientists find e-resources faster, easier, quicker and convenient to use because of value added features. Familiarity (or lack of it) is a root cause of use and non-use of information sources. The variables that affect the selection and use of information sources mentioned by Pinelli (1991) are relevancy, accessibility, ease of use, expense, familiarity and reliability. It is also found in different studies that usually convenience, availability of information and ease of access affect the quality of information source (Hallmark, 2001, Fidal & Green, 2004). Tenopir (2002, 2003) noted that the use of electronic versions still varies from discipline to discipline and age. Lack of awareness was mentioned as one of the contributing factors for non-use of e-journals (Nelson, 2001, Tenner & Ye, 1999; Teskey & Urquhart, 2001). Hallmark (2001) found out that academics meteorologists used easiest method of locating relevant information instead of going for quality. Accessibility (in terms of saving time) (Taylor, 1991; Björk & Turk, 2000; Fidal & Green, 2004) and familiarity (Fidal & Green, 2004) to be the factor that most influences engineers' in selection of information. Case (2007) after reviewed different information seeking research survey related to engineers found "the most compelling reason was relevancy followed by accessibility and technical quality or reliability" (p.256). There have been surprising changes due to Information Communication Technology (ICT) from collection to connection. Furthermore, many factors contribute to the selection and use of different information sources. such as: cost, past success, accuracy, reliability, availability comprehensiveness, usefulness, currency, response time, accessibility, technical quality and the format (Shanmugan, 1999; Yang, 1998, as cited in Majeed & Tan, 2002)." The variables that affect in the selection and use of information sources in e-publishing and communication modes would be a potential area to study infuture. Scientists 'invisible college' and their collaborative activities would be another potential area need to be studied in digital scenario.

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## Appendix A

### QUESTIONNAIRE

- Be sure that data supplied by you will be treated as confidential and will be used for research purpose only. Please feel free in supplying the information.

Faculty:\_\_\_\_\_

Q1. How important are the following sources while searching information on your relevant field?

| Sr # | Resources                | Extremely Important | Very Important | Important | Somewhat Important | Not Important |
|------|--------------------------|---------------------|----------------|-----------|--------------------|---------------|
| 2.1  | HEC digital library      |                     |                |           |                    |               |
| 2.2  | Other online web sources |                     |                |           |                    |               |

Q2. How do you obtain journal articles? (Please check all that apply)

3.1 Library’s online subscription c

3.2 Other online web sources c

Q3. How often do you use the following sources of information?

| Sr # | Sources                  | Very often | Often | Occasionally | Rarely | Never |
|------|--------------------------|------------|-------|--------------|--------|-------|
| 4.1  | HEC subscribed databases |            |       |              |        |       |
| 4.2  | Other web sources        |            |       |              |        |       |

Q4. When in need of information, are you most likely to.....? (Check one)

5.1 Search HEC subscribed sources c

## 5.2 Search other online sources c

Q 5. To what extent accessibility of HEC subscribed databases adequate enough to meet your information needs?

To great extent c To moderate extent c To some extent c Not at all c Never used c

Q.6 In your view, what is/are the overall major weakness(es) of the present information services of the PU? Your valuable suggestions are more than welcome. (You may use extra sheet)

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## Appendix B

### LIST OF S&T FACULTIES AND DEPARTMENTS/INSTITUTIONS/COLLEGES of PU SURVEYED

#### 1. Faculty of Life Sciences

1. Institute of Biochemistry & Biotechnology
2. Department of Botany
3. Department of Zoology
4. Department of Micro Biology & Molecular Genetics
5. Institute of Mycology & Plant Pathology
6. Department of Psychology & Applied Psychology
7. Centre for Clinical Psychology

#### 2. Faculty of Sciences

1. Department of Physics
2. Institute of Chemistry
3. Institute of Geology
4. Centre for High Energy Physics
5. Centre for Geographic Information System (GIS)
6. Department of Space Science
7. Department of Geography
8. Centre for Clinical Psychology
9. Department of Mathematics
10. College of Statistical and Actuarial Sciences
11. Centre for Solid State Physics
12. College of Earth and Environmental Sciences
13. Punjab University College of Information technology

#### 3. Faculty of Pharmacy

1. University College of Pharmacy

#### 4. Faculty of Engineering & Technology

1. Institute of Chemical Engineering & Technology
2. Institute of Quality & Technology Management
3. College of Engineering and Emerging Technologies
4. Department of Metallurgy and Material Engineering

## Chapter 8

### Usage and Expectations of Web 2.0 Tools in E-Learning Platforms: a Study on Basic Medical Science Students

J. K. Vijayakumar

Senior Science and Technology Specialist Librarian,  
King Abdullah University of Science and Technology  
Jeddah, Saudi Arabia.

[janardhanan.vijayakumar@kaust.edu.sa](mailto:janardhanan.vijayakumar@kaust.edu.sa)

[Worked with American University of Antigua during the study]

Hemachandran Nair

Assistant Librarian, Kerala University  
Trivandrum, India

[ghnair@gmail.com](mailto:ghnair@gmail.com)

[Worked with American University of Antigua during the study]

Majid Pathan

Dean Library Services and Vice President International Affairs  
American University of Antigua  
Antigua, West Indies  
[drmpathan@uamed.net](mailto:drmpathan@uamed.net)

**Abstract.** *This paper is based on a survey for analyzing the awareness of the students about Web 2.0 applications and their expectations during the integration of e-learning technologies. Major finding are wikis, instant messaging, media sharing, social networking and VoIP show high usage by major group of students, where very less usage of podcasts, social bookmarking, blogs, feeds is found. More students mainly want wikis, forums to be integrated to in e-learning system along with media/file sharing, streaming, chat rooms, blogs and bookmarking.*

**Keywords:** User expectations, E-learning, Web 2.0, Medical Education

#### 1. Introduction

It is interesting to watch how Web 2.0 applications are changing educational technologies through several instances. University of Michigan did a latest study about the usage of their websites (Chapman and Varnum, 2007) and it shows a high time use of Web 2.0 applications of their students. The top five activities as ranked by average response (in descending order) were emailed, social networking, IM, reading/using wikis, reading blogs. Gras University of Technology Austria did a survey among their students and faculty to find out the usage of Web 2.0 and how it affects the University's learning environment (Safran et al., 2007). They found that most of Web 2.0 applications are scarcely used in courses and in self-organized learning activities. Only weblogs and wikis are frequently used Web 2.0 applications in learning processes. Another study of first year students from the University of Melbourne (Kennedy et al., 2006, Kennedy et al., 2008) shows that 76% of them use Internet for searching study related information and significant portion of them uses Web 2.0 applications.

It is very clear that Web 2.0 is changing all aspects of academic life including practice and training of Medicine. Academic Institutions, Hospitals, Libraries, Publishers, E-Learning Vendors, Search Engines, Media, literally all walks of life are implementing Web 2.0 technologies to serve the need of “digital natives” and “digital immigrants”. According to Giustini (2006), Web 2.0 ultimately provides the opportunities of using software to create optimal knowledge building opportunities for doctors. He also provides a list of websites started in the early stages of Web 2.0 in medical practices and teaching.

White (2007) says that some of the most challenging outstanding issues in this area relate to administration, ownership, sustainability and assessment, which are more cultural (institutional and personal) rather than technical. It also suggests that the focus of further research should be on guiding and facilitating change rather than looking for purely technological solutions.

## **2. Background of this Study**

American University of Antigua (AUA) College of Medicine is a US Offshore Medical School established in the year 2004 at Antigua, West Indies. Its students and faculty population comprises mostly Americans and Canadians with multi ethnic and religious culture. AUA started implementing latest IT application from the start of the University. Most of the students are in the Category of “Digital natives” or “Y Generation”, born between 1980 and 1994 (McCrindle, 2006). Their familiarity and ease of ICT use because they spent their entire lives surrounded by and using computers, videogames, digital music players, video cams, cell phones, and all the other toys and tools of the digital age” (Prensky, 2001).

After finishing Basic Medical Science, students will go to various hospital locations in USA for continuing their next Semester and clinical rotations. Delivering the necessary learning materials and resources and interaction between faculty and students are becoming a challenge in terms of different locations. With this, AUA decided to improve its learning system with supplementing with e-learning facilities. Being integrated to the e-learning Systems, Web 2.0 tools are also going to play a major role in any e-learning platforms. Therefore there was a need to study the present student population before implementing the facilities, about their usage of Web 2.0 applications for learning and research purposes.

The future world of practice for the current medical student is rapidly evolving and the changes are already beginning to occur. The appropriate responses by medical educators are an increased awareness of the inevitable trend and acceptance of the importance of self-organized and personalized learning. The role of a medical educator will change but, as always, it will be concerned with how to enhance learning by considering the potential of the new technology (Sandars and Haythornthwaite, 2007). Web 2.0 applications are also creating new challenges for medical professionalism, where the scope is not well-defined in undergraduate medical education (Chretien et al., 2009).

Before implementing these technologies, it is very important that each institution should study the awareness and usage of these technologies by their users. The clear idea of user needs and how do they want to utilize these services should be analyzed carefully. Administrators need to gather evidences about the degree of usage of these emerging technologies. Based on this one should aim to develop and implement appropriate technological - tools in e-learning, where each learner will have a personalized learning system that is linked to a vast range of learning resources, containing both codified and tacit knowledge, and that is also adaptive to both the learner but also the wider learning community within which each learner is an integral part (Sandars and Haythornthwaite, 2007). Attwell (2007) identifies the basic paradigm shift from learners engaging with institutional provision and procedures to the institution engaging with the learner. He underlines the need for institutions to recognize the new cultures of learning and networking and change in institutional practice and procedures and in curriculum organization and pedagogic approach.

## **3. Methodology**

A quantitative and non-experimental survey on basic medical science students has done to collect data. The questionnaire contained closed and structured questions with pre-defined choices, semantic differential scale questions and 2 open and unstructured questions. Questionnaire in print-format were given to students and the responses were collected by hand. The questions are framed by taking care of all ethical facts related to an academic research. Proper confidentiality and security are given to the data collected, and the identity of participants is protected. The data collected through the survey is analyzed and graphical representations are developed. 162 responses are received in response to questionnaire distribution to a group of 200 randomly selected students.

#### **4. Data Analysis and Discussion**

From the literature review, it has seen that there are many evidences of Web 2.0 applications in e-learning, medical education and medical practice. It is also found that students are using wikis, instant messaging, podcasting, social networking, and blogs for their medical education.

##### **4.1 Age distribution**

Out of 162, 101 respondents (62%) are in the age group of 21-25, 52 (32%) are in the group of more than 26 years and 9 (6%) are in the group of 15-20 group. A major portion of the sample group belongs to Y Generation or Digital natives, born between 1980 and 1994 (McCrindle, 2006)

##### **4.2 Time share on Internet**

On an average, 60 (37%) respondents spent 4-7 hours in a day on Internet, 46 (29%) spent 1-3 hours, 36 (22%) spent 8-12 hours and 20 (12%) spent more than 12 hours. This shows high use of Internet by the students, where only 29% spent less than 3 hours online.

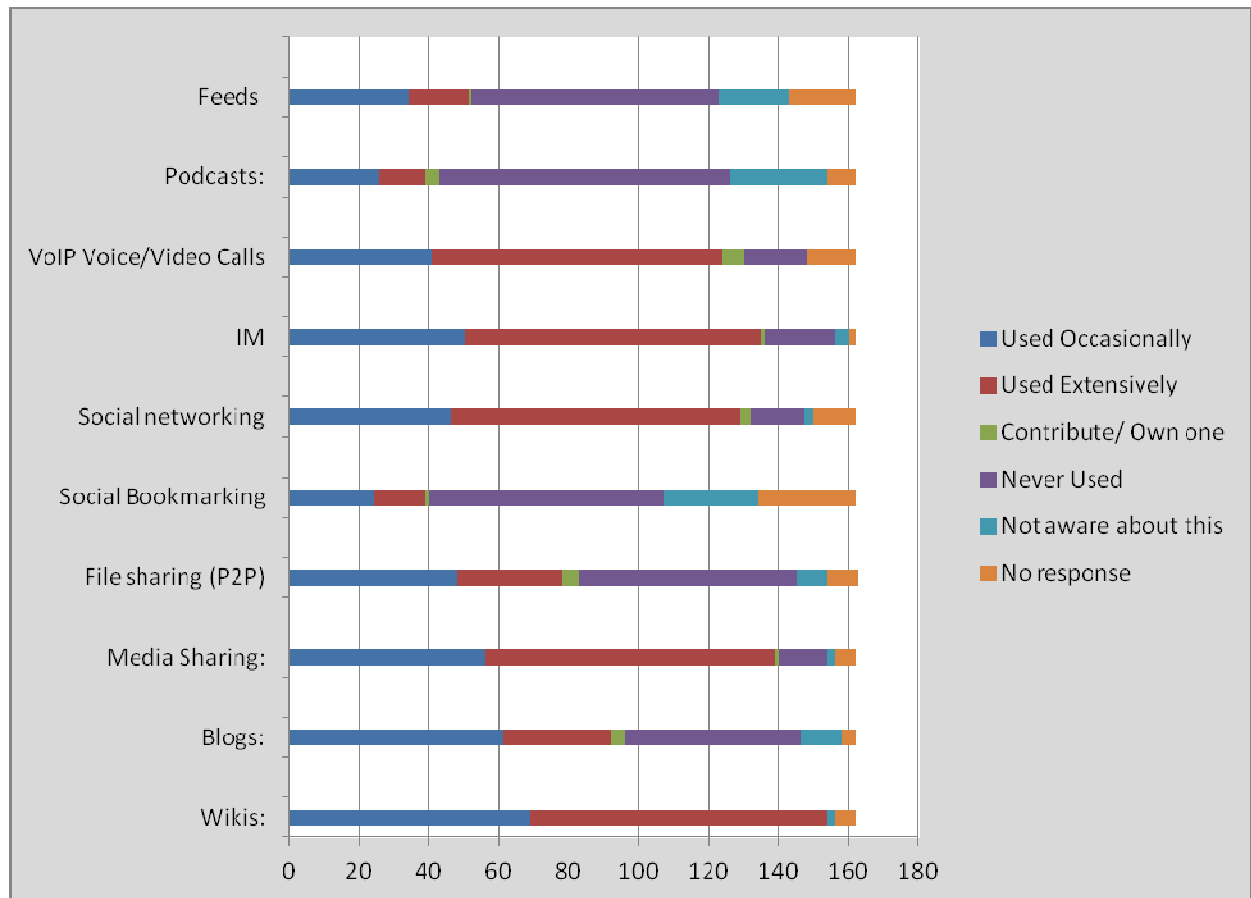
##### **4.3 E-resources usage for their Medical education**

*Question: What kind of resources do you use from the Internet for your Medical education?*

It is interesting to note that 107 (66%) respondents use blog and wikis; portals and websites are used by 95 (59%); 92 (57%) respondents chat with peers through Internet; medical school department websites are used by 81 (50%); news and feeds are used by 66 (42%); e-Journals are used by 63 (39%); e-books are used by 56 (35%); library databases and resources are used by 49 (30%) and 15 (9%) of them use other resources such as; e-mail, access medicine, you tube, educational videos, magic jack, search engines, black board etc. This shows relatively high use and activities of Web 2.0 applications by medical students as compared to traditional resources.

##### **4.4 Usage of Web 2.0 tools**

Among Web 2.0 tools used by medical students, following visualized graph will show how extensive these technologies are being used by the students.



*Usage of Web 2.0 tools for Medical education*

Wikis, instant messaging, media sharing, social networking and VoIP are extensively used by major part of students. When we add students group who occasionally use these 5 technologies, we can clearly say that these are the technologies showing a positive trend in student's usage. But, very less usage of podcasts, social book marking need to be analyzed more, since these two technologies have high usage in medical practice and collaborative research. Blogs, feeds and file sharing are also have low usage among the sample group.

This data is closely matching with some of the previous studies, where Sandars, et al. (2010) find over 90 percent medical students using instant messaging and social networking sites. But this data is contradicting findings from Ward, Moule and Lockye (2010) where they found podcasting used by 32%, blogs by 44%, wikis 28% and social networking by 16%. If we compare with different studies (White, 2007), (Kennedy et al., 2006) the findings have minor variations due to region, non-promotion from the campus faculty, unawareness among students and non-availability of such systems in their e-learning platforms.

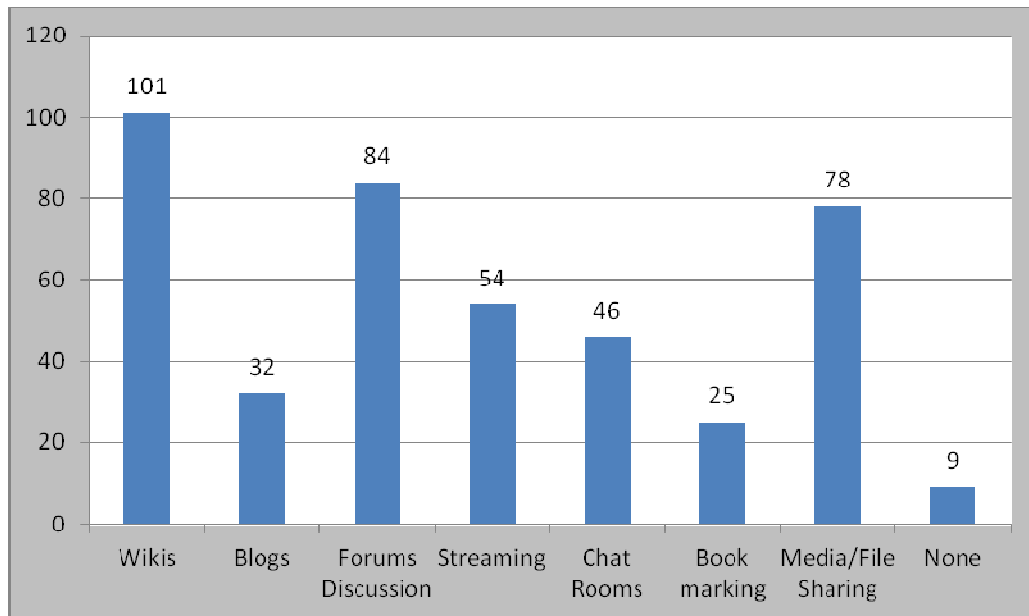
#### **4.5 Usage of a course management (e-learning) system**

Out of 162 respondents, 137 (85%) have used or using e-learning system for their medical education, 20 (12%) are not used and 5 (3%) did not respond to this question.

#### **4.6 Availability of Web 2.0 features in course management systems**

68 (42%) respondents told that the course management system they used has forums and discussion feature in it. Other features are 53 (32%) wikis, 63(30%) media/file sharing, 38(23%) chat rooms, 26 (16%) blogs, 22 (14%) streaming, 11 (6%) book marking and 39 (24%) told they did not have any web.20 features in their course management system. Most the e-learning products are integrating such Web 2.0 tools and support blended teaching.

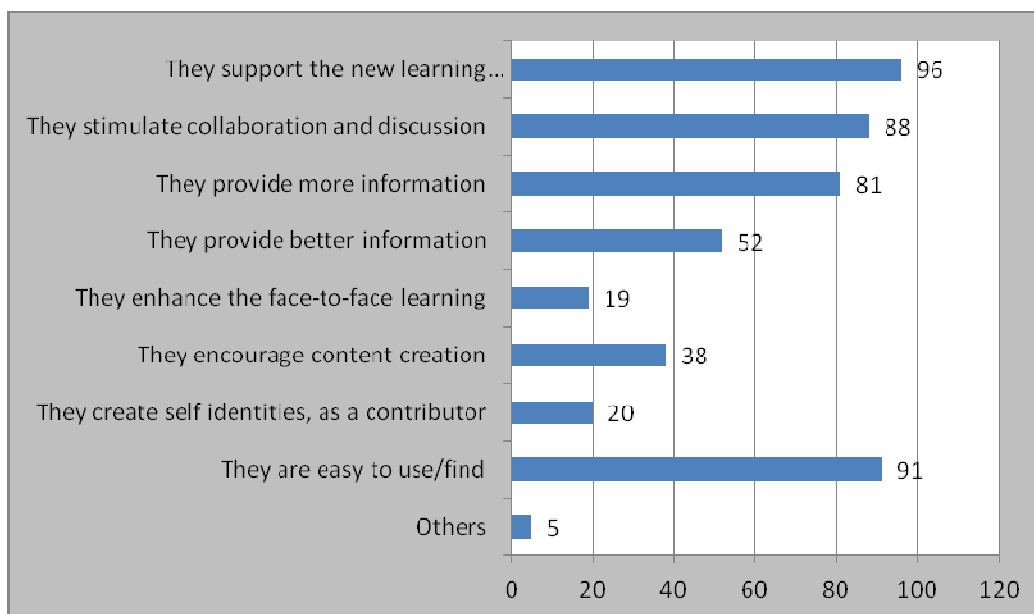
#### 4.7 Expectation of Web 2.0 feature(s) in an E-Learning System.



101 (62%) respondents expect wikis function in an e-learning system, 84 (52%) expect forum and discussion, 78 (48%) expect media/file sharing, 54 (33%) expect streaming, 46 (28%) expect chat rooms, 32 (20%) expect blogs, 25 (15%) expect book marking and 9 (5%) respondents do not expect any Web 2.0 features. It is interesting to note that wikis, forums and discussions and media file sharing are wanted by most of the students, and shows its popularity among them.

#### 4.8 Reasons for Web 2.0 tools are useful in learning

96 (59%) respondents agree that Web 2.0 tools will support new learning, 91 (56%) believe that they are easy to use and find, 88 (54%) agree that they stimulate collaboration and discussion, 81 (50%) believe that they provide more information, 52 (32%) believe that they provide better information, 38 (23%) believe that they encourage content creation and only 20 (12%) believe that they enhance the face-to-face learning.



#### 4.9 Evaluation of information from blog, wiki, podcasts etc

*Question: Do you evaluate a blog, wiki, podcasts etc based on its authority, reliability, authenticity etc, before using the information for your course works, assignments, research projects etc?*

92 (58%) respondents evaluate the information from wikis, blogs, podcasts etc before they use them for their course assignments and research works, 53 (34%) do not evaluate and 12 (8%) respondents did not answer this question. It should be a matter of concern for the educators to have clear guidelines and policies in evaluating the information from Web 2.0 resources (Haigh, 2010b, Burke and Snyder, 2008)

#### 4.10 Reasons preventing from using the information from Web 2.0

66 respondents (41%) found limited information as the reason preventing them using information from Web 2.0 tools, 45 (28%) found un-professional content, 43 (27%) found non-authoritative information, 40 (25%) found irrelevant information or information overload, and 34 (21%) found the non-acceptance from faculty or school are the reasons. 3 respondents found other reasons such as “youtube is blocked”, “internet not used much for study” etc. Posting of unprofessional online content, especially via Web 2.0 platforms is a matter of concern and there are no adequate policies having in place as well, even in U.S. Medical schools (Chretien et al., 2009).

#### 4.11 Citing practice of the information from Web 2.0 tools

*Question: When you use the information from a blog, wiki, podcasts etc for your course works, assignments, research projects, do you cite (provide reference) them properly?*

98 (62%) respondents said that they cite the references of information taken from Web 2.0 platforms, but 46 (29%) of them do not cite and 14 (9%) respondents did not respond to this question. A considerable minority is still do not practice citations or giving credit to the original author and this leads to plagiarism and unethical situations. Masters and Ellaway (2008) suggest plagiarism detection systems to be incorporated even in Web 2.0 environments.

#### 4.12 Willingness to contribute share in Web 2.0 environments

*Question: Are you willing to contribute/upload/share OR just to read/listen/download in Web 2.0 environments?*

113 (70%) respondents are willing to contribute or share information in Web 2.0 environments, 40 (25%) would like to read or listen and 9 (5%) did not respond to this question. This willingness is a positive trend, especially, the emphasis on student authorship and debugging of sophisticated academic knowledge bases are the powerful features of Web 2.0 tools (Bratsas et al., 2009).

#### **4.13 Awareness of Web 2.0 usage in medical practice and CMEs**

*Question: Do you know that Web 2.0 tools are used by physicians and hospitals in medical research and CME?*

It is interesting to note that 87 (54%) respondents are NOT aware about Web 2.0 usage in medical practice, research and continuing medical education programs, where only 57 (35%) knows about it and 18 (11%) did not respond to this question. The wide use of these emerging technologies in continuing medical education/professional development, patient education (Boulos and Wheelert, 2007) and on all areas of medical practice (Hughes et al., 2008) is already known, and basic medical science students should be aware about it.

#### **4.14 Open Ended Questions**

*Q.1 When comparing with traditional resources (faculty notes, textbooks, journals etc), what are your overall opinion about the information available in Web 2.0 platforms?*

Most of the responses are very common, general, specific and short answers. As compared to traditional resources, generally they found that the information from Web 2.0 platforms are easy to access, easy to search, convenient, informative, useful, faster, great, helpful, important, good, effective, awesome, concise, direct, efficient and so on.

Some of the responses suggest that one must be skeptical when using the information and should be used wisely. Main concerns of the critical views are about the reliability of information, the need of evaluation etc. Some students clearly say that text books and faculty notes are more relevant and will not be replaced by technologies. Most of the opinions tend to be saying that these resources can be a good supplementary resource, if evaluated and wisely used.

*Q.2 What are your comments about effective use of Web 2.0 tools in medical education OR practice?*

The comments worth mentioning or critical are mainly about the reliability of information, the need of evaluation etc. Some students say that medical school and faculty should clearly accept the practice of using the information from Web 2.0 tools. Blocking of such tools, like You Tube, are opposed by students and asking for more open approach from the administrators. There are opinions pointing out to the necessity of implementing these technologies to e-learning platforms, such as blackboard. They demand steaming videos of faculty lectures and podcasts kind of blended approach.

#### **5. Major Findings**

The study revealed the high use of Internet by basic medical science students and a relatively high use and activities of Web 2.0 applications. Among Web 2.0 applications, wikis, instant messaging, media sharing, social networking and VoIP show high usage by major group of students. Even though a positive trend is visible here, very less usage of podcasts, social bookmarking is also found. This trend is against to high usage of podcasts and collaborative bookmarking practices, especially in medical practice. Low usage of blogs, feeds and file sharing is also found.

85 percent of students have used or using e-learning system for and forums and discussion were highly noticed by students in their e-learning systems, followed by wikis, media/file sharing, chat rooms, blogs, streaming and bookmarking. Respondents expect most of the Web 2.0 functions to be integrated into a technologically advanced e-learning system. Students want medical school and faculty to clearly accept the practice of using the information from

Web 2.0 tools. Students feel there is a need of a more open approach from the administrators and are against to blocking of Web 2.0 tools, like YouTube, Facebook etc. There are opinions pointing out to the necessity of implementing these technologies to e-learning platforms, such as blackboard at American University of Antigua. Streaming videos of faculty lectures and podcasts kind of blended approach are the main demands.

More students believe Web 2.0 tools will support new learning, easy to use and find, stimulate collaboration and discussion, provide more information, and provide better information. Few students also believe that these tools encourage content creation and enhance the face-to-face learning. The information from wikis, blogs, and podcasts etc. are evaluated only by 58 percent students, before they use them for their course assignments and research works. Major group of students, 62 percent, provide proper citations for the information taken from Web 2.0 platforms. Knowingly or unknowingly a considerable minority is still do not practice citations or giving credit to the original author(s)

When we look at a broader perspective of Medicine 2.0, it is interesting to note that 54 percent basic medical science students are NOT aware about Web 2.0 usage in medical practice, research and CMEs. Only 35 percent knows about the wide usage and 11 percent did not respond to this question. Students believe that textbooks and faculty notes/presentations are more important, but Web 2.0 tools can be a good supplement, when they are used wisely.

## **6. Conclusion**

The literature review and the study revealed several needs and expectations of the medical students and by medical practitioners, even by community as a whole, in the age of Web 2.0 technology advancements. These tools attract the largest portion of Internet users, the youngsters and growing especially in medical fields. E-learning platforms are inflexible in a larger way to accommodate the possibilities of building credible resources through communities, and contrast with the user-centered approach of Web 2.0 services (Craig, 2007).

Innovative solutions at institutional level in a Web 2.0 environment are the need of the hour. It includes rethinking the underlying architecture of the present e-learning models. Students should be provided with the facilities in a format more familiar to them and used by most of them. Educators and faculty need to understand that these activities will add value to their teaching and learning process. Faculty also should be trained with a new emphasis as learners in a rapidly changing environment. Virtual Learning Environments supportive curricula, social media policies, e-professionalism for students, feedback systems and related possibilities still need to be fully identified and explored in various settings/scenarios at the campus level. Teaching and learning institutions should be equipped for the future with the appropriate technology and allow their students to achieve their maximum potential. The immediate calls are for integrating wikis, instant messaging, audio/video streaming, social collaborations, podcasts and Web 3.0 based semantic content present e-learning systems.

While implementing Web 2.0 or Web 3.0 features, the aim should be to develop and implement tools in e-learning platforms and each learner should have a personalized learning system linked to a vast range of learning resources, social media and collaboration, where each learner and his/her contribution is an integral part (Sandars and Haythornthwaite, 2007, Vijayakumar, 2008). Researches in Web 2.0 applications in learning tend to be very descriptive failing to identify and discuss the pedagogical theories and models that support and enhance the exploitation of Web 2.0 tools in (e)-learning environments, (Sigala, 2007), which needs attention and further research.

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## Chapter 9

# User studies of UNISWA Library: A case study of IDE Education Students

Thiyam Satyabati Devi  
Assistant Librarian & Cataloguing Head  
University of Swaziland  
Swaziland  
[sdthiyam@uniswa.sz](mailto:sdthiyam@uniswa.sz)

**Abstract.** User study requires a significant amount of time and effort. The understanding of users' behaviour can be gained through a particular user study. This paper will discuss the prerequisite of user studies in libraries in the current electronic environment where libraries are faced with new challenges brought by the digital revolution and rapidly developing new information technologies. It will also examine the importance of understanding user behavior and changing information needs and their satisfaction with the quality of the services libraries provide to meet the changing requirements. It indicates that the use of library resources and services is necessary to help students meet their information requirements. The study finds that textbooks and journals are the most popular sources of information for the student's course work.

**Keywords:** User studies, Information sources, E-resources, Information need, UNISWA, UNISWA Library

### 1. Introduction:

The Libraries provide relevant information resources for teaching, learning and research. The University of Swaziland (UNISWA) Library faces challenges in providing adequate resources and efficient services to its users because of the phenomenal growth in students over the past decade. The impact on library resources includes overuse of books and journals and the deterioration of the collection and the escalating cost of the journals. The University comprises of three campuses Mbabane, Luyengo and Kwaluseni each has its own library decentralized from Kwaluseni campus. To cater mainly for employed learners, the institution offers a limited number of programmed through distance education. It is the centre of academic and intellectual excellence. It has the responsibility of preserving and transmitting the nation's cultural heritage while at the same time contributing to the generation of new knowledge through research. The university provides programmes and courses that are relevant to the human resource needs of the country that are in line with regional and global trends. The university has embarked on a programmed to ensure a smooth introduction on the use of library services and resources.

### 2. Vision and mission of the University

The vision of the University is Leadership through Excellence in Education.

The mission of the University of Swaziland is to achieve Excellence in teaching and learning, research and training, community service, provision of opportunities for consultancy, professional leadership and enterprise development in the contemporary context. The mission shall be achieved through:

- Providing education opportunities at undergraduate and postgraduate levels;
- Establishing new academic programmed designed to meet the emerging needs of society;
- Conducting a regular review of the academic programmed to make them demand-driven to stakeholders;

- Creating continuing education opportunities for the inculcation of lifelong learning;
- Generating, disseminating and preserving knowledge through research, stakeholders' participation and development of an institutional repository;
- Teaching that encourages participation of students in entrepreneurship endeavours;
- Accounting to stakeholders that fosters efficient utilization of resources;
- Coordinating and monitoring performance among all employees and periodic evaluation and review of activities; and
- Providing an excellent working and learning environment for staff and students.

### **3. Mission and objectives of the UNISWA Library**

#### **3.1 Mission**

The Mission of UNISWA Library is to provide efficient service and access to quality academic information resources support the instructional, Learning, Research and Administrative functions of the University. In this regard, the library provides both print and electronic resources.

#### **3.2 Objectives**

- To computerize library operations and services to optimize information access through local, regional and internet connectivity.
- To develop library infrastructure in the three campuses in order to provide equitable services.
- To develop a responsive collection that is sufficiently comprehensive and representative of the universe of knowledge and ideas to keep pace with the changing needs of users.
- To select and acquire relevant and current documents, irrespective of format, to support the teaching learning and research needs of the users.
- To reduce the time lag between the ordering of resources and their accessibility.
- To create and maintain up-to date and user-friendly information retrieval tools to facilitate access to information sources.
- To develop and maintain efficient and effective services to meet user needs.
- To equip users with necessary skills which will enable them to fully exploit and utilize effectively the full range of information resources.
- To foster library research skills for lifelong independent learning.
- To collaborate and cooperate with other information centres in order to provide access to a wide range of information sources.
- To develop a responsive management system to ensure efficient and effective delivery of library and information services.
- To promote library staff development through education and training.
- To build and maintain a stable team of competent, motivated and dedicated library personnel.
- To install and maintain reliable library environment monitoring systems to promote document preservation.
- To contribute in the development of libraries in schools by equipping student teachers with the necessary skills for establishing school libraries.

### **4. User studies**

User studies are one of the research areas in library and information science. They are large and varied because it is an area that combine some of the most used and least precisely define concept of library and information science. User studies were first study in 1948 in the scientific Information conference of the Royal Society where Urquhart & Bernal reported their research findings. It ranges in complexity from detailed research investigation which model how a user gathers information to the most elementary in house, descriptive studies of a single library. The benefits of user study are:

- Understanding the process of information transfer;
- Improvement of information transfer and communication;

- Modification of circulation services
- More information about print readability;
- Determination of the relationship between user and staff;
- More information regarding users work habits;
- Awareness of the possible application of user information to administration problems and decisions relating to budgeting, staffing etc.

## **5. Problem Statement**

Most of the students come with different backgrounds some of which possess better skills to utilize library materials, while others have not enough skill for utilizing library materials such as computer, use of internet, and library catalogue. The University of Swaziland Library conducts user orientation programs for students but still there are some students who face difficulties in accessing and use library materials. They take time to understand and use the library so the author embark on this study, with the hope of finding their problems and find out the solution so that the materials in the library can be put into maximum utilization.

## **6. Purpose of the study**

Library information resources are expensive. The librarians needed to manage these resources and make them accessible are also costly in terms of recruitment, and retention. To attain cost effectiveness in the university library services and promotes the use of library information resources, this study sought to establish ways of improving the information-seeking behaviour of the students. To attain that goal, the study stipulated the following objectives:

- ❖ To determine the frequency of library use by the IDE students;
- ❖ To establish the students' information needs;
- ❖ To find out the awareness and use of library resources by the students;
- ❖ To find out the type of information sources used by the students;
- ❖ To ascertain users opinion regarding usefulness and adequacy of information sources and services;
- ❖ To know the purpose of seeking information;
- ❖ To establish the problems that the students encounter in information seeking;
- ❖ To determine the extent of use of library resources;
- ❖ To establish the level of satisfaction of needs; and
- ❖ To evaluate the services provided for the restructuring of information and/or the establishment of new services if necessary.

## **7. Methodology**

User studies have a wide range of research approaches and methods. The study used a questionnaire-based survey method, which was less time-consuming. The population of the study consisted of 128 IDE B.Ed. students. The survey comprises of 10 questions personal information such as gender, Department, Information sources used by the respondents, use of UNISWA library, adequacy of library collections, library use and computing skills of respondents, and the use of IT-based library sources and services in order to ensure reliability and effectiveness of the instrument. In order to save time and ensure better response rate, the questionnaires were personally distributed to students in their class 76 students (59.36%) filled-in-questionnaires were returned by the users. The collected data were analysed, classified and tabulated by employing statistical methods.

## **8. Analysis**

The analysis is based on the questionnaire collected from the IDE education students that were taught Academic communication skill (Library skill) in their 1<sup>st</sup> year of the programme of University of Swaziland. The data collected from the students are analyse and tabulated as follows.

Table 1. Number of students

| Sl. No. | Students           | B.Ed. Sec. Commerce | B.Ed. Secondary | B.Ed. Primary | Total |
|---------|--------------------|---------------------|-----------------|---------------|-------|
| 1.      | Number of Students | 14                  | 39              | 75            | 128   |

Table 2: Overall response

| Sl. No. | Questionnaire             | B.Ed. Sec. Commerce | B.Ed. Secondary | B.Ed. Primary | Total  | %      |
|---------|---------------------------|---------------------|-----------------|---------------|--------|--------|
| 1.      | Questionnaire distributed | 9                   | 33              | 67            | 109    | 85.15% |
| 2.      | Questionnaire return      | 6                   | 24              | 46            | 76     | 69.72% |
| 3.      | Questionnaire not return  | 3                   | 9               | 21            | 32     | 29.35% |
| 4.      | Response rate             | 66.66%              | 72.72%          | 68.65%        | 69.72% | 69.72% |

Table 2 shows the rate of response of the students. The sample for survey was made for 128 students which comprises of students from B.Ed. commerce, B.Ed. secondary and B.Ed. Primary, but the questionnaire can be distributed to 109 students only. Out of the 109 (85.15%) questionnaire distributed the investigator got response from 76 students which is about 69.72% and 33 (29.35%) students did not give their response. The rate of response is highest in B.Ed. Secondary which arises to 72.72%. The percentage of questionnaire return and not return is based on the number of students the questionnaire has distributed (109).

Table 3: Gender study

| Sl. No. | Male   | Female | Total  |
|---------|--------|--------|--------|
|         | 30     | 46     | 76     |
|         | 39.47% | 60.52% | 59.37% |

Table 3 shows the gender of the respondent. Out of the 76 respondent it was found that 30 (39.47%) were male and 46 (60.52%) were female. The overall response rate is 59.37%.

Table 4: Awareness of e-resources in the library

| Sl. No. | Yes  |        | No   |        | No response |        |
|---------|------|--------|------|--------|-------------|--------|
|         | Male | Female | Male | Female | Male        | Female |
| 2.      | 27   | 40     | 3    | 5      | N/A         | 1      |
| 3.      | 90%  | 86.95% | 10%  | 10.86  | 0%          | 2.17%  |

Table 4 shows the awareness of e-resources in the library. It is found that the male (90%) are more aware than the female (86.95%). Only 10% of the students are not aware of e-resources.

Table 5: Satisfaction with the service available in the library

| Sl. No. | Yes    |        | No   |        | No response |        | Total  |
|---------|--------|--------|------|--------|-------------|--------|--------|
|         | Male   | Female | Male | Female | Male        | Female |        |
| 1.      | 17     | 22     | 12   | 23     | 1           | 1      | 76     |
| 2.      | 56.66% | 47.82% | 40%  | 50%    | 3.33%       | 2.17%  | 69.72% |

Table 5 shows the satisfaction of the user with the services provided in the library. More than half (56.66%) of the male are satisfied with the services but (50%) of the female are not at all satisfied with the services provided by the library. Most of them complain mostly that the books are obsolete and there were not enough number of books for them to borrow.

Table 6: Frequency of visit to the library

| Sl.No. | Frequency   | No. of respondent |        | No response |        | Total | %     |        |
|--------|-------------|-------------------|--------|-------------|--------|-------|-------|--------|
|        |             | Male              | Female | Male        | Female |       | Male  | Female |
| 1.     | No response | N/A               | N/A    | 1           | N/A    | 1     | 3.33% | N/A    |
| 2.     | Everyday    | 1                 | N/A    | N/A         | N/A    | 1     | 3.33% | N/A    |
| 3.     | 2-3 times   | 9                 | 13     | N/A         | N/A    | 22    | 30%   | 28.26% |
| 4.     | Weekly      | 18                | 30     | N/A         | N/A    | 48    | 60%   | 62.21% |
| 5.     | Monthly     | 1                 | 3      | N/A         | N/A    | 4     | 3.33% | 6.52%  |

Table 6 shows the frequency of visit to the library. The frequency of students visit to the library has been classified into five time gaps as shown in table 6. Majority of users were visiting the library weekly followed by 2-3 times in a week. There are hardly students who visit the library on a daily basis since the students are part time only.

Table 7: Purpose of visit to the library

| Sl. No. | Purpose                     | Respondent |        | %      |        | Total | %      |
|---------|-----------------------------|------------|--------|--------|--------|-------|--------|
|         |                             | Male       | Female | Male   | Female | Both  |        |
| 1.      | To study                    | 23         | 41     | 76.66% | 89.13% | 64    | 84.21% |
| 2.      | To borrow books             | 25         | 41     | 83.33% | 89.13% | 66    | 86.84% |
| 3.      | Browsing the shelves        | 1          | 6      | 3.33%  | 13.04% | 7     | 9.21%  |
| 4.      | Used of reference materials | 19         | 30     | 66.33% | 62.21% | 49    | 64.47% |
| 5.      | Read the journals           | 2          | 11     | 6.66%  | 23.91% | 13    | 17.10% |
| 6.      | To collect course materials | 11         | 19     | 36.66% | 41.30% | 30    | 39.47% |
| 7.      | Know the latest arrival     | 3          | 3      | 10%    | 6.52%  | 6     | 7.89%  |
| 8.      | Read newspaper & magazines  | 6          | 10     | 20%    | 21.73% | 16    | 21.05% |
| 9.      | Browse e-resources          | 12         | 23     | 40%    | 50%    | 35    | 46.05% |

N.B. Multiple answers were permitted.

From the above table 7 it is seen that most users visited the library to study and to borrow books. Other than study and borrowing the books the users visit the library for using the reference material which is about 64.47%. Only a few users visit the library to know the latest arrival of the books and journals. Visiting library for browsing the electronic resources is not so encouraging at it stands for 46.05% only. Comparing gender wise for the purpose of visit female shows more in all except in used of reference materials and know the latest arrival.

Table 8: Use of library source and service

| Sl. No. | Services            | No. of respondent |        | %      |        | Total | %      |
|---------|---------------------|-------------------|--------|--------|--------|-------|--------|
|         |                     | Male              | Female | Male   | Female | Both  |        |
| 1.      | Issue / Return      | 21                | 31     | 70%    | 66.39% | 52    | 68.42% |
| 2.      | Reference service   | 23                | 37     | 76.66% | 80.43% | 60    | 78.95% |
| 3.      | Books and journals  | 15                | 26     | 50%    | 56.52% | 41    | 53.95% |
| 4.      | Seminar/ conference | N/A               | 2      | N/A    | 4.35%  | 2     | 2.63%  |
| 5.      | Indexing            | N/A               | 7      | N/A    | 15.22% | 7     | 9.21%  |
| 6.      | Abstracting         | N/A               | 4      | N/A    | 8.70%  | 4     | 5.26%  |
| 7.      | Bibliography        | 21                | 25     | 70%    | 54.35% | 46    | 60.53% |
| 8.      | Newspaper           | 12                | 13     | 40%    | 28.26% | 25    | 32.89% |
| 9.      | Interlibrary loan   | 5                 | 13     | 16.66% | 28.26% | 18    | 23.68% |

N.B. Multiple answers were permitted

Table 8 shows that the use of library sources and services. It was found that majority of the students uses Reference service, followed by Issue / return and then Bibliography. More than 50% of the students are also using the books and Journals. Seminar/Conference, Indexing and Abstracting are hardly used. From the table it shows that the service provided by the UNISWA library is not lacking far behind. One female has not responded about the source and services

Table 9: Purpose of seeking information

| Sl. No. | Purpose                              | No. of respondent |        | %      |        | Total |        |
|---------|--------------------------------------|-------------------|--------|--------|--------|-------|--------|
|         |                                      | Male              | Female | Male   | Female | Both  |        |
| 1.      | For carrier development              | 9                 | 17     | 30%    | 36.96% | 28    | 36.84% |
| 2.      | To solve immediate practical problem | 5                 | 7      | 16.67% | 15.22% | 12    | 15.79% |
| 3.      | To keep up to date                   | 9                 | 14     | 30%    | 30.43% | 23    | 30.26% |
| 4.      | To write an article /research paper  | 28                | 43     | 93.33% | 93.48% | 71    | 93.42% |

N.B. Multiple answers were permitted

Table 9 indicates that the decreasing rank and order of information seeking. To write an article/research paper with 93.42% out of 76 respondents was the most preferred response for seeking information. This was followed by the reasons that include seeking for carrier development, keeping up-to date and to solve immediate practical problem. Out of the 76 responded only 1 male and 2 female has no response on the purpose of seeking information. So majority of the students seek information for writing the assignment only.

Table 10: Preference of E-journals and Print Journals

| Sl. No. | E-journals |        | Print  |        | Both |        | No response |        |
|---------|------------|--------|--------|--------|------|--------|-------------|--------|
|         | Male       | Female | Male   | Female | Male | Female | Male        | Female |
| 1.      | 8          | 15     | 11     | 17     | N/A  | 5      | 12          | 9      |
| 2.      | 26.66%     | 32.60% | 36.66% | 36.95% | N/A  | 10.86% | 40%         | 19.56% |

Table 10 shows the respondent preference on the use of E-Journals or the print journals. From the table it is seen that they prefer the Print journals more than the E-Journals. More than 40% of the male has not responded their preference. This is the reason the use of E-resources is not encouraging among the distance education learners.

Table No.11. Problem on use of e-resources

| Sl. No. | Yes    |        | No     |        | Total      |
|---------|--------|--------|--------|--------|------------|
|         | Male   | Female | Male   | Female | No problem |
| 1.      | 7      | 17     | 23     | 29     | 52         |
| 2.      | 23.33% | 36.95% | 76.66% | 63.04% | 68.42%     |

From the above table it is found that more than half the student's 76.66% male and 63.04% female do not have a problem in using the electronic resources but still the e-resources usage is not that encouraging since they are distance learners and the e-resources subscribed by the library is IP authenticated so they can't use beyond the library and they have no time to spend much in the library. It is of the opinion that the usage will be more if they are allowed to access at their own pace with the user ID as stipulated by the university.

Table No. 12. Does the ACS (Academic and Communication) class help you?

| Sl. No. | Yes  |        | No   |        |
|---------|------|--------|------|--------|
|         | Male | Female | Male | Female |

|    |        |        |       |       |
|----|--------|--------|-------|-------|
| 1. | 29     | 42     | 1     | 4     |
| 2. | 96.66% | 91.30% | 3.33% | 8.69% |

Most students were of the opinion that the class (ACS) Academic Communication Skill which was done by the Library professional to teach library skill to the first entrant of the university are of phenomenal use. They were of the view that for more effective and efficient use of the library, students need instruction on how to use information sources in their subject areas.

## 9. Recommendation

University library faces a number of challenges in its user instruction of Library skill but still it is through user education the librarian is able to take the challenges. The library user instruction program should be to empower students with the benefit of using information resources in all formats, and be proficient in library use. They should integrate physical expansion of collections and buildings as well as propose a well-planned user instruction and information skills program.

It should lobby for funds to increase the print collections; electronic collections and expand on the access points, increase the number of librarians serving the ever growing population of students in the University. All these should be done while addressing the information demand so that the resources are appropriately utilized.

For publicity of the libraries resources and services, the following could be done:

- Use of attractive posters in each section of the library describing the services and scope of collections;
- Issue out pamphlets about the library services and workshops;
- The user instruction workshops should be marketed using flyers and pamphlets, promoting the collections, services and library regulations in general and provide current editions of video coverage that includes new developments in the library to be used to introduce fresh students to the library and its services;
- Be creative in producing posters and postcards depicting library topics. This could turn out to be a money-generating venture;
- Library personnel should publish articles, news releases and short communications for the university news publications to increase on the sensitisation mechanisms or use the library Web page for publicity;
- Students should also properly be initiated and guided into being good information resource users so that they do not depend mainly on lecturer notes to accomplish their knowledge goals;
- Reading and research should be the dominating activity of which information literacy is the foundation; and,
- Lecturers should take the lead in initiating library use to their students, with the librarians left to ensure that the students are appropriately informed and guided.

## 10. Conclusions

Understanding the actual needs of information users and taking steps to satisfy them is the first step towards effective service provision. This can best be achieved through formal in-depth studies. Librarians, especially those involved in bibliographic instruction should be interested in ways individuals approach the library and the methods they use to search for needed information. Librarians could redesign strategies intended to improve the provision of library services especially towards information skills development and information resource awareness.

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## Chapter 10

### Use of E-resources in Universities: A study with special reference to Kannur University, Kerala

**M. Bavakutty**  
Professor and Director  
Department of Library and Information Science  
Kannur University Thalassery Campus Palayad 670661  
Kannur, India  
[m.bavakutty@gmail.com](mailto:m.bavakutty@gmail.com)

**Abdul Majeed K.C**  
Associate Professor  
Department of Library and Information Science  
Farook College, Calicut 673 632, India  
[kcamajeedfc@yahoo.co.in](mailto:kcamajeedfc@yahoo.co.in)

**Mohammed Najeeb. V**  
Health Sciences Librarian  
King Abdul Azeez Medical City  
Riyadh, Saudi Arabia  
[najeebmankada@gmail.com](mailto:najeebmankada@gmail.com)

**Abstract.** *E- Resources, especially in higher education and research, are getting a prime place in academic activities. The academic community is slowly switching over from using print resources to e- resources. Changing priority of the academic community for e-resources create a new challenge to library management at Colleges and Universities. Studies are conducted to know about the priority and use of e-resources for academic purposes. This study is aimed at assessing the extend of use of e-resources by postgraduate students, research scholars and the faculty of Kannur University, Kerala State. It is generally observed that the academic community is well aware of e-resources and interested in using it to the maximum, but at the same time feels that the facilities provided are inadequate to promote and strengthen the use of e-resources in academic institutions.*

**Keywords:** Academic Community, E-Resources, Kannur University

#### 1. Introduction

Use of information and its management become inevitable in an era of information explosion and widespread use of digital information sources. In the modern world, people are depending more on technology for useful information sources and services than on traditional gadgets. Development in the field of Information Communication Technology (ICT) enabled the use of networking, Internet, mass storage media, interactive video technology, virtual reality, and public and private databases. It opened up new possibilities in dealing with collection, organization, and dissemination of information in a large scale. Today information can not only be stored, retrieved, communicated and broadcasted electronically in enormous quantities at phenomenal speed, but can also be rearranged, selected and transformed to different forms. It is to be noted that the large quantity of useful information products is only available in digital format. Extend of access to information and its use in the country make them information 'rich' or 'poor'. The gap between so-called 'information rich' and 'information poor' countries is widening further and 'information poor' countries are now under the threat of 'information starvation'. To overcome this unfortunate situation, Libraries and Information Centers

in developing countries need to review their policies and, instead of heavily depending on traditional sources, should develop adequate e-resources. They also need to give priority to staff training and user education in order to introduce, promote and use e-resources.

E-resources are the materials consisting of data and/or computer programmes encoded for reading and manipulation by a computer and peripheral devices directly connected to the computer, such as a CD ROM Drive or remotely via a network such as the Internet. These include software applications, electronic texts like e-journals, e-books, e-conference proceedings, bibliographic and textual databases, library catalogues etc. They also include CD ROMs, DVDs, website, emails, chatting, mailing lists, virtual conferencing, e-publishing, digital libraries etc. All these information sources are very much useful to the academic community in colleges and universities and therefore to be exploited to the maximum for the benefit of higher education and research.

## **2. Objectives of the study**

E-resources enable for innovation in teaching, enhance timeliness in research, increase in discovery and creation of new fields of inquiry. E-resources are available on Internet, databases and CDs / VCDs at library, knowledge resource centres etc. Higher education institution and its library play a leading role in providing access to its members in promoting and using e-resources. Academic community, especially the faculty and the research scholars often prefer easy access to databases of online-refereed journals and to the web, which provide information that are minute, international in scope and some times not available elsewhere. This study aims at assessing the use of e-resources of the academic community at Kannur University, one of the state owned universities in Kerala. The main objectives of the study are:

1. The preference of e-resources to traditional sources of information;
2. The purpose and the extend of use of e-resources by academic community in the university; and
3. The problems and difficulties faced by them in getting access and using e-resources.

## **3. Methodology**

Social survey techniques, such as questionnaire and interview are used for the study to collect research data from the sample population selected by stratified random method. The Questionnaire contained 23 questions of 4 different areas, namely computer literacy, Internet service, E-resources and training.

## **4. Response rate**

185 users were selected for the study from a total population of 485 members of the academic community. Questionnaires were distributed among the sample population, of which 123 were duly filled in and collected back, with an overall response rate of 66.5 per cent, 85.7 per cent of faculty members, 60 per cent of research scholars and 62.3 per cent of postgraduate students.

## **5. Background of the study**

Results of many studies have already been reported on the use of e-resources in academic institutions for teaching-learning and research purposes. Maheswarappa and Ebrazer (2003)<sup>1</sup>, Waldman (2003)<sup>2</sup>, Choukhande and Dongre (2004)<sup>3</sup>, Ibrahim (2004)<sup>4</sup>, Renwick (2006)<sup>5</sup>, Kumbar and Shirur (2003)<sup>6</sup>, Lohar and Roopshree (2006)<sup>7</sup>, Nikham and Prmodini (2006)<sup>8</sup>, Rambgan and Tedd (2007)<sup>9</sup>, and others have studied the academic use of Internet / e-resources by students and the faculty. It has been reported that the student communities are very much fond of using e-resources for preparing assignments, seminar papers, and for updating lecture notes. Students are extensively using e-mail service on Internet for exchanging information among classmates, friends and even with the faculty. And teachers are exploiting open resources on Internet like e-journals, e-reference books, databanks and information services for teaching, research and updating their knowledge.

## **7. Demographic profile**

The study covered a sample population of 185 academic members of Kannur University which comprised of 35 faculty, 20 research scholars, and 130 postgraduate students from the Department of English, Anthropology, Life Science, Management Studies, Applied Economics, Law and Health Sciences.

## **8. The Analysis and The Findings**

Responses of the academic community about computer literacy, use of Internet service, e-resources and need for training for access and use of e-resources were collected and analysed. The results are discussed below:

### **8.1 Computer literacy**

The ability to use e-resources effectively depends on basic computer skills, knowledge of what is available and how to use it. A computer literate can exploit the e-resources to the maximum possible without any difficulty. Only 14 per cent of the respondents are fully literate and 70 per cent are moderately literate, whereas 16% does not even know how to use computers. As 20 per cent of the faculty members, 17 per cent of the research scholars and 15 per cent of the postgraduate students are the beginners, computer use could not be universal in the sense that every academic member does not use computer for one or other purposes. This will definitely influence the use of e-resources. In this context, the university has to make necessary arrangements for making the academic community computer literate. The university should organize computer literacy programmes or it should be given as part of library orientation programme. A compulsory course on computer use is to be offered to all post graduate and research students as well as faculty who have to use electronic, digital and online information sources for teaching, learning and research purposes. Computer literacy will positively enhance the use of e-resources on the campus.

### **8.2 Internet service**

The Use of e-resources usually begin with accessing Internet and using open resources on Internet. So, the academic use of Internet was analysed and found that 98 per cent of the academic community uses Internet. The rest, 2 per cent does-not know how to use Internet. The frequency of use is as follows: 63 per cent of the academic community uses Internet daily for accessing e-resources, 20 per cent use it once in a week, and the rest uses it twice or thrice in a week.

Access to Internet is an important factor leading to the use of e-resources. Academic institutions provide facilities for Internet access on the campus. 62 per cent of the academic community (80 per cent of faculty members, 60 per cent of postgraduate students and 33 per cent of research scholars) is satisfied with the facilities provided for Internet access in Kannur University campus.

Generally academic community uses Internet for getting access to information, communication and exchange of ideas. The highest use of Internet is for collecting factual information (37 per cent) and subject information (34 per cent) required for preparing research papers / seminar papers or assignments or lecture \ class notes. Email is apparently the tool of choice for communication, so 27 per cent of them use Internet for E-mail service. Only 4 per cent uses Internet for entertainment, which is the lowest priority.

Access to Internet is found to be one of the main factors leading to the use of e-resources on campus. The faculty, students and research scholars use the Internet facility for getting information for academic works. However, few are not satisfied with the Internet facilities provided on the campus.

The university has to provide enough Internet access points to the postgraduate students, research scholars and the faculty in the department. Internet facilities should also be provided at the library and hostels so that the students and research scholars can have access during free hours and holidays.

### 8.3 Use of E-resources

E-resources are getting prominence over print resources due to its inherent positive features like up-to-date-ness, international in scope, easiness of access, search, retrieval and use. All the respondents have the same feeling that e-resource are very important in universities for quality education and research and should be easily available and accessible to the academic community. And 37 per cent of faculty members, 50 per cent of research scholars and 37 per cent of students prefer e-resources most. However, 94 per cent of them like to have information sources both in print and electronic media, which necessitates the collection and development of both print and electronic resources in university libraries.

The entire academic community is aware of e-resources and its availability in various forms such as Internet, websites, databases, CD Rom, etc., 80 per cent of the academic community is familiar with Chatting facility, map\ image collections, e-journals and Online Public Access Catalogue (OPAC), data bases and book shop and 50 per cent are aware of e-dissertations and theses, e-conference proceedings, mailing lists, and Frequently Asked Questions (FAQ's). 35 per cent is familiar with virtual desk. Awareness of academic community about e-resources is found unsatisfactory. It has to be improved further by organizing awareness programmes for introducing the different forms of e-resources on Internet, the info-net of UGC and in the digital library of the university.

Most of the faculty knows much about e-resources, however, some of the members of the faculty are unaware of e-resources like OPAC, e-theses and dissertations, e-conference proceedings and mailing lists, virtual conferences, and virtual help desks. Though virtual help desk and virtual conference proceedings are important source of current information some of the research scholars are not aware of them. The postgraduate students are not much aware of OPAC, databases, e-theses and dissertations, e-conference proceedings, virtual conferences, FAQs, and virtual help desk. The faculty must be in touch with all types of e-resources and they should deliver it to the research scholars and students regularly.

Among the different types of e-resources, websites (46 per cent ) and CD ROM (23 per cent ) are daily used. OPAC (31 per cent ), Website (29 per cent ) and Chat (31.7 per cent) are used only once in a week. Virtual help desk (85 per cent ), FAQ (61 per cent) and e-dissertations and theses (55 per cent ) are rarely used. The frequency of use of various e-resources by the academic community is shown in table 1

Table 1 The frequency of the use of e-resources by the academic community

| E-sources               | Daily % | Weekly % | Rarely % | Never % | No Answer % |
|-------------------------|---------|----------|----------|---------|-------------|
| OPAC                    | 9       | 38       | 37       | 39      | 0           |
| CD-ROM                  | 28      | 31       | 46       | 18      | 0           |
| Internet                | 78      | 33       | 11       | 1       | 0           |
| Website/Homepages       | 56      | 36       | 20       | 11      | 0           |
| Online databases        | 14      | 30       | 39       | 37      | 3           |
| E-journals              | 15      | 32       | 38       | 38      | 0           |
| E-theses/E-dissertation | 0       | 16       | 26       | 68      | 13          |

|                             |    |    |    |     |    |
|-----------------------------|----|----|----|-----|----|
| E-conference proceeding     | 0  | 4  | 35 | 67  | 17 |
| List serves/mailling list   | 7  | 18 | 25 | 66  | 7  |
| Virtual Conference          | 0  | 0  | 10 | 96  | 17 |
| FAQs                        | 6  | 12 | 28 | 75  | 2  |
| Chat                        | 22 | 39 | 29 | 33  | 0  |
| Map/Sound/Image collections | 16 | 20 | 58 | 29  | 0  |
| Virtual help desk           | 0  | 4  | 15 | 104 | 0  |
| Online book shops           | 1  | 7  | 45 | 70  | 0  |

The academic community has to use current information sources to update their knowledge. Promotion of the use of current information resources is necessary for study, research and publication works in the university. Non-use of current information sources like e-theses/ dissertations, e-conference proceedings, virtual help desks, etc. may adversely affect the quality of academic work done.

Use of e-resources depends on the competency of the academic community to access, download and use e-resources. Though the use of Internet is common among the academic community, use of other kinds of e-resources is found to be less common due to many factors. Many (51 per cent) of the academic community (70 per cent of faculty members, 50 per cent of research scholars and 44 per cent of postgraduate students) are having more than two years experience, but 11 per cent is fresh in using e-resources. Moreover, the experience in use of different e-resources varies from one to the other. 43.1 per cent are expert in using CD ROMs and Chat service, 15 per cent in OPAC, 26 per cent in Databases, 46 per cent in Websites, and 23 per cent in E-Journals, maps and image collections. Many of the faculty are good in using websites, databases, e-journals, CD-ROMs, and Chat service. Good number of Research scholars are expert in using e-journals, CD-ROMs, and websites. And fairly number of postgraduate students are well versed in using chat service, CD-ROMs, websites and databases. The Competency of the academic community can be improved by way of regular training in accessing and using e-resources.

Proper skills are necessary to access and use e-resources. It can be developed through many ways like trail and error method, expert guidance, instruction and training, assistance of friends and staff, etc. It is found that 57 per cent of the users acquired necessary skills through trial and error method, and 60 per cent got guidance from various sources in accessing and using e-resources. Majority of the members of the faculty (67 per cent ) and research scholars (94 per cent ) acquired the necessary skills by trial and error method. However, 33 per cent of the faculty, 17 per cent of research scholars and 11 per cent of postgraduate students have undergone some short term courses on accessing and using e-resources. There is no doubt that properly organized orientation programmes are necessary to develop different skills for the effective use of the e-resources.

With regard to the purpose of using e-resources, the highest use is for teaching and learning activities (weighted score 591). Other main purposes are for communication (weighted score 517), and for collecting general information (weighted score 482). The least use was for recreation (weighted score 299). The faculty and research scholars use them for getting specialized information, whereas postgraduate students use them for getting general information for study purposes. So, the university has to offer maximum facilities to the faculty, research scholars and students to access and use e-resources for academic purposes.

Location of the facility is an important factor influencing the use of e-resources. Computers with Internet connectivity are now common at home, in offices, libraries etc. . Generally the faculty and research scholars use them at home (73 per cent ) and at departments (80 per cent ), whereas postgraduate students use it at department (51 per cent) and at the library (54 per cent ). The locations of accessing e-resources by the academic community are given in table 2.

Table 2. The locations of accessing e-resources by the academic community

| <b>Location</b> | <b>Faculty (%)</b> | <b>Research Scholars (%)</b> | <b>Postgraduate students (%)</b> |
|-----------------|--------------------|------------------------------|----------------------------------|
| Home            | 73.3               | 66.7                         | 14.6                             |
| Department      | 80.0               | 58.3                         | 41.5                             |
| Library         | 16.7               | 16.7                         | 43.9                             |
| Internet Café   | 26.7               | 50.0                         | 17.9                             |

The departments and the library are found to be the main place of accessing e-resources by the academic community, so enough facilities are to be provided there.

Adequacy of e-resources available in the library and on the Internet is a serious matter that influences the promotion of use of e-resources among academic community. Only 5 per cent of the academic community is satisfied with the e-resources available in Kannur University campus libraries . Therefore there is a strong demand for immediate steps for developing a good collection of e-resources in the campus libraries. The academic community also feel that factors like accessibility, accuracy, availability, consistency, ease of use, flexibility, timeliness, and uniqueness are having expected quality and they are to be improved further. And the relevance and usefulness of e-resources available on the campus are to be evaluated and measures should be taken to improve their quality.

#### 8.4 Training

The study finds that the faculty and students have certain difficulties in accessing and using e-resources. Lack of facility (48 per cent ) and lack of training (36 per cent) are found to be the two major hurdles in accessing and using e-resources in Kannur University. Therefore, 76 per cent of the academic community demands proper training in accessing and using of e-resources. The faculty (60 per cent ), research scholars (75 per cent ) and postgraduate students (74 per cent) are of the same view in this regard. Identifying the problems and difficulties of the academic community in accessing and using e-resources will be useful for taking corrective measures and improving the use of e-resources on the campus. Difficulties of the faculty, research scholars and postgraduate students in accessing and using e-resource are given in table 3.

Table 3. Difficulties of the academic community in accessing and using e-resource

| <b>Difficulties</b>                | <b>Faculty</b> | <b>Research Scholars</b> | <b>Postgraduate Students</b> |
|------------------------------------|----------------|--------------------------|------------------------------|
| Lack of facility                   | 15             | 9                        | 35                           |
| Lack of training                   | 9              | 10                       | 25                           |
| Lack of knowledge about e-resource | 13             | 6                        | 33                           |
| Lack of time                       | 10             | 2                        | 13                           |
| Other difficulties                 | 1              | 0                        | 0                            |

It can be seen that large majority of the academic community does face problems in accessing and using e-resource Hence there is need for providing proper training in Internet browsing, using e-journals, databases, OPAC, and CD ROMs. They feel that the university has to organize regular workshop on the access and use of e-resources and the library should provide technical assistance for this.

## 9. Recommendations

Based on the study, the following recommendations are made for improving the efficient and effective use of e-resources on university campuses. The universities in the country has to take the responsibility to:

- Organize regular computer orientation programmes;
- Organize training programmes on Internet search and retrieval of electronic information
- Organize digital library orientation programmes.
- Develop adequate collection of e-resources in the library.
- Provide enough access points and other facilities for accessing e-resources on the campus.
- Motivate the faculty, research scholars and the students to use e-resources for academic purposes.
- Publish regular bulletin on open e-resources on the Internet and in the library.

## 10. Conclusion

The Faculty, due to their nature of work i.e., teaching, research and publication, should have ready access to information. Many of them have Internet access at home. The research scholars and the students totally depends on the facilities in the campus for accessing e-resources. The university has to provide them adequate facilities and ensure free access at the departments, the library and hostels. Moreover, they have to be motivated for accessing and using e-resources. Provision of references about e-resources on the Internet and in the library in class rooms is an ideal way of taking students to the e-resources. Similarly directing the students to use e-resources for preparing assignments, seminars, projects and research reports will also make them use e-resources.

UGC info-net programme is now available in all campuses. The library has to play its own role in making the students and faculty use this programme. Listing of the sources on UGC info-net programme, on the Internet and in the library for academic work is found useful for attracting the academic community to e-resources. Similarly the library can organize awareness and training programmes focusing on e-resources and its use for various academic works. Also the library has to develop a digital library and should participate in library consortia for having increased access to e-resources on the campus. The university, the departments and the library should work hand-in-hand for promoting effective use of computer and the Internet facilities and e-resources on the campus for study, research and publication activities.

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## Chapter 11

# IMPACT OF TECHNOLOGY ON STUDENTS' WAY OF PERCEIVING EDUCATION

Amar Nath  
Librarian, Post Graduate Govt. College, Sector- 11  
Chandigarh, India  
[sharmago4amar@gmail.com](mailto:sharmago4amar@gmail.com)

**Abstract.** Education is one of the most essential tools for any modern nation to achieve social, economic and political objectives for a meaningful national development. The scientific and technological basis of the world is dependent upon the quality of the higher education provided by the nation. Understanding students' ideas is a key step towards meaningful learning. Perception and attitudinal studies in education have been used to unravel crucial aspects about a particular issue, concept or an idea. Technology is a construct little explored in the Indian context. It is evident that information technology has affected changes to the methods, purpose and the perceived potential of education. This paper explores how students studying at a higher education institution use learning technology in their self-directed learning. The study has been conducted through three different methods, i.e., observation, interview, and document review.

**Keywords:** Self-directed Learning, e-learning, Technology Use, Digital Library of Panjab University Chandigarh

### 1. Introduction

Technology surrounds us and influences our lives in profound ways. It would be impossible to imagine a world without technology. Educational experiences and training in diverse knowledge and skills prepares one to face challenges. Over the years the Indian scenario has undergone considerable changes in a very short span of time due to the influx of many technologies that have had an impact on human lifestyles.

### 2. Definition Of Information Technology

The word 'Information Technology' is a combination of two words. One is 'Information' and the other is 'Technology'. Information means knowledge, can be bit or a para or a page. Technology refers to the use of computer and communication technologies for gathering, processing, storage, retrieval and dissemination of information.

It is a generic term used to denote all activities connected with computer based processing, storage and transfer of information. It involves computers, electronic media, satellites, telecommunications and reprography.

The development in Information and communication technology (ICT) has revolutionized the modes and methods of information storage and retrieval. The developments of the Internet and World Wide Web have made a tremendous impact in the society as a whole, shrinking the world into a global village. The proliferation of large databases available for access over telephone lines and the increased use of computers as tools for the management of information is a fact of life in the developed countries.

### 3. Objectives Of The Study

University campuses often have a rich and varied assortment of technology and electronic resources available for research use by the academic community. The purpose of this study is to investigate the role that IT plays in the information seeking process of researchers who are engaged in a research project.

Furthermore, it is important to gather information about the electronic resource use such as how often online resources are used, why they are chosen, and what type of information researchers are seeking in order to better gauge the usefulness of providing electronic resources and to improve the match between the users' needs and desires and the systems' capability.

#### **4. Review Of Literature**

An important and crucial aspect of a research project is the survey of related literature. Survey of related literature means to locate, to read and to evaluate the past as well as current literature, concerned with the planned investigation. The time spent in such a survey invariably is a wise investment. Bearing this in mind, the investigator made a survey of related literature and could find out some of the relevant materials, which is being reproduced here.

**Mutula (2000)** states that at the end of the twentieth century and the dawn of the twenty first century, a new revolution has just begun to shape context of human civilization, it is called the information revolution. He further states that the information revolution is the result of a convergence between information and communication technologies.

**Becker (1994)** stated that various technologies deliver different kinds of content and serve different purposes in the education. For example, word processing and e-mail promote communication skills; database and spreadsheet programs promote organizational skills; and modeling software promotes the understanding of science and math concepts. It is important to consider how these electronic technologies differ and what characteristics make them important as vehicles for education.

#### **5. Limitations Of The Study**

The scope of the present study is confined to Panjab University Library, Chandigarh. Hence, the researcher has limited the study to the Panjab University Library, Chandigarh. The study population limited to 60 researchers of Social Science faculty. Which consist of the research scholars working in the departments like Library Science, Sociology, History, Political Science, Public Administration, Psychology, Philosophy, Economics, and Women Studies, etc. of Panjab University Chandigarh. The data collected are self reported, based on the answers given by the researchers.

#### **6. Research Methodology**

Keeping the above-cited objectives and scope in view, the research plan was drawn, and to collect the comprehensive and relevant data, structured interview method has been adopted. A structured interview questions, designed according to the objectives, were personally distributed to the research scholars of the Panjab University Library, Chandigarh. Only M.Phil. and Ph.D level students were approached to answer the questions that were engaged in writing dissertations and are expected to use various sources of information almost similar to Ph.D. students. Observation method was also applied when required for authentic and detailed information.

#### **7. Methods Of Data Collection**

In the present study, the use of both the primary and secondary sources has been made to collect the data. The secondary data for the said study were obtained from the published books, journals, magazines, newspapers, periodicals, seminars and conference proceedings, annual reports of the university library and, research papers.

#### **8. Tools And Techniques**

The tools and techniques used for the present study are as under:

1. Literature Survey: In order to know the current status of said study were obtained from the published books, journals, magazines, newspapers, periodicals, seminars and conference proceedings, annual reports of university library and also research papers.
2. Interview Method: Structured Interview Method was used to collect the necessary data from the research scholars of Panjab University Chandigarh. The data thus collected was interpreted appropriately in order to highlight the findings

#### **9.A.C. Joshi Digital Library**

The Digital Library of A.C. Joshi is equipped with 1 Server, 1 Network printer and 8 Desktop Systems. The library users have access to e-journals, Indian standards, database access, etc. A.C. Joshi Library being a member of [INDEST Consortium](#) (Indian National Digital Library in Science and Technology Consortium), under the aegis of the MHRD, provides On-line access to a large number of full-text journals from various publishers. Library also provides online access to major e-journals database through UGC-INFONET E-journal Consortium. Library being a member of [DELNET](#) (Developing Library Networks) provides on-line access to a large number of databases through the Internet. A.C. Joshi Library holdings are accessed by a computerized Online Public Access Catalog (OPAC). It allows searches for materials by key-words, or through several access points like author, title, subject, call number, publisher, and year of publication. Library user-friendly Web OPAC enables searches to be conducted with ease and speed. As databases became more readily available, end users were given the opportunity to search for themselves. Thus, the literature reflects this shift with examinations of resource use by intermediaries, end users, and both groups.

#### **10. Analysis Of Data According To Respondent's Interview**

This study examined the impact of technology for information seeking process and resources use of research scholars in the social sciences who were conducting research for a required M.Phil/ Ph.D. Resource use categories developed during the study were previous use of resources, first time use, the resources utilized for finding information, the reasons for use or non use of these resources, the usefulness of the resources, and how the resources were discovered.

#### **11. Research Process**

1. What are the steps in the research process?
2. How do you choose your topic?

In general, the process followed by research scholars included: selecting a topic, using resources to find resources physically retrieving and selecting appropriate sources, reading the sources, organizing the information, and writing the paper. The research process was highly interactive and some of these steps took place many times. Most often reading the sources led to finding more and different sources. For the most part, scholar did not reflect much in the interviews about the process they used for conducting research. They tended to follow the same patterns they had always used. It is not too surprising, however, that they also tended to focus on sources, rather than resources. For this reason, perhaps, scholars are less likely to alter their methods or try new tools, as long as they are able to find enough information to satisfy their needs.

3. How do you devise plan for conducting the research?

Research plans spanning the whole project did not really seem to be prevalent. Scholars had an overall sense of what they needed to accomplish, but mainly preceded one step at a time. Although they may well have possessed notions in their heads about the nature of the process, it was not clear what effect this had on their research. Perhaps, in this kind of research, it is unnecessary to have a plan beyond the basic steps.

4. What setbacks or problems occur during the research process?

The main problems that the scholars mentioned in information seeking were not actually related to the finding part of the process. Namely, they were that desired materials were not available and time management was difficult. Most scholars did not specify what they did when they could not get materials they wanted. Having too much material was also a problem for some respondents, in that it was problematic to organize it effectively. In addition, they did not feel that they had enough time to go through the materials thoroughly enough.

**5. Resource use:**

What are the most used resources?

How useful are the resources?

What are the most useful resources?

The most used and most useful resources were: online databases (28 respondents), scholars (15), and bibliographies (10). Browsing/surfing internet was also popular (7), although it probably was not explicitly mentioned as often as it was utilized. It is likely that this was the case because it was not viewed as a 'real' mechanism for finding sources. The online databases were familiar to almost all respondents and constituted the single most important tool. Only one or two scholar did not actually use the online databases to find sources for their final topic, but everyone used them at some point in their project.

**6. How do you learn about resources?**

Participants mainly learned about resources in a formal way in a bibliographic instruction (BI) session, library workshop, or research courses, or because they were listed on a handout given by a BI instructor, professor, or teaching assistant. Students also heard about resources from other scholars or discovered their existence themselves in some fashion.

**7. Why are resources chosen to be used?**

Scholars overwhelmingly used familiar, convenient, and easy resources. In fact, only fifteen respondents employed unfamiliar resources. The most commonly voiced reason for this was the perception that there was no time to learn new things. Respondents also found that generally they could get what they needed from the resources they already knew and so had no incentive for seeking out new tools.

**8. How useful are the technologies?**

Majority of researchers indicated that they used technology for conduct searches through the Internet, locating relevant information held on computers worldwide; check contents pages of relevant journals using online databases; locate papers that cite seminal works using online citation indexes; in some fields, search pre-prints and electronic journals online and donor full text of papers; learn of forthcoming conferences, and retrieve electronic coherence papers from institutions world-wide; join special interest computer discussion groups and swap ideas; and search any computerized library catalog in the world using online public access catalogs.

**9. Is technology making an impact on education?**

Technology is making a significant, positive impact on education. Important findings indicate that: Education technology has been found to have positive effects on student attitudes toward learning and on student self-concept. Students have increased self-confidence and self-esteem when using computer-based instruction. This was particularly true when the technology allowed learners to control their own learning.

Students trained in collaborative learning, had higher self esteem and student achievement.

Positive changes in the learning environment brought about by technology are more evolutionary than revolutionary. These changes occur over a period of years, as teachers become more experienced with technology.

**10. What are the benefits and advantages of technology for research?**

Regarding the benefits and advantages of technology for research fairly good numbers of respondents reported that technology offers speedy access; remote access; access to unlimited information from numerous sources; wider coverage of information that is flexible to all individuals hence satisfying their requirements; facilitates the reformatting and combining of data from different sources and also offers increased flexibility in teaching, learning, research and extension.

**12. Conclusions and Suggestions**

Each technology is likely to play a different role in students' learning. Rather than trying to describe the impact of all technologies as if they were the same, researchers need to think about what kind of technologies are being used in the research and for what purposes.

These findings reveals that positive and consistent patterns when students were engaged in technology-rich environments, including significant gains and achievement in all subject areas, increased achievement in university through college for both regular and special needs students, and improved attitudes toward learning and increased self-esteem.

Researchers indicate that computer technology can help support learning and is especially useful in developing the higher-order skills of critical thinking, analysis, and scientific inquiry at the same time; some researchers emphasize the ability to access, interpret, and synthesize information.

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## Chapter 12

# Role of University Libraries in Promoting the Digital Literacy: the Indian Perspective

Shabir Ahmad Ganaie  
University of Kashmir, Srinagar, India  
[shabirku@gmail.com](mailto:shabirku@gmail.com)

**Abstract.** Information has attained the status of an important resource for the overall growth and prosperity of the nations. Present paper highlights the importance of information in higher education and deliberates upon the role of libraries in higher education. Application of information and communication technology in libraries has transformed libraries from the store houses of knowledge to the service oriented institutions concerned with providing easy accessibility to information available in multiple formats. Major Initiatives taken by Infflibnet are highlighted in the paper with emphasis on digital literacy. The role of libraries in promoting digital literacy and the methods and methodologies applied by libraries for promoting digital literacy is the feature of the present article.

**Keywords :** Information, Libraries, Infflibnet, Digital Literacy, Indest

### 1. Introduction

Information in the contemporary societies has attained the importance of an important resource essential for overall progress and prosperity of the individual, communities and ultimately to whole societies at local, regional, national and global level. Information as such is a dynamic and unending resource that affects all disciplines and all walks of life. Due to such importance of information as a resource, different efforts are conducted at different levels to make this resource easily accessible to all the individuals on the planet earth. Whether an individual is associated with the education sector, agricultural sector, economic sector, defense sector, science and technology sector, medical sector, legal sector or any other sector he/she is using information. Information has become the dividing factor in determining the progress and prosperity of nations. We see the emergence of terms like information rich and information poor nations in the world. Societies that actually have realized the importance of information and are using it in abundance and not only using but also producing and generating information in huge amounts are labeled as information societies. In order to make information easily available to the individual, Information and Communication Technology (ICT) is playing a very important role. ICT has developed to such a stage that it has given access to information at the fingertips. UNESCO defines Information Technology as “The scientific, technological and engineering disciplines and the managerial techniques used in information handling and processing; their applications; computers and their interaction with men and machines and associated social, economic and cultural matters”(Peltu,1982).

India has been a developing nation ever since her independence in terms of social, economic and political backgrounds. With every remarkable achievement, the nation moves one step ahead towards a continual progress. Education sector in India has bloomed during recent past because of the policies and strategies of the government of India particularly on integration of technology in education. ICT is applied in the higher educational institutions like universities and colleges for achieving excellence in providing qualitative education to the inhabitants of these institutions. ICT is applied by faculty members for teaching purposes; researchers use it for conducting different activities related to research and students of both graduate and post graduate level use it for learning new things from the universe of knowledge.

### 2. Libraries in Higher Education: Role and Importance

Libraries have been regarded as important organs of any educational system from time immemorial in all parts of the world. Some call these as rich springs of knowledge that irrigates the field of education. Libraries have significant role in preparation of dynamic future leaders by offering effective and efficient services so that users can learn the process of how to enter methods of higher research oriented studies gradually. In fact, libraries are regarded as the hearts of modern institutions of higher education. The principal function of a Library is to educate the educated. Education and library are two inseparable—indivisible concepts, both being fundamentally related to and co-existent with each other. One cannot be separated from the other, and the existence of one is impossible without the other. None of them is an end in itself; rather both of them together are a means to an ultimate end. One dies as soon as the other perishes. One survives as long as the other exists. *This* inter-relation, *this* co-existence, *this* dependence of one upon the other have been coming down from the birth of human civilization to the posterity through a process of evolution in accord with varied needs, changes, and circumstances of various stages of human life. Library occupies an important position in the academic institutions, including universities, colleges, schools, etc. Their existence is meant for the cultural maturation of the humanity. Users' unsatisfied queries are satisfied here. Libraries store pearls of wisdom; embodies lifelong works of the great persons; embraces solutions to the problems that the man faces. People increase their knowledge; sharpen their intellect; develops insights into the various aspects of life. Keeping in view such importance of libraries in education sector, libraries are regarded as the beating heart of academic institutions. How sound the library is determines the health of the academic institution. It should be appropriate to mention here that methods and fashions in education change from generation to generation but each generation uses the library as a means of realizing its aims and objectives; hence the library remains a great conservator of learning. An investment in a library is a permanent investment guarantying returns for centuries to come. In India, role of libraries in higher education has been realized from very early times but after independence due attention was given to the growth and development of libraries in higher education sector. In India the University Education Commission (1948-49) headed by Dr. S. Radhakrishnan describes that teachers must have the necessary tools for teaching purposes in the shape of libraries and laboratories as also the right type of students. According to him, "The library is the heart of the University's work; directly so as regards its research work and indirectly as regards its educational work, which derives its life from research work. Scientific research needs a library as well as its laboratories, while for humanistic research; the library is both library and laboratory in one." The training in higher branches of learning and research is mainly a question of learning how to use the tools, and if the libraries tools are not there how can the students learn to use them. The Kothari Commission report (1964-66) on education highlights the role of libraries in higher education in these words, no new university, college or department should be setup without taking into account its library needs in terms of staff, books, journals, space etc. "Nothing could be more damaging to a growing department than to neglect its library or to give it a low priority. On the contrary, the library should be an important center of attraction on the college or university campus." A library performs a crucial role in the educational process. While passing on to the youthful generation the distilled wisdom of the human mind it has evolved over the ages, the library sharpens the mind and clarifies concepts. It is the most durable bridge across time. A library should play a pivotal role through the following supportive functions viz. perspective plan, implementation of the plan, collection development, easy accessibility, freedom, user orientation, accountability vs. assessment.

The Indian education system is the second largest in the world and is perhaps the most complex in terms of its spatial outreach and profile of students and teachers in terms of their linguistic, social, cultural and economic background. It consists about 339 universities and about 17,500 affiliated colleges where millions of students enroll for higher education. University Grants Commission (UGC), Professional Councils, Central Government, and State Governments are playing major roles in enhancing the quality of higher education in the country. The UGC is responsible for coordination, determination and maintenance of standards and release of the grants to the universities and colleges. For popularizing ICT application in libraries associated with higher education UGC, has taken different initiatives. ICT has penetrated deeply in every facet of higher education. Whether it is teaching, research or extension activities of any university or college, ICT is playing an important role in all activities.

### **3. Impact of ICT on Libraries : Indian Perspective**

The revolution of technology that allows people to transmit and receive information has opened a new age in the history of mankind. Different new concepts like e-commerce, e-content, e-books, e-journals, e-governance, e-learning etc. have emerged in the recent past. These new ideas have proved their worth in promoting education both formal as well as non-formal forms and even support life long learning processes. Libraries have long sought technological aids to facilitate and enhance their quality in attaining their objectives, missions and targets. The mission of libraries is to serve their clientele by providing right information to the right user at the right time in right amount and in right form. For achieving this mission libraries are utilizing different technologies for performing different house keeping operations like Acquisition of information sources, Classification and cataloguing of information sources, Circulation, Stocktaking/ Verification, Serial Control and overall administration and management of libraries and information centers. Technology is also applied in delivering different information services to library patrons in an effective and efficient manner. Because of the application of ICT libraries are witnessing transformation after transformation. In library science literature there are different concepts of the libraries like automated libraries, electronic libraries, digital libraries and library without walls (Virtual libraries). Thus we find complete metamorphosis in the concept of libraries as was prevailing in the good olden days. Application of ICT has led to the creation of digital repositories. These revolutionary and evolutionary developments in the world of libraries have elevated basic tenants of libraries. Digital revolution brought about by digital technology has in real sense revolutionized the concept of libraries and information centers.

These revolutionary trends has created a paradigm shifts in the library philosophy. Some of these paradigm shifts are enumerated as under:

- Preservation to utilization
- Possession to Access
- Paper media to other media
- Print publishing to electronic publishing
- Isolation to Consortia
- Free services to Fee based services
- Manual process to Mechanical process (automation)
- Manual practices to Technological practices
- Traditional libraries to virtual libraries
- Polymedia to multimedia (Corall, 1995; Jagtar & Malhan, 2010; Myburgh, 2005; Thomas, Satpathi & Satpathi, 2010).

Adoption of ICT by libraries has converted libraries into service oriented institutions committed to achieve more and more satisfaction of the clientele by providing pinpointed, exhaustive and expeditious information. Academic libraries associated with higher education in India are reaping the fruits of the initiatives taken by University Grants Commission in the form of Information and library Network (INFLIBNET) in year 1991.

### **3.1 INFLIBNET: Catalyst for Library Transformation in India**

INFLIBNET is contributing a lot in popularizing the application of digital revolution in libraries of the higher education in India. Inlibnet has launched many programmes related to digital contents and libraries with higher educational institutions are making full use of these digital contents. Some of the programmes of inflibnet are:

#### **a) INDCAT: Online Union Catalogue of Indian Universities**

*Indcat* is unified Online library catalogue of books, theses, journals etc available in major university libraries in India. It provides bibliographic information about books, journals, theses etc in all subject areas, available in more than 121 university libraries across the country. A web based interface is designed to provide easy access to the emerged catalogues. IndCat is a major source of bibliographic information that can be used for inter-library loan, collection

development as well as for copy cataloguing and retro- conversion of bibliographic records (Inflibnet, 2012). Libraries can take full advantage of this catalogue.

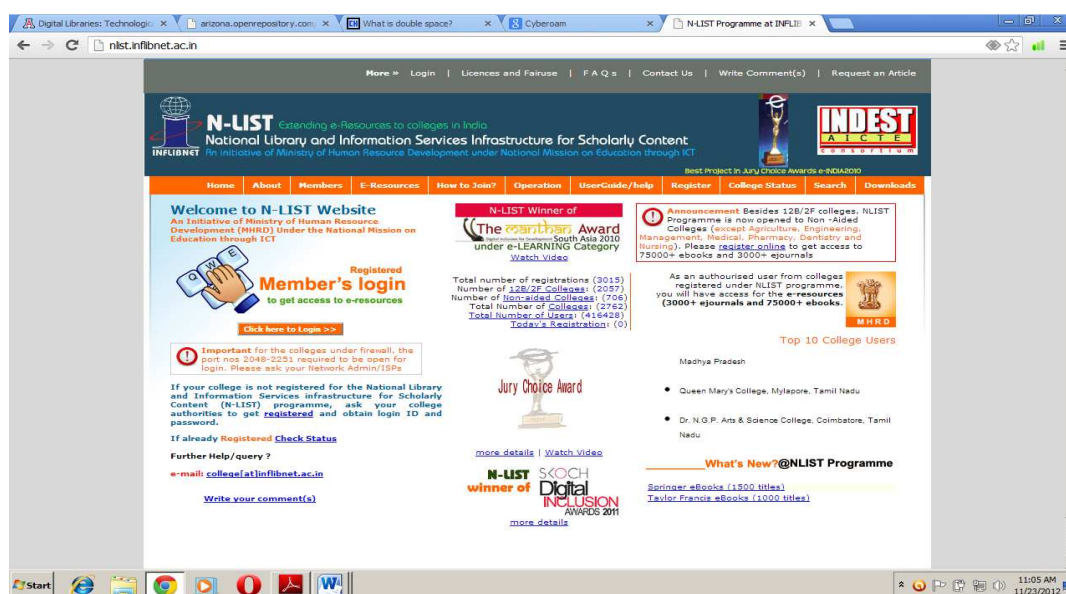
#### b) UGC-INFONET Digital Library Consortium

UGC-INFONET Digital library Consortium was launched in December 2003, by the then president of India Dr A.P.J. Abdul Kalam soon after providing Internet connectivity to the universities in year 2003 , under the UGC-Infonet Programme. The consortium provides current as well as archival access to more than 7000 core and peer- reviewed journals and 10 bibliographic databases from 26 publishers and aggregators in different disciplines. The e –resources under the consortium covers almost all subjects including arts, humanities, social sciences , physical sciences , chemical sciences , life sciences , computer sciences , mathematics, statistics and like other subjects. This programme is entirely funded by UGC and executed by the INFLIBNET Center (Inflibnet, 2012).

#### c) N-LIST

The project entitled “National Library and Information Service Infrastructure for Scholarly Content (N-LIST)” is jointly executed by UGC-INFONET Digital library Consortium, INFLIBNET center and INDEST-AICTE Consortium , IIT Delhi. It provides :

- i) Cross- subscription to e- resources subscribed by the two Consortia i.e. subscription to INDEST-AICTE resources for universities and UGCINFONET resources for technical institutions; and
- ii) access to selected e-resources to colleges

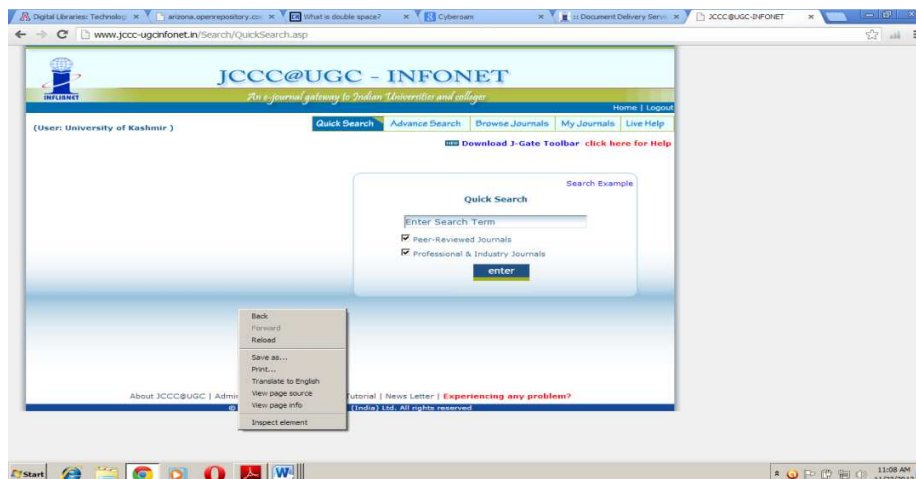


The N-LIST project provides access to e-resources to students , researchers and faculty members from colleges and other beneficiary institutions through server(s) installed at the INFLIBNET center. The authorized users from colleges can now access e-resources and download articles required by them directly from the publisher's website once they are duly authenticated as authorized users through servers deployed at the INFLIBNET Centre (Inflibnet2012).

#### d) Document Delivery through JCCC

INLIBNET has initiated interlibrary loans (ILL) and document delivery services from the comprehensive collection of subscribed journals under JCCC@UGC- INFONET. JCCC (J- Gate Custom Content for Consortium) is a virtual library of journal literature created as a customized- journals access gateway and database solution. It acts as a single point

access to the journals subscribed currently under both UGC-INFONET Digital Library Consortium as well as university libraries designated as Inter-Library Loan (ILL) centers besides index to open access journals. INFLIBNET has designated 22 libraries to fulfill ILL request from the users, affiliated to 149 universities covered under UGC. The ILL libraries together subscribe for 2000 plus journals that is not available through consortia. Universities can request for articles from the journal holdings of those libraries wherever they find useful articles in JCCC search, that are not available in that library (Inflibnet, 2012).



#### e) Software for University Libraries (SOUL)

**SOUL** is a state-of-the-art Integrated library management Software (ILMS) designed and developed by *the INFLIBNET center and is based on the requirements of college and university libraries situated in India*. It is user friendly software developed to work under client-server environment. The software is compliant to international standards for bibliographic formats, networking and circulation protocols. The software was designed to automate all house keeping operations in library. The first version of software i.e. SOUL 1.0 was released during CALIBER 2000. The latest version of the software i.e. SOUL 2.0 was released in January 2009 (Inflibnet, 2012).

#### f) OJS @ INFLIBNET

Open Journal Systems (OJS) is an open source solution developed by the Public Knowledge Project through its federally funded efforts to expand and improve access to research. OJS, INFLIBNET offers a platform to host their journals. The OJS is designed for managing and publishing Scholarly Journals online. There are fourteen journals available through OJS on INFLIBNET website (Inflibnet, 2012).

#### g) Shodganaga@ Inflibnet

Theses and dissertations are known to be the rich and unique source of information, often the only source of research work that does not find its way into various publication channels. Theses and dissertations remain an un-tapped and under-utilized asset, leading to unnecessary duplication and repetition that, in effect, is the anti-theses of research and wastage of huge resources, both human and financial. Online availability of electronic theses through centrally-maintained digital repositories, not only ensure easy access and archiving of Indian doctoral theses but will also help in raising the standard and quality of research. This would overcome serious problem of duplication of research and poor quality resulting from the "poor visibility" and the "unseen" factor in research output (Inflibnet,2012).

#### h) 3.2 INDEST-Catalyst for Quality Technical Education

The Ministry of Human Resource Development (MHRD), Government of India has realized the importance of establishing a consortium for providing easy access to the electronic resources in the discipline of engineering and related subjects. On the recommendations of expert group appointed by the ministry under the chairmanship of Prof. N. Balakrishnan, MHRD established Indian national Digital Library in Engineering Sciences and Technology (INDEST) and provided funds for subscribing electronic and digital resources for institutions including IISc, IITs, NITs, IIMs etc through the consortium headquarters set-up at the IIT Delhi. A good number of institutions are participating in this consortium (Indest, 2012).

These efforts are all focused on creating a digital academic environment in India so that there are more chances of cooperation and collaboration in achieving the mission of creating India as a knowledge based country as envisioned in A.P.J. Abdul Kalam's vision 2020. This vision and the efforts taken at different levels in India can bloom when all concerned with higher education whether students, researchers or even the supporting staff are well versed with the basic aspects of this digital revolution. Thus there is need of launching digital literacy programs / missions at different levels in the country.

#### **4. Digital Literacy: What it means?**

Application of Information and communication technology in different fields has brought about tremendous positive changes in all spheres of life whether education of individual, economical development of societies, technological advancement or any other such sectors existing in the societies. Information is available in multiple formats like text, graphic, audio or video etc. In the contemporary world one can have access to all these formats simultaneously. However, information can be exploited optimally when the user of the information is well versed with the skills and knowledge of using these formats. This competency of using the state-of-the-art technology concerned with information is the basis of what is called as digital Literacy. Digital literacy is the ability to effectively and critically navigate, evaluate and create information using a range of digital technologies. Digital literacy is the ability to use information and communication technologies to find, evaluate, create, and communicate information requiring both cognitive and technical skill (ALA, 2012). Digital literacy is the marrying of the two terms digital and literacy; however, it is much more than a combination of the two terms. Digital information is a symbolic representation of data, and literacy refers to the ability to read for knowledge, write coherently, and think critically about the written word. Research around digital literacy is concerned with wider aspects associated with learning how to effectively find, use, summarize, evaluate, create, and communicate information while using digital technologies. There are four dimensions involved in the 'process' of digital literacy:

1. Operational: The ability to use computers and communication technologies.
2. Semiotic: The ability to use all the languages that converge in the new multimedia universe.
3. Cultural: A new intellectual environment for the Information Society.
4. Civic: A new repertoire of rights and duties relating to the new technological context.

Thus Digital Literacy is represented as under:

Digital Literacy = Digital Tool Knowledge + Critical Thinking + Social Engagement.

Characteristics of digital literacy are:

- It supports and helps develop traditional literacies
- It's a life long practice
- It's about skills, competencies and critical reflection on how these skills and competencies are applied.
- It's about social engagement.

##### **4.1 Digital Literacy: Why?**

In the present Indian society, we find that there is a wide digital divide among the people. A large number of the population is living below poverty line and are not having access to the technology. Then there are digital natives and digital immigrants. Those who were born in the digital environment are well versed with the technologies and the one who was born earlier is facing problems in adopting technologies. So this big divide among the individuals in their use of technology is the basic factor for launching different digital literacy programs in the community. The ultimate objective is to produce digital literate personalities who can use and produce information for the overall progress and prosperity of the nations. Thus there is a need for digital literacy in the contemporary society.

#### **4.2 Features of Digital Literate Person**

In the words of American Library Association (ALA, 2012) , digital literate person is possessing following features:

- a) Possesses the variety of skills – technical and cognitive – required to find, understand, evaluate, create, and communicate digital information in a wide variety of formats;
- b) Is able to use diverse technologies appropriately and effectively to retrieve information, interpret results, and judge the quality of that information;
- c) Understands the relationship between technology, life-long learning, personal privacy, and stewardship of information;
- d) Uses these skills and the appropriate technology to communicate and collaborate with peers, colleagues, family, and on occasion, the general public; and
- e) Uses these skills to actively participate in civic society and contribute to a vibrant, informed, and engaged community.

Thus a digital literate person is competent enough to handle and manage digital information in an effective and efficient manner.

#### **5. Role of Libraries in Promoting Digital Literacy**

Libraries are the democratic institutions concerned with promoting scholarship by providing easy access to the information existing in whatever format. Libraries have tried their best to adopt the technological or any such developments for ensuring easy accessibility to information required by the patrons. In order to make the users of information well aware about the different sources of information in different formats and about the services libraries are providing, awareness programs in the form of user education are conducted by libraries. In user education programs multiple methods are adopted in creating awareness programs like

- a) Lecture method where library professionals deliver lectures about the services and information sources available in the library both in print and digital formats. Library and information professionals are supposed to avoid technical jargon and make their lectures as simple as possible for their audience.
- b) Practical orientation in which users of the library are provided with opportunities to practically observe and have practical experience in exploiting different sources of information, tools available in libraries and the services provided by the library. How to use digital and analog resources and services by the users optimally is the focus of such programs.
- c) E- learning methodology: Library professionals use the internet and allied technologies for making users competent enough in exploiting the services and resources optimally. Exposure to web 2.0, library 2.0 and like other technological applications can be taught to users through e-learning mode.
- d) In order to create information literate users library professionals are also publishing different literature or creating their own websites having information about the library activities and services offered by the libraries. Users by going through this information can come to know the ways and means they will adopt to become information literates.

#### **6. Conclusion**

Library and information centers have become important channels for disseminating the information available in multiple formats to those who are in need of information. Libraries have adopted ICT for achieving the mission and are witnessing metamorphosis. There are digital libraries and digital repositories now in plenty available and accessible to the users of information. Application of ICT has changed the role of librarian from Caretaker to gatekeeper of information. Librarians are no more storekeepers but are known by name cybrarians who play a very important role in exploiting web based resources available on internet. Librarians are supposed to serve as “creators”, “collectors”, “communicators” and “consolidators”( Moore *et al.* , 1998). Keeping in view these new roles of library and information science professionals, it is hoped that in India academic world will achieve new heights and will contribute a lot for the advancement of universe of knowledge. Creating a community of scholars, students and faculty equipped with the information literacy competencies will definitely help India to come close to the Knowledge based societies.

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## **PART 3:**

### **LIBRARY SEARCH INTERFACES AND SYSTEMS: *ENHANCED AND INTEGRATED***

## Chapter 13

# Insights into One-Stop Searching in Discovery Tools

Sharon Q Yang

Associate Professor/Systems Librarian, Rider University, USA

[yangs@rider.edu](mailto:yangs@rider.edu)

**Abstract.** *One stop searching is the most essential requirement for a discovery tool. However, this vision may never be fulfilled due to political and economic complications. The article discusses the difficulties arising from deploying a unified index, the solution to one stop searching in current discovery services. The integrated search, which combines a unified index with federated search technology, may come closer to what librarians want.*

**Keywords:** Library Catalog, Discovery Tools, Federated Search

### 1. One-Stop Searching-Librarians' Vision for the Next Generation Catalog

One-stop searching is defined as a single point of entry to search all library resources, which include the library's catalog, subscribed databases of journal articles, ebooks, local digital repositories and more. It is one of the important visions for the next generation catalog that has been under discussion in the library community for the past ten years. Until several years ago library patrons were forced to search for resources in multiple places, for instance, books and videos in a library's online catalog, journal articles in electronic databases, and images in local digital repositories. This fragmented approach brought difficulty and confusion to patrons who are used to simple approaches in Google and other Internet search engines. In a world where efficiency and speed are of the utmost importance, libraries are losing competitive edge to less credible information sources. There has been a tendency of students and faculty turning away from the libraries towards the Internet for needed information. Past research has revealed that "most students prefer the internet as a means to access information, which in turn posed a threat to libraries. With this, it suggests the need for libraries to adopt technological advances to bring back its role as a good source of information" (Rose 2009).

Librarians have been searching for a better solution to serve their patrons for quite some time. The next generation catalog (NGC) embodied the visions of librarians from long discussions on the subject. One-stop searching at a single point of entry is at the center of attention and also the essential piece of the NGC. The first attempt at one-stop searching came as federated search in the middle of the 2000s.

### 2. Federated Search

Federated search is also called metasearching, and distributed or broadcast search (Taylor, 2012). It is a single query to search multiple online resources and displays a single list of search results. A federated search engine does not have the elaborate features of the NGC that a discovery tool has. All it does is to search, process the retrieved information, and display the results. It is a complicated and difficult task. Many federated search engines were developed more than ten years ago such as WebFeat, MetaLib, and 360 Search. Federated search was popular, and according to a 2007 study, an estimated 3/4 of big research university libraries deployed a federated search engine on their websites (Primary Research Group 2008).

A federated search engine pulls information from disparate sources through connectors or translators and displays the results to users. Connectors or translators are computer programs written by programmers. Each online data source needs its unique connector or translator that will map the search terms users entered from the federated search engine to

search fields in the proprietary database. In other words, the connector will translate a user's query syntax and map it into the corresponding search fields in the target data source. The connector will retrieve the search result page and parse the results in the federated search engine for a meaningful display for users. From a technical point of view, it is not a formidable technical challenge to develop a connector program. A federated search system comes with a set of pre-developed connectors. If a library subscribes to a database that is not on the list of the connectors or translators in the federated search engine, a library can pay a fee for the vendor to develop a connector for the resource. Real-time metasearching makes federated search attractive.

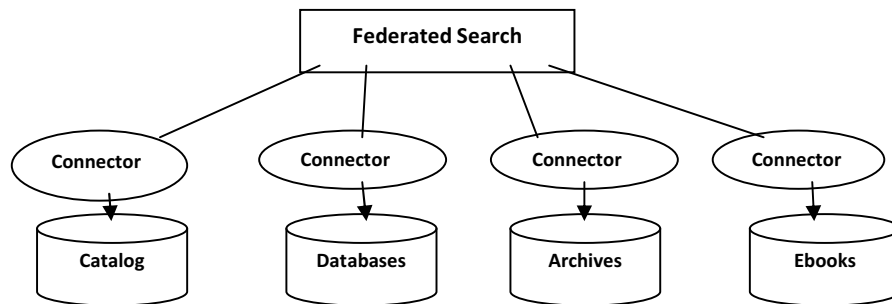


Figure 1. Federated Search Does Real-time Search through Connectors

While federated search is a progress that brought libraries closer towards achieving one-stop searching, it fell far short of expectations. For one thing, it has difficulty in the final stage of displaying search results. Processing a list of search results by reading and dissecting the HTML that a database provides is called "screen scraping." Screen scraping is a difficult way to obtain search results because the result data is not structured in a way that makes it easy to identify the fields in the result records. In addition, a federated search engine has to face the daunting task of what is called deduping, a process that involves moving the duplicate items from different databases and grouping them together for display. For another, databases change and improve interfaces, and the connectors have to be modified accordingly to work with the new design. As Dalziel put it, "While the advantages of metasearching are in acceleration and simplification of information searching and gathering, its down side is in maintenance problems because the system relies on connections to so many databases, and those connections are fragile and easily broken, making it a burden to maintain the system" (Dalziel 2008), federated search is not totally satisfactory.

In the late 2000s, one-stop searching began to have a new solution with better displays and fast speed in information retrieval. The new inventions are discovery tools.

## 2. The Unified Index in Discovery Tools

With the advent of discovery tools, federated search became less popular and almost faded from the market. While an online public access catalog usually is a module of an integrated library system (ILS), a discovery tool is third-party software that is independent of a library system. It serves as a library user interface that can replace or live side by side with a library online catalog. Discovery tools provide many advanced features of the next generation catalog, while federated search does not. Gradually a discovery tool moved from local installation to the cloud. Today most discovery tools are offered as "Software as a Service" (SaaS) which is a subscription-based solution. Thus many are called discovery services.

Not all the discovery tools are capable of one-stop searching, even though it was clear from the beginning that it was the most sought-after feature in a discovery layer. The past three years witnessed the releases of Web-scale discovery services such as WorldCat Local, Summon, Primo, and EBSCO Discovery Service. The Web-scale discovery services stand out from the rest because "Web scale discovery services are a tool with major potential to transform the nature of library systems. These services are capable of searching quickly and seamlessly across a vast range of local and remote

content and providing relevancy-ranked results in the type of intuitive interface that today's information seekers expect" (Cooppner 2013). At the center of Web-scale discovery services is an index called central or unified index and vertical search. The unified index is essential to one-stop searching. It provides a single point of entry where one search will retrieve results from multiple resources. Unlike federated search that goes out and does real-time searching in multiple resources, searching in a single unified index is fast and allows better deduplication and relevancy ranking. Pre-formed facets and many other advanced features make its user interface much more meaningful than federated search. A Web-scale discovery tool allows tag clouds, book images, RSS, perm links, auto-completion of search terms, spell checking, and even FRBR relationships. None of those exist in federated search.

The central or unified index is a database of pre-indexed metadata from disparate sources including remote full-text content and data in silos. It uses Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) to harvest metadata from repositories provided by remote resources. To be more specific, OAI-PMH is based on the client-server architecture where the unified index harvests metadata from updated repositories based on a commonly understood data structure. "The Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) offers a simple technical option for catalogue and repository services to make their metadata available to other services, based on the HTTP and XML standards, resulting in facilitated discovery of distributed resources" (Fegen 2007). Even though pre-indexing is not a new technology, its application in discovery tools is revolutionary. A library may have a vast array of licensed and local content containing millions upon millions of items. Pre-indexing licensed content involves negotiation and permission from publishers and content aggregators. Building a unified index is a huge project that needs strong financial and technical resources. That explains why only four discovery tools provide a unified index. Those Web-scale discovery services include EBSCO Discovery Service, Primo, Summon, and WorldCat Local.

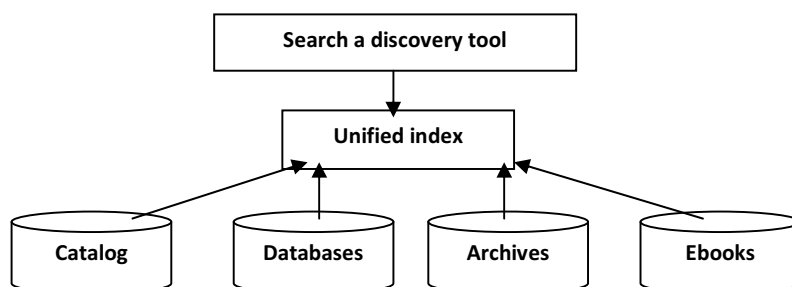


Figure 2. Unified Index Harvest Metadata and Catalog Records (Taylor 2011)

Research has indicated that adoption of a good discovery tool may increase the use of library resources by students, sometimes from 50% to 150% (Fitzpatrick 2010; Way 2010). More studies are needed to verify the findings. If this is true, the unified index plays the vital role in the success of proving a library's relevance as an information keeper and provider.

Even with the inception of Web-scale discovery tools, one-stop searching is still more a dream than reality. The unified index is nowhere near perfection. Because each Web-scale discovery service creates its own unified index behind closed doors, no one knows how much those indexes differ or duplicate each other in content coverage. Furthermore, discovery services are limited in how much they can obtain from publishers and information aggregators, and these are important players in building a comprehensive index. One thing one can ascertain is that none of the discovery tools can claim to cover a library's resources 100%. While it is a huge investment to subscribe to a discovery tool, libraries hardly know what they are paying for. Not all the discovery services are willing to release their content covered by the unified index. Thus an analysis or comparison of what each unified index covers remains impossible. It suffices to say that the unified index only provides pointers to most of or partial library resources. One-stop searching does not truly exist.

Beside political and economic issues, the unified index has other setbacks. For instance, no matter how often a unified index is updated, it always lags behind in content. Known- item search has caused complaints, as the desired items may be hidden beneath thousands of hits in the search display. Sometimes the unified index does not cover what it claims to cover. The same search in the unified index may produce fewer or totally different results than that conducted in the native search interface of the resources. A unified index also lacks precision in information retrieval. Thus, serious researchers are still encouraged to search the disparate native resources. The value of the unified index lies largely in the service it provides to freshmen or sophomores that are inexperienced in research, or for those who desire an interdisciplinary search experience.

### 3. Other Attempts at One-stop Search

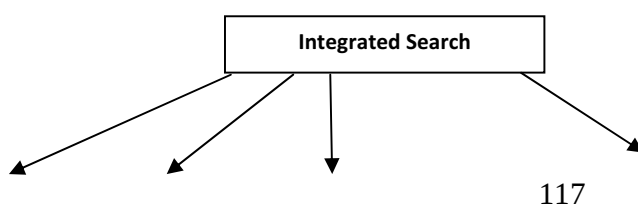
Most discovery tools do not have a unified index, especially the open source ones. Nevertheless, there are various clever attempts to add one-stop searching to a discovery tool that do not come with a unified index. VuFind is the most popular discovery tool among open source and free solutions. Even though it does not have its own unified index, it can connect to the content search of a Web-scale discovery service through an application programming interface (API). A library must subscribe to a Web-scale discovery service before VuFind can search its unified index through the VuFind user interface. When installing VuFind, a user is provided the option to add the search capability of Summon or WorldCat Local in its configuration settings.

Serials Solutions' AquaBrowser is another discovery tool with many advanced features of the next generation catalog. Adding its native federated search engine 360 Search, it can query electronic databases and conduct article-level searches in addition to local holdings. Innovative Interfaces' Encore connects to resources by connectors, and does real-time searching. Significantly Innovative has formed a partnership with EBSCO Discovery Service by which the EBSCO unified index is searched by Encore (EBSCO Publishing 2012). In the next few years more discovery tools without federated search or unified index will look for ways to add one-stop searching. It has become a major setback for a discovery tool to miss this capability.

### 4. Future Outlooks

From federated search to unified indexes, one-stop searching is still evolving. It slowly dawns on some that it might be a better solution to combine federated search with unified index. While each has its own pros and cons, those two approaches can be positioned to compliment, not replace, each other. This idea is not widely spread, but echoed somehow in the recent library literature. As early as 2011, Mike Taylor, who works in the field of data and indexing, explained the superiority of such a solution. The combined approach is called “integrated search” (Taylor 2011). There are resources whose metadata a unified index cannot harvest for various reasons, but federated search may include them in its search path.

The search results returned from a unified index are different from those from the federated search. They may come with pre-formed facets and relevancy ranking and may have completed the deduping and merging process. Integrated search must provide a way to combine those two totally different kinds of data into one single display list. Obviously integrated search has its own share of problems to deal with. In spite of the technical issues and difficulties that accompany this hybrid solution mainly making connectors seamless for users of the discovery tool, integrated search will expand the search scope and content coverage, carrying the dream of one-stop search even further towards the desired goal. It may not be true one-stop searching, but it certainly will come closer to it than federated search or unified index working separately.



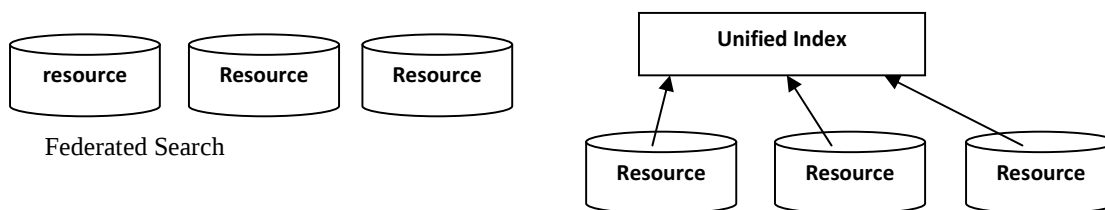


Figure 3. Integrated Search

A recent open-source discovery layer developed by a Japanese researcher, Prof. Takashi Harada, at the National Diet Library of Japan, is an example of integrated search. The new discovery tool, NDL Search (National Dietary Library is the name for the national library of Japan) uses the hybrid approach of a unified index and federated search. With this approach, it can search other national libraries in Asia as well as its local holdings in the pre-indexed metadata in one search.

One-stop searching is a vision that may be fulfilled one day, but not in the near future. Integrated search is the right path to take if one-stop searching is what libraries want to provide to their users.

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## Chapter 14

# A Review on the Use of Web 2.0 Tools Among Selected Gulf Libraries Websites

Rindra Ramli

Access and Digital Services Specialist

King Abdullah University of Science and Technology, Saudi Arabia

[rindra.ramli@kaust.edu.sa](mailto:rindra.ramli@kaust.edu.sa)

**Abstract.** *The purpose of this paper is to explore the use of Web2.0 tools by university libraries in the Gulf region namely the Kingdom of Saudi Arabia, United Arab Emirates, Qatar, Bahrain, Oman and Kuwait. The author used the observational method of visiting each of the selected academic libraries in the gulf region. A total of 56 academic library websites were viewed to see whether any Web2.0 tools have been implemented. Each of the university libraries was randomly selected.*

**Keywords:** Web 2.0, Library Websites

### 1.Introduction

Web 2.0 has brought about significant changes in the way library users interact and collaborate within the community. From just “one way traffic” mode of communication between the library and its users, it has evolved to become a platform that serves a number of users and uses. Kroski mentioned that “what began with blogs and wikis has blossomed into an all-encompassing and standard phenomenon of sharing, collaboration and user involvement” (Kroski, 2008). Kroski also stated that the web “offers us a new and completely interactive experience in which we are invited to participate in creating and collaborating within a community”(Kroski, 2008). Library users today are presented with an array of Web 2.0 tools in which they can utilize and exploit. Tools such as really simple syndication (RSS), social networking tools, blogging, wiki, podcasting, video and photo sharing have mushroomed within the last few years. All of these tools serve the purpose of getting the library users more involved with the library community.

This paper describes the various Web 2.0 tools implemented by the academic libraries in the selected Gulf countries namely Kingdom of Saudi Arabia (KSA), United Arab Emirates (UAE), Qatar, Bahrain, Oman and Kuwait. It also looks into the purpose of using such tools and the “usage level” of such tools. “Usage Level” here means the level of participation among the library communities. Web2.0 tools that are analyzed include Social Networking Sites, Blogs, Wikis, Podcast, Photo and Video Sharing and RSS. (Kroski, 2008), in her book “Web2.0 for Librarians and Information Professionals”, provided several definitions for the Web2.0 tools,:

- Social Networking Sites  
A website where people come together to interact and relate with other members. They are able to seek out individual(s) with similar interests to connect and collaborate on a particular topic of interest.
- Blogs  
Online journal – chronological entries of a particular subject matter
- Wikis  
Online platform that facilitates collaboration and knowledge sharing among a community of users

- Podcast  
Audio recordings that can be subscribed via RSS feed
- Photo and Video sharing  
Sites that allow for photo and video sharing. Users can upload, share and collaborate with other interested users.
- RSS (Really Simple Syndication)  
Technology that facilitates publishers to syndicate news and other content on the web

In addition to that, this paper also discussed other studies done in relation to the use of Web 2.0 tools by other libraries around the world.

## **2.Web 2.0 and Library 2.0**

O'Reilly described, among others, the features of Web 2.0, that has the capability to “harness collective intelligence” and “enrich user experiences” (O'Reilly, 2005). Miller stated that Web 2.0 is “participative” and “participation is often seen to be on the part of end-users” (Miller, 2005). Maness gave meaning to Web 2.0 as “a web of multi-sensory communication” and “a matrix of dialogues, not a collection of monologues” (Maness, 2006). On another note, Library 2.0, which as coined by Casey and Savastinuk gave meaning to “a model for library service that encourages constant and purposeful change, inviting user participation in the creation of both the physical and the virtual services they want, supported by consistently evaluating services” (Casey & Savastinuk, 1 Sept 2006).

Nesta and Mi added that prior to Library 2.0, libraries have already embarked on tasks/practices to reach out to users such as increasing the opening hours of the library, implementation of web catalogues, enabling databases access from remote geographical locations (Nesta & Mi, 2011). In addition to that, libraries have also set-up common areas in the physical library for social gatherings, conducted library trainings and sending out alerts via SMS-es and emails (Nesta & Mi, 2011). However, it is interesting to note that Holmberg et al stated that there is no clear definition on Library 2.0 (Holmberg, Huvila, Kronqvist-Berg, & Widén-Wulff, 2009). Its more like a combination of “ideas, ideologies, technologies and services” (Holmberg et al., 2009). The idea of library 2.0 revolves around “interactivity, users, participation, libraries and library services, web and web 2.0, social aspects and technology and tools” (Holmberg et al., 2009).

Needleman described Web 2.0 characteristics as having the user as the contributor, active participation, trust and collaboration and an enriched user experience (Needleman, 2007). In addition to that, he added that Library 2.0 as making “services available at the point of need rather than making the users come to the services”, discoverable data, flexible applications deployed which are flexible to user needs and “facilitate communication, community, and user participation” (Needleman, 2007). From the above descriptions of web 2.0 and library 2.0, it can be said that the main components are interactivity, collaboration and participation among the community. Technology is the driver of it. However, for the library to achieve maximum gains, the higher the level of communication and participation of its community, the higher the level of success will be.

## **3.Case Studies**

There have been numerous studies on use of Web 2.0 by libraries. One such study conducted by Harinarayana and Raju, discovered that “only 57 of the top 100 libraries have used at least one of the web features” (Harinarayana & Raju, 2010). On top of that, only a handful (43%) of the top universities have incorporated Web 2.0 features in their website (Harinarayana & Raju, 2010). Their study also showed that the most widely used applications are Really Simple Syndicate (RSS) and Instant Message (IM). RSS is popularly used to provide latest news and event on the

library while IM is commonly used for online reference service (Harinarayana & Raju, 2010). On another note, blogs were used as a platform for subject guides, newsletters (Harinarayana & Raju, 2010).

In addition to that, Mahmood and Richardson Jr study on Academic and Research Libraries (ARL) in the United States revealed that RSS and Instant Messaging as the most popular tools employed by the ARLs (Mahmood & Jr, 2011). The common usage for such tools were for reference services and alerts to distant users (Mahmood & Jr, 2011). Moreover, they added that 89 out of 100 libraries had an online presence in Facebook while 85 out of 100 libraries were using twitter (Mahmood & Jr, 2011). 47 of those libraries were using Flickr commonly used for photo sharing while 40 of them were using wiki applications (Mahmood & Jr, 2011). The use of vodcast/video sharing (72 libraries) and podcasts/audio sharing (65 libraries) were also quite prevalent among the ARLs (Mahmood & Jr, 2011). From their study, it was discovered that the main purpose of using such tools were for disseminating library news and announcements/events plus library instruction notes / library tutorials (Mahmood & Jr, 2011).

Si et al conducted another study using Chinese university libraries as their sample population. It showed that RSS was the most popular Web 2.0 tool used followed by Instant Messaging (Si, Shi, & Chen, 2011). According to their research, it showed that RSS was commonly used for “news or notification, new books and information push for commercial databases information, customized subject information and user information” (Si et al., 2011). In addition to that, they observed that IM was used for reference services (Si et al., 2011). Blogs and wikis were not a common Web 2.0 tool for the Chinese university libraries. (Si et al., 2011). Overall their study demonstrated that “at least two thirds of the Chinese university libraries deployed one or more Web 2.0 technologies” (Si et al., 2011).

Another study by Chua and Goh on 120 library websites across North America, Europe and Asia reported that the most common and popular Web 2.0 tools used are blogs followed by Really Simple Syndication (RSS), instant messaging, social networking services, wikis and social tagging (Chua & Goh, 2010). In addition to that, the study also established that North American libraries sampled in the study are using blogs, RSS and instant messaging compared to other libraries from other parts of the world (Chua & Goh, 2010). Some examples of blogs usage were used for library commentary for new acquisitions books and current developments in the library while wiki were used for subject guides and even a platform for frequently asked questions (Chua & Goh, 2010).

Linh presented a study on the usage of Web 2.0 by Australasian university libraries (Linh, 2008). The study showed that “at least two thirds of Australasian university libraries deployed one or more Web 2.0 technologies” (Linh, 2008). Among the popular Web 2.0 tools used by Australasian university libraries were RSS, blogs, instant messaging and podcasts (Linh, 2008). Common uses of blog, according to the study, is the exchange and sharing of ideas and opinions among library staff and users on library services, news and events plus research tools (Linh, 2008). The study also pointed out that wiki was not used by those university libraries due to that possibility that it’s used more for internal communication between library staff. Therefore it was not meant as a tool to interact with the users (Linh, 2008). Apart from that, RSS was used to informing library users on newly acquired books, electronic resources and latest happenings in the library (Linh, 2008). Podcast was commonly used for providing advice on library skills and information on how to use library resources also as a tool to orientate library users with the library (Linh, 2008).

Another research done by Tripathi and Kumar on libraries located in Australia, Canada, the UK and USA on the use of Web 2.0 revealed that Really Simple Syndication (RSS), Instant Messaging (IM) and blogs are commonly used by libraries (Tripathi & Kumar, 2010). The study covered 277 university libraries that were randomly selected. IM was used heavily as it “induces interactivity in the real time mode and users get their queries responded to immediately” (Tripathi & Kumar, 2010). Blogs were used due to the ease of maintenance while RSS were used because of its ease of use (Tripathi & Kumar, 2010). Tripathi and Kumar pointed out that the main purpose of using RSS was to inform users on university news while blogs were used for disseminate the library’s general information and newly acquired library materials plus tips on conducting research work (Tripathi & Kumar, 2010). They pointed several good tips for the Web 2.0 tools to flourish, among others namely:

- Having well defined purposes
- Accessibility of blogs that can be used by authorized users
- Publishing guidelines on the usage of Web 2.0 tools
- Proper training given to library users on how to use Web 2.0 tools
- Timely Marketing and Promotion activities of the tools by library staff (Tripathi & Kumar, 2010)

From the case studies observed, it can be deduced that the 3 most notable Web 2.0 tools are RSS, IMs and blogs. The most common purpose of using those tools are to disseminate library news, research tips and inform users of newly acquired materials namely book titles and electronic resources products. The important factor to note is that the easier the implementation and low maintenance, the higher the chances of that particular Web 2.0 to be deployed.

In another study by Buigues-Garcia and Gimenez-Chornet on national libraries throughout the world, they demonstrated that social networking tools are becoming more prominent (Buigues-García & Giménez-Chornet, 2012). Facebook and twitter are becoming a common feature among the National Libraries while RSS and blogs still maintained their popularity (Buigues-García & Giménez-Chornet, 2012).

Apart from that, a focused study on the use of Twitter showed that 34% of the randomly selected 296 academic libraries (USA) had twitter accounts for the library (Bosque, Leif, & Skarl, 2012). According to their study, they noted that libraries located in the rural areas are more prone to have twitter accounts (40%) while libraries in the suburban areas are least likely to have them (28.79%) (Bosque et al., 2012). It also showed a relation between electronic reference services and twitter. 33.6% of the libraries that offered electronic reference services have twitter account while 21% of those that had twitter account do not have such services (Bosque et al., 2012) .

#### 4. Research Questions and Methodology

This article aims to find out:

1. What Web2.0 tools that have been implemented by Gulf countries libraries websites?
2. What are the reasons behind the usage of these tools?

The universities libraries websites were randomly selected from this website: <http://www.4icu.org/>. Below are the breakdown of the university libraries breakdown and their respective URL addresses. The criteria for their selection are:

- The content are written in English. Most of the websites do have Arabic version but they do have the English translation of it.

##### 4.1 Kingdom of Saudi Arabia

|   |                                                        |                                                                                                                                           |
|---|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | King Abdulaziz University Library                      | <a href="http://library.kau.edu.sa/Default.aspx?Site_ID=212&amp;Lng=AR">http://library.kau.edu.sa/Default.aspx?Site_ID=212&amp;Lng=AR</a> |
| 2 | King Fahd University of Petroleum and Minerals (KFUPM) | <a href="http://library.kfupm.edu.sa/">http://library.kfupm.edu.sa/</a>                                                                   |
| 3 | King Faisal University Library                         | <a href="http://www.kfu.edu.sa/en/Deans/Library/Pages/e_library.aspx">http://www.kfu.edu.sa/en/Deans/Library/Pages/e_library.aspx</a>     |
| 4 | King Abdullah Uni of Sci and Tech                      | <a href="http://library.kaust.edu.sa/">http://library.kaust.edu.sa/</a>                                                                   |
| 5 | Umm Al-Qura University Library                         | <a href="https://uqu.edu.sa/lib/en">https://uqu.edu.sa/lib/en</a>                                                                         |

|    |                                                   |                                                                                                                                                                                                                                                                                                                             |
|----|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6  | King Saud University Library                      | <a href="http://catalog.library.ksu.edu.sa/">http://catalog.library.ksu.edu.sa/</a>                                                                                                                                                                                                                                         |
| 7  | King Khalid University Library                    | <a href="http://www1.kku.edu.sa/Library/Default/Default.aspx">http://www1.kku.edu.sa/Library/Default/Default.aspx</a>                                                                                                                                                                                                       |
| 8  | Imam Muhammad Ibn Saud Islamic University Library | <a href="http://www.imamu.edu.sa/sites/en/_layouts/ima/Login/newportalLogin.aspx?domainURL=http://www.imamu.edu.sa&amp;ReturnURL=%2fsites%2fen%2fImamULibraries">http://www.imamu.edu.sa/sites/en/_layouts/ima/Login/newportalLogin.aspx?domainURL=http://www.imamu.edu.sa&amp;ReturnURL=%2fsites%2fen%2fImamULibraries</a> |
| 9  | Taibah University, Deanship of Library Affairs    | <a href="http://library.taibahu.edu.sa/">http://library.taibahu.edu.sa/</a>                                                                                                                                                                                                                                                 |
| 10 | Taif University, Deanship Library Affairs         | <a href="http://web.tu.edu.sa/tu/en/departments/library-affairs.html">http://web.tu.edu.sa/tu/en/departments/library-affairs.html</a>                                                                                                                                                                                       |
| 11 | Najran University, Deanship of Libraries Affairs  | <a href="http://portal.nu.edu.sa/web/deanship-of-libraries-affairs/home">http://portal.nu.edu.sa/web/deanship-of-libraries-affairs/home</a>                                                                                                                                                                                 |
| 12 | Prince Sultan University Library                  | <a href="http://info.psu.edu.sa/psu/library/index.html">http://info.psu.edu.sa/psu/library/index.html</a>                                                                                                                                                                                                                   |
| 13 | Prince Mohamed Bin Fahd University Library        | <a href="http://lrc.pmu.edu.sa/librarya.asp">http://lrc.pmu.edu.sa/librarya.asp</a>                                                                                                                                                                                                                                         |
| 14 | Qassim University Library                         | <a href="http://www.library.qu.edu.sa/en/Pages/default.aspx">http://www.library.qu.edu.sa/en/Pages/default.aspx</a>                                                                                                                                                                                                         |
| 15 | University of Dammam Deanship of Library Affairs  | <a href="http://www.ud.edu.sa/DU/en/deanship/library_affairs/index.htm">http://www.ud.edu.sa/DU/en/deanship/library_affairs/index.htm</a>                                                                                                                                                                                   |
| 16 | Effat University library                          | <a href="http://library.effatuniversity.edu.sa/index.php?title=Welcome!">http://library.effatuniversity.edu.sa/index.php?title=Welcome!</a>                                                                                                                                                                                 |
| 17 | Ayamamah University Library                       | <a href="http://www.yu.edu.sa/En/Pages/Library/Library%20Home.aspx">http://www.yu.edu.sa/En/Pages/Library/Library%20Home.aspx</a>                                                                                                                                                                                           |
| 18 | AlFaisal University Library                       | <a href="http://lib.alfaisal.edu/">http://lib.alfaisal.edu/</a>                                                                                                                                                                                                                                                             |
| 19 | AlBaha Uni Library                                | <a href="http://portal.bu.edu.sa/web/14807978/home">http://portal.bu.edu.sa/web/14807978/home</a>                                                                                                                                                                                                                           |
| 20 | University of Tabuk Deanship of Library Affairs   | <a href="http://www.ut.edu.sa/en/web/deanship-of-library-affairs/home">http://www.ut.edu.sa/en/web/deanship-of-library-affairs/home</a>                                                                                                                                                                                     |

#### 4.2 United Arab Emirates (UAE)

|   |                                         |                                                                                                                                                                                                               |
|---|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Zayed University Library                | <a href="http://www.zu.ac.ae/main/en/_library/index.aspx">http://www.zu.ac.ae/main/en/_library/index.aspx</a>                                                                                                 |
| 2 | United Arab Emirates University Library | <a href="http://www.library.uaeu.ac.ae/">http://www.library.uaeu.ac.ae/</a>                                                                                                                                   |
| 3 | Higher Colleges of Technology Library   | <a href="http://libraries.hct.ac.ae/">http://libraries.hct.ac.ae/</a>                                                                                                                                         |
| 4 | American University of Sharjah Library  | <a href="http://library.aus.edu/">http://library.aus.edu/</a>                                                                                                                                                 |
| 5 | University of Sharjah Library           | <a href="http://www.sharjah.ac.ae/en/about/offices/office_sadmin/dass/depts/libraries/Pages/default.aspx">http://www.sharjah.ac.ae/en/about/offices/office_sadmin/dass/depts/libraries/Pages/default.aspx</a> |

|   |                                                    |                                                                                                                           |
|---|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
|   |                                                    |                                                                                                                           |
| 6 | Masdar Institute Library                           | <a href="http://www.masdar.ac.ae/library.html">http://www.masdar.ac.ae/library.html</a>                                   |
| 7 | Ajman University of Science and Technology Library | <a href="http://www.ajman.ac.ae/en/library.html">http://www.ajman.ac.ae/en/library.html</a>                               |
| 8 | Univeristy of Wollongong in Dubai Library          | <a href="https://www.uowdubai.ac.ae/academic-resources/library">https://www.uowdubai.ac.ae/academic-resources/library</a> |

#### 4.3 Qatar

|   |                                                    |                                                                                                                                                                                                               |
|---|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Zayed University Library                           | <a href="http://www.zu.ac.ae/main/en/_library/index.aspx">http://www.zu.ac.ae/main/en/_library/index.aspx</a>                                                                                                 |
| 2 | United Arab Emirates University Library            | <a href="http://www.library.uaeu.ac.ae/">http://www.library.uaeu.ac.ae/</a>                                                                                                                                   |
| 3 | Higher Colleges of Technology Library              | <a href="http://libraries.hct.ac.ae/">http://libraries.hct.ac.ae/</a>                                                                                                                                         |
| 4 | American University of Sharjah Library             | <a href="http://library.aus.edu/">http://library.aus.edu/</a>                                                                                                                                                 |
| 5 | University of Sharjah Library                      | <a href="http://www.sharjah.ac.ae/en/about/offices/office_sadmin/dass/depts/libraries/Pages/default.aspx">http://www.sharjah.ac.ae/en/about/offices/office_sadmin/dass/depts/libraries/Pages/default.aspx</a> |
| 6 | Masdar Institute Library                           | <a href="http://www.masdar.ac.ae/library.html">http://www.masdar.ac.ae/library.html</a>                                                                                                                       |
| 7 | Ajman University of Science and Technology Library | <a href="http://www.ajman.ac.ae/en/library.html">http://www.ajman.ac.ae/en/library.html</a>                                                                                                                   |
| 8 | Univeristy of Wollongong in Dubai Library          | <a href="https://www.uowdubai.ac.ae/academic-resources/library">https://www.uowdubai.ac.ae/academic-resources/library</a>                                                                                     |

#### 4.4 Bahrain

|   |                                               |                                                                                                                                                                                                                 |
|---|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | University of Bahrain Library                 | <a href="http://www.uob.edu.bh/english/pages.aspx?module=pages&amp;id=1643&amp;SID=137">http://www.uob.edu.bh/english/pages.aspx?module=pages&amp;id=1643&amp;SID=137</a>                                       |
| 2 | Arabian Gulf University Library               | <a href="http://www.agu.edu.bh/library/Default.aspx">http://www.agu.edu.bh/library/Default.aspx</a>                                                                                                             |
| 3 | Ahlia University Library                      | <a href="http://www.ahlia.edu.bh/ahliaweb/library/">http://www.ahlia.edu.bh/ahliaweb/library/</a>                                                                                                               |
| 4 | Gulf University Library                       | <a href="http://gulfuniversity.edu.bh/en/library/">http://gulfuniversity.edu.bh/en/library/</a>                                                                                                                 |
| 5 | University College Bahrain Library            | <a href="http://www.ucb.edu.bh/index.php/library">http://www.ucb.edu.bh/index.php/library</a>                                                                                                                   |
| 6 | Delmon Uni for Science and Technology Library | <a href="http://www.delmon.edu.bh/preview.php?page=library_services">http://www.delmon.edu.bh/preview.php?page=library_services</a>                                                                             |
| 7 | Royal University for Women Library            | <a href="http://www.ruw.edu.bh/message_dlis.php">http://www.ruw.edu.bh/message_dlis.php</a>                                                                                                                     |
| 8 | Kingdom University Library                    | <a href="http://library.ku.edu.bh/KUv5/Libraries/start.aspx?fn=ChangeLang&amp;Applang=E&amp;ScopeID=1.101">http://library.ku.edu.bh/KUv5/Libraries/start.aspx?fn=ChangeLang&amp;Applang=E&amp;ScopeID=1.101</a> |

#### 4.5 Oman

|   |                                      |                                                                                                                                                                                     |
|---|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Sultan Qaboos University Library     | <a href="http://www.squ.edu.om/mainlibrary/tabid/1337/Default.aspx">http://www.squ.edu.om/mainlibrary/tabid/1337/Default.aspx</a>                                                   |
| 2 | Sohar Uni Library                    | <a href="http://www.soharuni.edu.om/index.php?option=com_content&amp;view=article&amp;id=52">http://www.soharuni.edu.om/index.php?option=com_content&amp;view=article&amp;id=52</a> |
| 3 | The University of Nizwa Library      | <a href="http://www.unizwa.edu.om/index.php?contentid=10">http://www.unizwa.edu.om/index.php?contentid=10</a>                                                                       |
| 4 | Oman Medical College Library         | <a href="http://omc.edu.om/librarymain.html">http://omc.edu.om/librarymain.html</a>                                                                                                 |
| 5 | Majan College Library                | <a href="http://www.majan-elibrary.com/">http://www.majan-elibrary.com/</a>                                                                                                         |
| 6 | Dhofar University Library            | <a href="http://www.du.edu.om/Library/index.htm">http://www.du.edu.om/Library/index.htm</a>                                                                                         |
| 7 | AlBuraimi University College Library | <a href="http://www.buc.edu.om/LearningCenter.aspx">http://www.buc.edu.om/LearningCenter.aspx</a>                                                                                   |

#### 4.6 Kuwait

|   |                                                    |                                                                                                             |
|---|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| 1 | Kuwait University Library                          | <a href="http://library.kuniv.edu.kw/">http://library.kuniv.edu.kw/</a>                                     |
| 2 | American Uni of Kuwait Library                     | <a href="http://www.auk.edu.kw/library/library_main.jsp">http://www.auk.edu.kw/library/library_main.jsp</a> |
| 3 | Gulf University for Science and Technology Library | <a href="http://amrlibrary.gust.edu.kw/">http://amrlibrary.gust.edu.kw/</a>                                 |
| 4 | Kuwait Maastricht Business School Library          | <a href="http://www.kmbs.edu.kw/library/">http://www.kmbs.edu.kw/library/</a>                               |

#### 5. Overview

A total of 56 university library websites across 6 gulf countries were reviewed. The gulf countries selected in this study comprised of Kingdom of Saudi Arabia, United Arab Emirates, Qatar, Bahrain, Oman and Kuwait. Below is the breakdown:

| Country                 | Number of Library websites |
|-------------------------|----------------------------|
| Kingdom of Saudi Arabia | 20                         |
| United Arab Emirates    | 8                          |
| Qatar                   | 8                          |
| Bahrain                 | 8                          |
| Oman                    | 8                          |
| Kuwait                  | 4                          |
| Total                   | 56                         |

The study showed that 30.4% of the selected gulf libraries website used at least one of the web2.0 tools. With regards to the use of Web2.0 tools within the selected gulf libraries, the top 2 are Facebook and Twitter. 26.8% of the sampled

libraries deployed Facebook while 25% used Twitter. 5.4% of the libraries used RSS. This is a stark contrast to the Web2.0 tool studies which showed that Instant Messaging (IM) and RSS as the forerunners.

### **5.1 Kingdom of Saudi Arabia**

Facebook, Twitter and RSS are the most commonly used Web2.0 tools. 30% of the libraries used facebook, 25% used Twitter and 15% used RSS. Out of the 20 academic libraries sampled, 6 of them (30%) applied at least 1 of the tools on their website. The six libraries are namely:

- King AbdulAziz University Library
- King Fahd University of Petroleum and Minerals (KFUPM) Library website
- Umm AlQura University Library
- Qassim University Library
- Effat University Library
- Taibah University Library

King AbdulAziz University Library use of Web2.0 tools is more prominent as compared to the rest of the academic universities in the Kingdom of Saudi Arabia. Their twitter account has around 549 followers with about 148 tweets (at the time of writing). The main purpose of using twitter is as follows:

- Informing users about training sessions
- Linking to electronic resources
- Informing users of the upcoming library training sessions and the latest news about the library

On another note, the library (King AbdulAziz University) uses YouTube to disseminate information about the library club, instructions on how to access the electronic resources, make bookings for the library facilities, how to request for articles as well as communicating with the library staff. The medium used in the YouTube videos is Arabic.

King AbdulAziz University Library also has a presence in Facebook. There are about 2,556 likes of the site. The main purpose of using the Facebook account is to disseminate instructions on using the digital libraries.

In addition to that, the library also has a forum page that promotes the exchange of ideas and opinions and encourages the interaction between users and library staff.

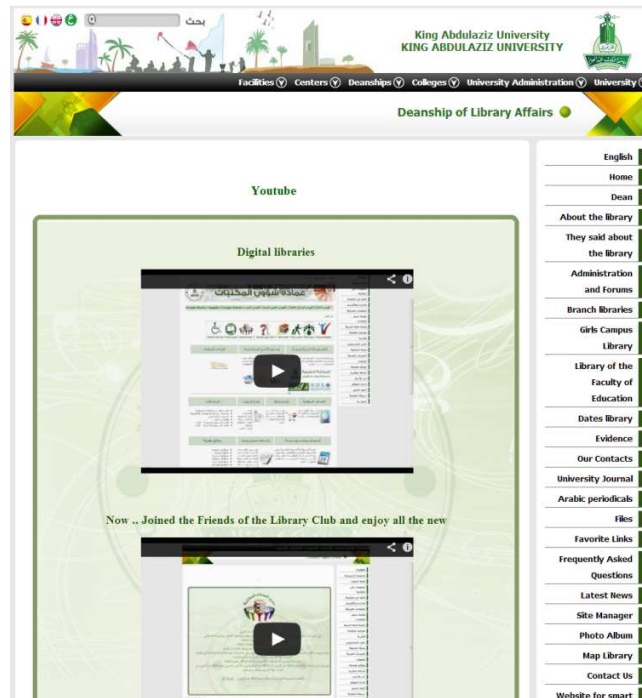


Figure 1. KAA Library Youtube Videos

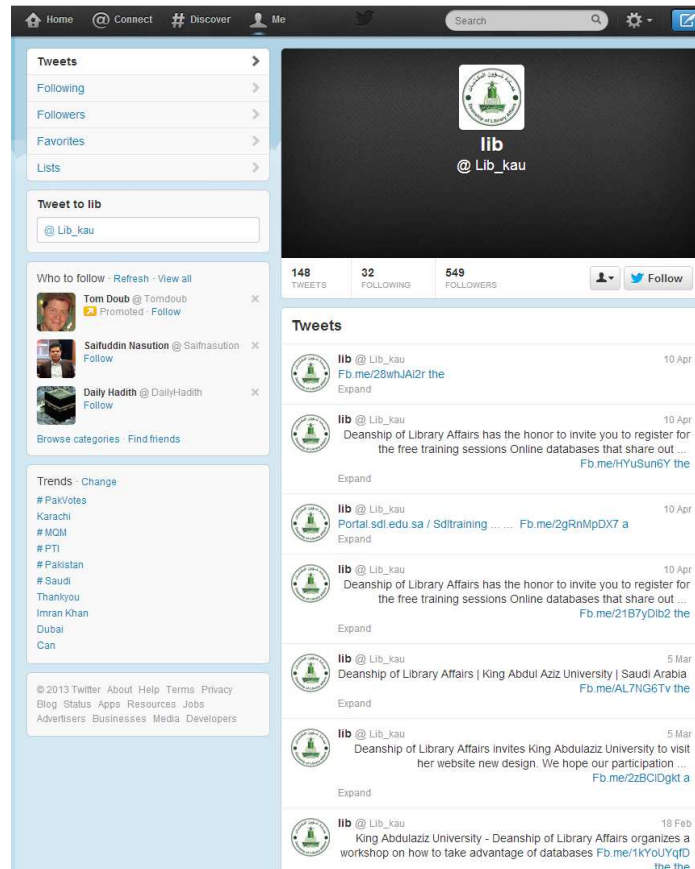


Figure 2. KAA Library Twitter account



Figure 3. Facebook of the King AbdulAziz University Library

Effat University library website is another example that apply Web2.0 tools. Online videos are used to circulate information on finding books, access electronic resources off-campus, check library account and renew library materials online.

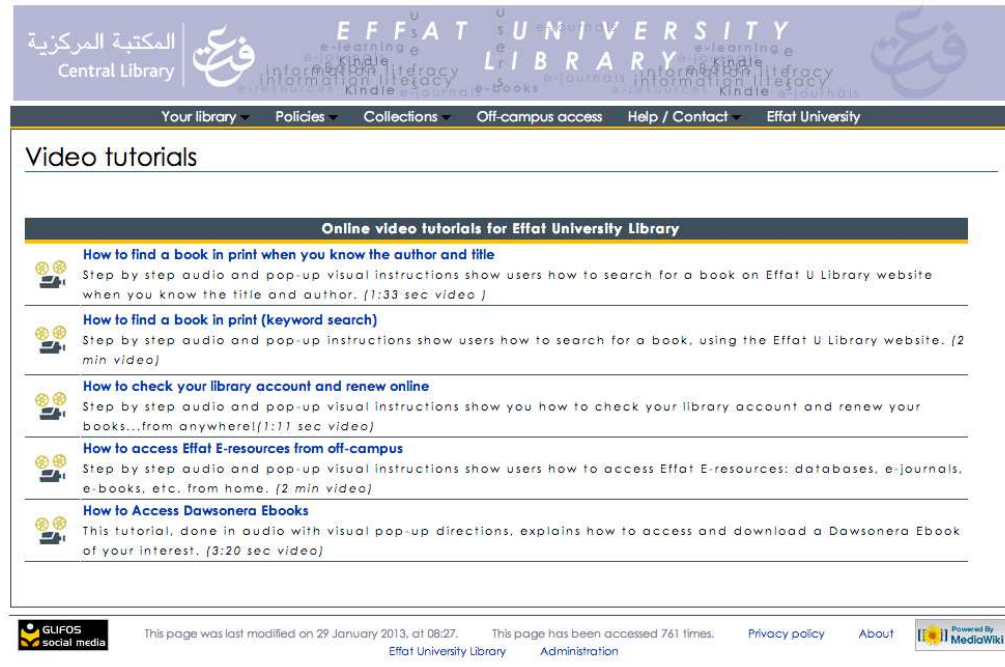


Figure 4. Effat University Library website – Videosharing

KFUPM university library website adopted twitter to impart general library information as well as provide links to the library's Facebook entries. Their twitter account has 74 followers with only 12 tweets.

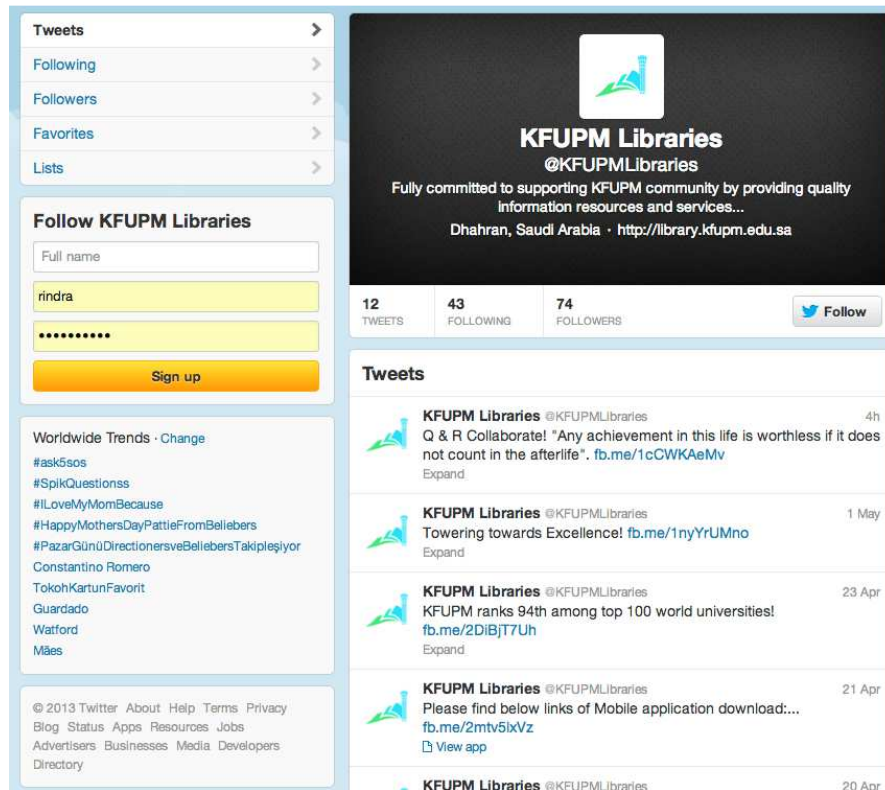


Figure 5. KFUPM Twitter page

## 5.2 United Arab Emirates UAE.

The use of Web2.0 tools among the libraries in the UAE revealed that only 3 out of 8 selected library websites showed that they used at least one of the tools (37.5%). The observation also showed that RSS is the popular tool followed by Facebook and Twitter. The most common uses of such tools were the dissemination of general information about the library, sharing of photos, providing links to speeches.

The 3 library websites that uses Web2.0 tools are:

- Zayed University
- Higher Colleges of Technology (HCT)
- American University of Sharjah



Figure 6. Screenshot of Zayed University Library in Facebook

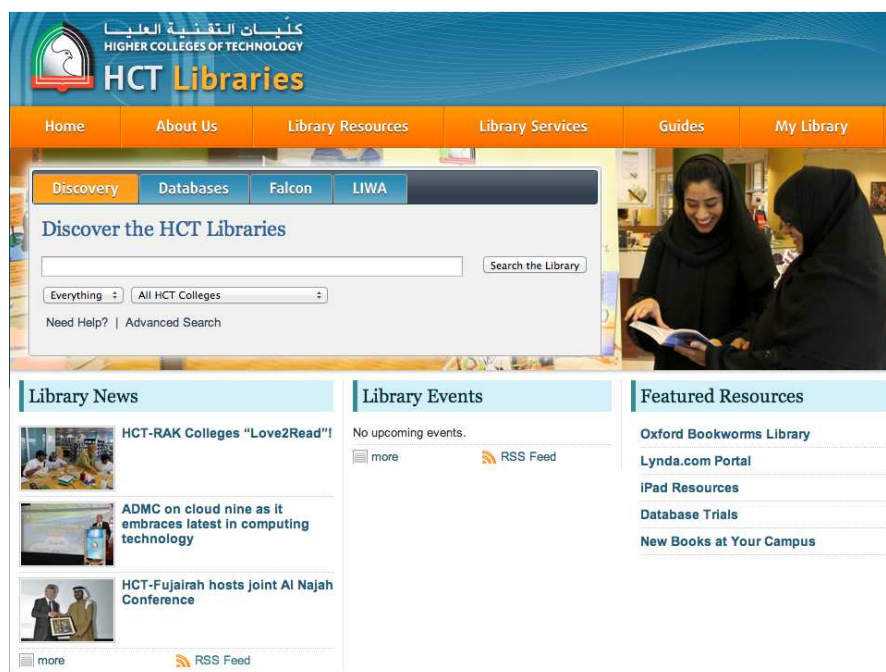


Figure 7. Screenshot of HCT libraries – RSS

### 5.3 Qatar

2 of the 8 academic library websites uses Web2.0 tool (25%). Only 2 Web2.0 Tools are evident namely Twitter and Facebook. 25% of the library websites use twitter while 12.5% of them use Facebook. The Web 2.0 tools were commonly used to spread news on library news and happenings, provide instructional information on e-resources as well as reference points.

The 2 library websites that are using Web2.0 tools are:

- Qatar Univeristy Library
- Weill Cornell Medical College Library

### 5.4 Bahrain, Oman and Kuwait

Lowest usage level could be traced to Bahrain. Only 1 out of 8 (12.5%) library websites uses a Web2.0 tool. Facebook and Twitter are used by Ahlia University library website. On another note, 2 out of 8 library websites in Oman uses Web2.0 tool while 1 out of 4 library websites in Kuwait (25%) uses it (Web2.0 tool). The main uses of Web2.0 tools among the 3 gulf countries are similar namely imparting information on library such as latest happenings, training classes and resources.

## 6. Conclusion

The study is an observation of the use of Web2.0 tools by academic library websites across the gulf countries. Out of a total of 56 academic library websites, only 15 out of 56 (26.8%) websites have adopted Web2.0 tools. Among the 6 gulf countries, academic libraries in the United Arab Emirates and Kingdom of Saudi Arabia are more actively involved in using the Web2.0 tools. Bahrain's academic library websites are ranked low in this study with about 12.5% of the websites show Web2.0 tools deployment. Facebook and Twitter are the most popularly used Web2.0 tools. This is in stark contrast to the Web2.0 tools study as mentioned in the literature review. As mentioned in the literature review section, Instant messaging and RSS are the popular tools in the North American, Europe and Asia.

Apart from that, the main uses of these Web2.0 are similar to the other regions of the world. Some of them are namely:

- Disseminating information on library's training guides and training classes
- Spreading the word about library news and latest happenings

However, it can be noted that the level of interaction between users and library staff are very low. From the various observations in most of the library's Facebook and twitter account, it can be seen that library staff do push out announcements however the interaction between them and their users are minimal.

## 7. Future Study

Their study provides a platform for future study in the field of Web2.0 and the university libraries in the Gulf region:

- Study on the direction of Web2.0 tools with regards to usage among Gulf libraries
- An alternative medium of communication between library and library users

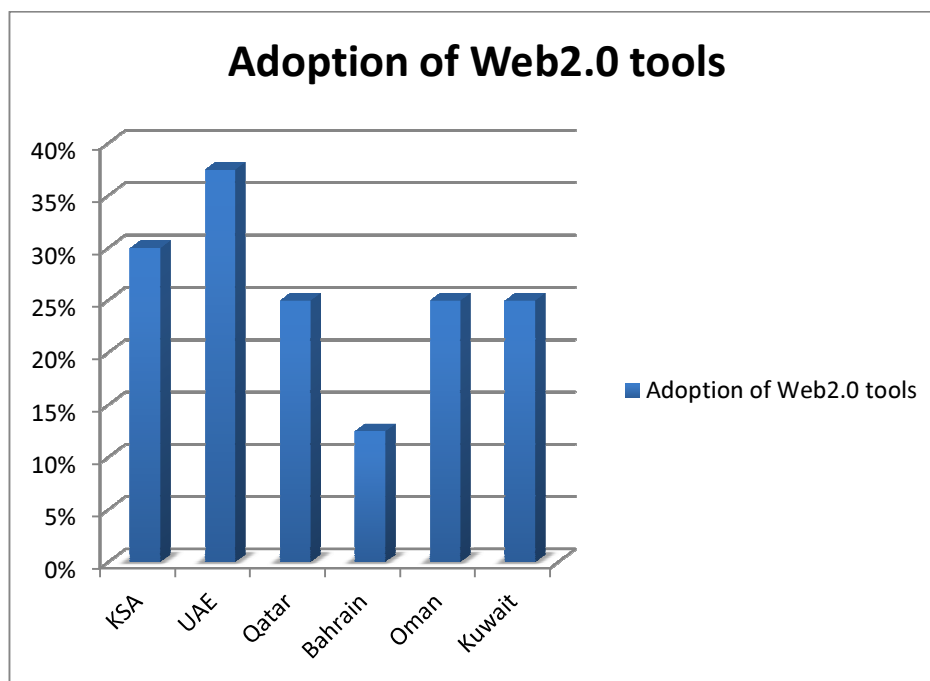


Chart 1. Comparison of Web2.0 tools among selected Gulf libraries

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## Chapter 15

### Role of Library in Addressing Users' Discovery Need in Google Generation

Svetal H. Shukla

Assistant Librarian, Institute of Science, Nirma University  
Ahmedabad, India

[svetal.shukla@nirmauni.ac.in](mailto:svetal.shukla@nirmauni.ac.in)

Virendrakumar S. Goswami

Assistant Librarian, Institute of Pharmacy, Nirma University  
Ahmedabad, India

[virendra.goswami@nirmauni.ac.in](mailto:virendra.goswami@nirmauni.ac.in)

Jayshree D. Pandya

Library Assistant, Institute of Science, Nirma University  
Ahmedabad, India

[jayshree.pandya@nirmauni.ac.in](mailto:jayshree.pandya@nirmauni.ac.in)

**Abstract.** *The information technology (IT) has brought great changes to the information world. In this paper we are just trying to focus on Library's role in this Internet generation, which is otherwise termed as Google generation. With the wide use of Internet, Library professional's role is not just to act as an information gatekeeper but as a facilitator armed with advancing technologies to help researchers. With the expanded use of Google, Library Professionals role do not limit to serve the need but to help users' in their discovery need beyond search engines also to teach and even work as a contributor to the Knowledge Society.. Here we have highlighted Library professional role in this g – generation.*

**Keyword:** Google Generation, G – Generation, Next Generation Information Specialist

#### 1. Introduction

Effectiveness of a library in the present digital age depends largely upon the application of information and communication technology, and integration in to global information infrastructure. With the very enormous advancement of human intelligence, there is a major change in information need. The vast storage of information on Internet is highly affecting the traditional Librarian role. Technology has brought many changes to education in the past ten years and technological literacy is listed as one of the goals of the Common Essential Learning's which is a component of the Core Curriculum. Now Library becomes the gateway of information where one can access Variety of Information in print or electronic formats.

#### 2. Paradigm Shift

The shift introduced almost 15 yrs ago with the resulting introduction of www and internet into work places, academics and home. The shift initially wasn't much change in philosophy of Library and Information Science, but now it is changing the delivery of Library services in different ways. With the advancement and acceptance of technology in Library, it extends the role of Library Professional from Librarian to Information Manager.

During this in this paradigm shift, librarians and library designers need to join faculty and need to understand that the success of the academic library is best measured not by the frequency and ease of library use but by the learning that results from that use. Our purpose is not only to circulate books, but also to ensure that the circulation of knowledge produces learning. Reconceiving our purposes involve a fundamental shift for librarians trained in a service culture—one that is comparable to the shift that faculty are making as they move from a teaching to a learning culture. Academic librarians need to make a paradigm shift from a service to a learning culture. (*Scott Bennett, 2005*)

***“Google can bring you back 100,000 answers a Librarian can bring you back the right one” - by Neil Gaiman.***

This is the message that greets you (imprinted on the carpet) when you step in the door at the Gungahlin Public Library in Canberra, Australia.

### **3. Role of Library**

Enormous changes taking place in the information world that transforms the education pattern due to advancement of Information Technology with its unique advantages of access. (*Kumar, Manish 2009*) Information technology has changed the face of Library Profession due to application of ICT in Library. Library professionals' role is confined not only to provide access to resources but more beyond that.. There is a drastic change with the adoption of new technologies like computerized acquisition and circulation that displaces the manual work. Introduction of electronic databases, Virtual Reference Services to the users, accessibility by 24/7 are few to quote. The changes can be discussed with respect to pre and post digitization.

**Pre digitization:** Manuscripts form a significant resource material for the study and research, Digital preservation of old rare documents and manuscripts is essential because they contain valuable information about society and culture. By digitizing them we should try to preserve and make available to all through network. Theses and dissertations are another important components of any library collection which needs to be digitized at the priority basis, as these may not be available to other library users. Digitization of these will be proved fruitful for users.

Before digitization, libraries have focused for long on the management of content in physical forms. By making 'access' as our top priority, librarians and archivists can fulfill user requests in a more expeditious manner. Conservative, sometimes justifiable assumptions about copying rare and unique materials often result in time-consuming, overly-cautious procedures. These labor-intensive processes and outdated policies can be streamlined to fit both the circumstances of requests and institutional resources. (*Schaffner, Jennifer, 2011*)

**Post digitization:** Efficient & qualitative services by collecting, organizing, storing, disseminating, retrieving and preserving the information. Preservation benefits besides making information retrieval & delivery more comfortable. Online access to historical and cultural documents whose existence is endangered due to physical decay and Digital libraries necessarily includes a strong focus on the management of digital content. With digitization, we beneficial with accessing data anywhere, reducing delays, distributed storage – central access., better cataloguing, cross references to other documents, full text search, protected information source, wide exploration and exploitation of the information have become possible.

### **4. Google Generation**

“Google generation” refers to young people born since 1993. A number of other expressions are used to name this segment of the population, such as “digital natives” or “Z generation” (which seems to imply that they will limit their reproductive behavior to the virtual world). The study undertaken by the Centre for Information Behavior and the Evaluation of Research (CIBER) research group at University College London was focused on information behavior within an academic context (*Centre for Information Behavior and the Evaluation of Research, 2008a*). The broad objectives of the study were to gather and assess the available evidence to:

- Establish whether or not, as a result of the digital transition and the vast range of information resources being digitally created, young people, the “Google generation”, are searching for and researching content in new ways and whether this is likely to shape their future behavior as mature researchers;
- Establish whether or not new ways of researching content will prove to be any different from the ways that existing researchers and scholars carry out their work; and
- Inform and stimulate discussion about the future of libraries in the internet era (*Centre for Information Behavior and the Evaluation of Research, 2008b, p. 5 adapted from Menou, Michel J., 2010*)

**Generation X:** is the generation generally defined as those born after baby boom ended in the late 1950s. Demographers, historians and commentators use beginning birth dates from the early 1960s to the early 1980s. The term generally includes people born during all or part of the 1960s.

**Generation Y:** Millennials, also known as Generation Y, Generation Next, Net Generation and Echo Boomers, describes the generation following Generation X who were born from 1982 to the early 2000s (decade). There are no precise dates for when the millennial generation starts and ends.

**Generation Z:** A variety of terms are being used to describe Generation Z, including iGeneration, Generation@, Net Generation, Homeland Generation, or in the United States Generation 9/11 due to their post-9/11 childhoods., the Pluralist Generation, Generation AO (always on) Generation Text, and the "Digital Natives" by Marc Prensky. Beginning birth dates are from the early 2000s. <http://en.wikipedia.org/wiki/Generation> Dated 10<sup>th</sup> Jan, 2013)

## 5. Google a competitor or Collaborator to the Library?

A lot of discussions have taken place on myth and reality of Google versus Libraries. And most probable conclusion is Google is good and Libraries are better as there is a concern about currency, accuracy, reliability and authenticity with the Google information.

“Of course, there is a difference between the hype about Google and the reality, but both of these now affect library resource sharing. In many people's minds, “Google” and “the web” are synonymous, and some believe that Google's book digitization project will soon be a universal library online; meanwhile, others believe that Google will sooner be litigated out of existence. The more realistic point of view, of course, is that neither Google nor libraries can provide universal access to all information. For instance, there will always be rare materials that can neither be digitized by Google nor circulated by libraries.” (*Posner 2007*)

With the introduction of World Wide Web and Internet, Search engines become the information hub where one can find lots of information about anything. “The personal computer revolution of the 1980s and the development of the web in the 1990s combined to make online searching increasingly easy and popular” (*Straw, 2003*). While Preservation became the burning issue with the Library resources, Internet helps out this with the digitization solution. Google introduced Google books Library project, in which books which are out of Copyright and in the Public domain, are fully available to read or download and many of universities are participating in this project. ([http://en.wikipedia.org/wiki/Google\\_Books\\_Library\\_Project](http://en.wikipedia.org/wiki/Google_Books_Library_Project) on Dated 10<sup>th</sup> Jan, 2013)

## 6. Next Generation Technical Services:

### 6.1 Social Networking sites:

Academics as well as Industries are attending attraction of Social Network Sites (SNS). There are many Social Sites where million of people and different communities can share, access, and post lots of information. The rise of SNSs use indicates generation shift towards online communities. Facebook, Twitter and other social networking sites are often mentioned as possible services that might be useful in learning and teaching. However as they have been designed for social recreational and not social-educational purposes their structure can result in the personal and educational interacting in unexpected and unwanted ways. Some of the examples are given below.

- Facebook: General: Photos, Videos, Blogs And Apps.
- Flickr: Photo sharing, commenting,
- Blogs: Individual with specific subjects' also personal blogs
- Google+: General
- LinkedIn: Business and professional networking
- Twitter: General. Micro-blogging, RSS, updates
- Podcasting, publishing on demand service
- Social Community: LIS Forum, LIS Links

## 6.2 Web 2.0 and Web 3.0 (Semantic Web)

Nowadays, bulks of Information are stored on Internet which is very hard to manage. Semantic web is the next generation web infrastructure which helps in content management. It makes searching more pin pointed and potential than the present one. In the words of Tim Berners-Lee “the day-to-day mechanisms of trade, bureaucracy and our daily lives will be handled by machines talking to machines”. Semantic Web aims at converting the current web dominated by unstructured and semi-structured documents into a "web of data". Web.3.0 helps in transforming the web into database. According to the W3C, "The Semantic Web provides a common framework that allows data to be shared and reused across application, enterprise, and community boundaries ([http://en.wikipedia.org/wiki/Semantic\\_Web](http://en.wikipedia.org/wiki/Semantic_Web) on dated 12th Jan, 2013).

The Semantic Web will not be restricted to corporate intranets or singular islands of knowledge. Rather, it will incorporate large portions of the Web, displaying heavy reuse of URIs ((Universal Resource Locator) and high interconnection. ( *Ankolekar, Anupriya, 2008*)

## 7. E - Learning:

E -Learning is generally referred to as “Computer mediated delivery of scholarly information, education, and training to remote users”. E-learning and its synonyms have been subject to extensive studies since the emergence of E -Learning technologies in early 1990s. A web search conducted on Google Scholar (27 Aug.2005) has returned a considerable amount of scholarly research works on ITC based educational systems and related synonyms such as online learning (17200), e-learning (16920), virtual learning (6700), Tele learning (1770), and course website (1280). So, it would be a tedious work to review such huge accumulated literature in this text. E-learning is suitable to fulfill the requirements of education. Moodle is the best support OSS for e-learning program in education. E-learning has become very popular because of the various benefits it offers to the institutions, academic staff and students, which include its potential to assist the university in preparing its students for effective participation in the wider information society to support student- directed learning. The Web based Information and technologies (ICT) have greatly catalyzed the emergence of online or electronic education as a new genre of delivering innovative bundle of the ICT-based learning materials, which has been developed in response of the growing needs for talented personnel to live up to knowledge-oriented society.

## 8. Virtual Networked Environment

The second Life, the best known Virtual Networked Environment (NVE) launched in 2003. Gartner [Filho, 2007] predicts that by the end of 2012: '50% of large enterprises will establish an NVE business presence'. It is ease in sharing and managing information on network, the best example of Cloud Computing. Filho has given below three reasons of utilization of it.

- Increased attention and engagement
- Improved understanding, practice and experience through contextualized activities
- Provide a rich environment for learning, teaching, testing, simulation, and collaboration [Filho, 2006] (Kent, Philip G., 2008)

Some of examples are; CVRS (Collaborative Virtual Reference Service), Institutional BLOG, SMS (Short Message Service), Online Institute Repository, Wikis, Online streaming, Virtual Library / E –library etc...

### **9. Role of Next generation information Manager/Specialist:**

New roles require different attitudes, skills and knowledge. A concern for detail and organized approach will not be enough. To fill the gap between the present and future role, Library Professionals' are in real need of training that helps to develop skills as mentioned for below services.

- Provide Space where People can share, discuss and exchanges their ideas knowledge.
- Value added access of web resources
- Content Management
- Assist Users in finding resources beyond Google
- Virtual Reference Services
- Search beyond search engine
- Library as Training & Learning centre
- Library as Publication centre
- Library for collaborative environment

### **10. Conclusion**

Libraries are operating in a rapidly changing environment. New strategies are required to ensure that libraries continue to reach their users and maintain the relevance of their service offerings. Librarians/Library Professionals themselves must also change to gain new skills, attitudes and knowledge to operate effectively in this changing environment so that user needs are understood and met. Learning has been fundamentally changed by the digital revolution. We, now have more information than ever before due to the Internet. Quick, easy and convenient access to information in many ways makes our lives easier, but it also presents us with challenges. Massive digital choice in particular has created a paradigm shift in information seeking and using behavior which in turn, has an impact on teaching and learning. The influences of this in higher education are far reaching.

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## Chapter 16

# How Far or Near to 24 X 7 Libraries? Analysis of Application of Web 2.0 Tools in University Libraries of Gujarat

Sandip S. Patel

Library, Institute of Pharmacy, Nirma University

Ahmedabad, India

[sandip.patel@nirmauni.ac.in](mailto:sandip.patel@nirmauni.ac.in)

Lalitha Poluru

Librarian, Institutes of Pharmacy & Science, Nirma University

Ahmedabad, India

[lalitha.poluru@nirmauni.ac.in](mailto:lalitha.poluru@nirmauni.ac.in)

**Abstract.** *In the 21st century, libraries should work with a concept of 24X7 accessibility and Web 2.0 tools are to be exploited to the maximum for providing information services and to serve according to the expectations of the users. The present study is focused on the application of Web 2.0 tools for providing information services in the university libraries of Gujarat. During the study, it was noticed that very few libraries have embraced the technology to provide information services. RSS is the major Web 2.0 tools that are in application, where as blogs, Facebook, google docs, instant messaging, podcasts, twitter and YouTube are few other tools that are in use. In order to develop 24 X 7 libraries according to the present and future needs of the users, the library personnel are to be proactive, skilled and passionate to provide the web based information services. At the same time the users are also required to be well versed with this kind of technology.*

**Keywords:** Web 2.0, University Libraries of Gujarat, Web based Information Services, RSS, Blogs

### 1. Introduction

The present day libraries are undergoing a lot of transformations in terms of resources, services and information seeking attitudes of users. During the last two decades, there is a phenomenal growth of Information and Communication Technology (ICT) that has impacted tremendously on libraries. Around the world academic libraries started reaching the users with so many dynamic information services through their websites. Liu (2008) says that the academic library websites are virtual presentation to the world. With the advent of Web 2.0 that has become the buzz word is now being used to explore new ways to interact on the Internet and for collaborating with fellow professionals (Bradley, 2007). Web 2.0 can be well articulated as the shift from simply being a website and a search engine to a shared network space that drives, work, research, education, entertainment and social activities, which especially all people do (Storey, 2006). According to PEW Internet and American Life Project (Lenhart et al., 2007) 64 percent of American teen aged between 12-17 years are involved in a wide range of content creating activities for the social networking sites they are used in their daily activities. This development has made libraries around the world keen to integrate Web 2.0 features (Harinarayana; Raju, 2010). Indian university libraries have also started embracing the technology so that they may easily outreach their users. Though it is a known fact that the technology is used and implemented in Indian university libraries, there is very little research that focuses on evaluation of Web 2.0 applications in libraries. It is likely that none of the research is focused towards the application or evaluation of Web 2.0 in the university libraries of Gujarat. Hence, the present study deals with the extent of usage of Web 2.0 in university libraries of Gujarat.

## 2. Objectives of the Study

In present day concept of 24 X 7 libraries, it is required to embrace the Web 2.0 technologies for providing seamless information to users. Beyond understanding the usefulness of implementation of Web 2.0 tools in the University libraries of Gujarat, India the present study will try to find how far these libraries are using the technology to reach out to their users by providing innovative information services. Thus this study will be helpful for the information professionals and researchers to understand the impact of Web 2.0 technologies and providing such services. The objectives of the study are:

- To identify the Web 2.0 tools that are being used by the university libraries in Gujarat
- To understand the purpose behind the usage of Web 2.0 tools

## 3. Literature Review

### 3.1 What is Web 2.0?

While the Internet has provided the facility of decentralization and the ability to reach out to the users, Web 2.0 helps the librarians to quickly and easily provide information services by themselves. Downes (2004) suggests that the original vision of Web 2.0 is “read-write”.....*that the web itself was being transformed from what was called “the Read Web”, in accordance with Tim Berners-Lee’s original vision. Proponents of this new, evolving web began calling it Web 2.0 and in short order the trend became a movement.* Further Coombs (2007) opines that Web 2.0 is “a space that allows anyone to create and share information online – a space of collaboration, conversion, and interaction; a space that is highly dynamic, flexible, and adaptable”. The Web 2.0 tools are being used for providing different services like resource discovery, personalized information services, delivery of course content, e-learning etc. According to Manes (2006), Michael Casey was the first to coin Library 2.0 on his blog Library Crunch. Library 2.0 is based on applying Web 2.0 technologies in libraries for providing information services. The present study is focused on the application of Web 2.0 tools for providing web based information services in university libraries of Gujarat.

### 3.2 Web 2.0 Technologies in Libraries

Linh (2008) conducted a survey to provide an overall picture of application of Web 2.0 technologies in Australian University libraries (AULs). It was found that two thirds of AULs have deployed the Web 2.0 technologies and only four technologies namely RSS, blogs, instant messaging and podcasts are used for some specific purposes with basic features.

Mahmood and Richardson Jr. (2011) surveyed the websites of 100 member academic libraries of Association of Research Libraries (USA) and found that all libraries were using various tools of Web 2.0. Blogs, Microblogs, RSS, instant messaging, social networking sites, mashups, podcasts and vodcasts were widely adopted, while wikis, photo sharing, presentation sharing, virtual worlds, customized web pages and vertical search engines were used less. Librarians were using these tools for sharing news, marketing their services, providing information literacy instruction, providing information about print and digital resources, and soliciting feedback of users.

Shi and Chen (2011) investigated the application of Web 2.0 technologies accessing thirty Chinese University libraries websites within five weeks. The study reveals that two-thirds of Chinese university libraries deployed one or more web 2.0 technologies. Only one-tenth of libraries adopted more than four web 2.0 technologies among Chinese university libraries are not extensive or profound enough.

Mankori (2012) examined the extent of utilization of Web 2.0 in African university libraries and found that only few university libraries are trying to embrace the technology. He further suggested that across the globe, university libraries

are increasingly using Web 2.0 system to support, promote and extend information services to their patrons. In the modern information world 2.0, it is important for university libraries to identify relevant Web 2.0 systems and integrate them into main stream library and information services.

Gerolimos and Konsta (2011) documented the integration of Web 2.0 into the working framework of some of the most advanced libraries in the world that is compared with the previous study that was conducted approximately two years ago. They noticed that when there is an increase in the integration of Web based services in the library, the user participation is less and sometimes it's difficult to measure their participation and utilization of the services.

Balaji and Kumar (2011) examined the effectiveness of library website by providing web based information services in south Indian Technological universities and found that deployment of mainstream web information services is not wide spread as web information services are yet to take off widely in academic libraries. The majority of university libraries are found to be working in the conventional library settings and diffusion rate of web information services is relatively low.

ShriRam et al. (2011) had undertaken a study on implementation of Information Technology with the aim of exploring the expectations of the users and their awareness and usage of such applications. They found that despite of Library Resource Center's efforts to provide Web 2.0 applications in its library services to provide Information Literacy, the users are still lacking the awareness about various Web 2.0 applications necessary for teaching and learning.

Though some good research surveys related to the application and implementation of Web 2.0 tools in libraries and web based information services were conducted at different places on the globe, however it was noticed that there is no research based literature that focuses on the survey and evaluation of Web 2.0 tools in university libraries of Gujarat region. Thus, the present study focuses on application and evaluation of Web 2.0 tools used in the university libraries of Gujarat.

#### **4. Research Methodology**

The study is based on content analysis that is used for qualitative approach. The list of universities in Gujarat state was collected from Education Department Government of Gujarat state (<http://gujarat-education.gov.in/education/index.htm>). The university websites were visited and library homepages were visited and searched. All links in the page were observed and noted for the implementation of Web 2.0 tools. The details of the data was gathered and observations were noted and then the data was analyzed to understand about the availability of implementation of Web 2.0 tools for providing different web based information services.

#### **5. Data Collection and Research Sample**

The survey was conducted from July 10<sup>th</sup> -31<sup>st</sup> 2012 and 1<sup>st</sup> – 10<sup>th</sup> December 2012. During the survey it was noticed that there are 48 universities (26 State universities, 4 State Agricultural universities, 2 Central universities, 2 Private Aided universities, 1 Central Deemed university and 13 State Deemed universities) in Gujarat state. To create the research sample, the list of 48 universities was created; their library websites were accessed to identify the application of different Web 2.0 tools in libraries. The list of libraries that are using Web 2.0 tools was created. As a result a subset of whole research population was made up to five university libraries as mentioned in the Table No.1.

As there is no existing standard evaluation criteria to study about Web 2.0 tools, a checklist is made in excel sheet based on the utilization of web 2.0 tools that is based on the literature reviewed and was adapted from different checklists. It is mainly based on the list of checkpoints for web content accessibility guidelines (W3C, 2008), Survey of the application of Web 2.0 in Australian University Websites (Linh, 2008) and Perceptions and usage of library instructional pod casts by staff and students at New Zealand, Universal College of Learning UCOL (Jowitt, 2008).

The checklist consists of questions along with alternative answers (Y = Yes = 1, N = No = 0) and the list of university libraries that apply any types of Web 2.0 tools. Mostly the Web 2.0 tools applied by libraries were available from the home page of the websites. If the links to those applications are not available in home page then the second level pages were searched. Either the number 1 or 0 was filled in the corresponding cell on the checklist as mentioned in Table No. 1.

## 6. Data Analysis

As the checklist was made in excel sheet, and the checkpoints were assigned with either 1 or 0 values, the 'SUM' function of excel was used to calculate the types and purposes of Web 2.0 tools. Chart No.1. shows the percentage of libraries using different Web 2.0 tools.

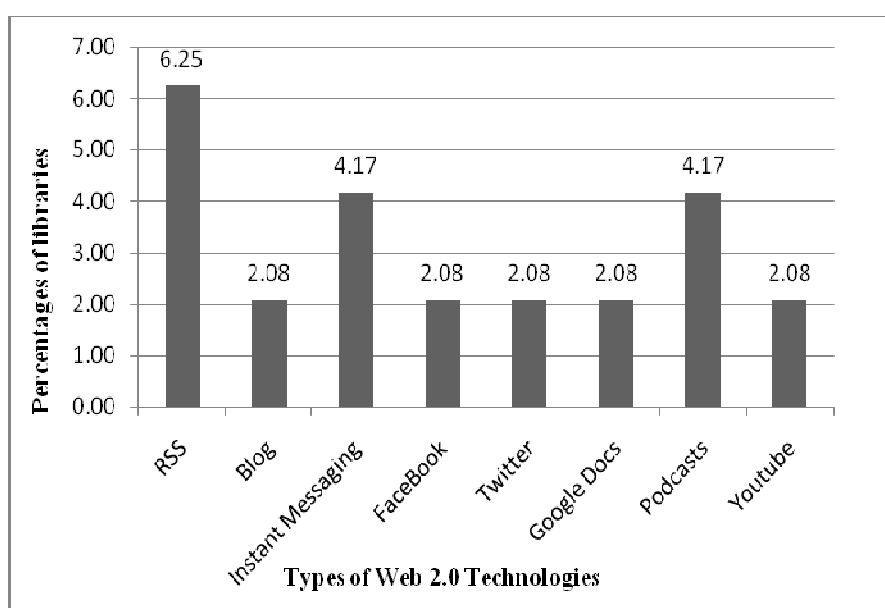


Chart No. 1. Types of Web 2.0 Tools

As shown in the Chart No. 1, eight types of Web 2.0 tools are employed by university libraries in Gujarat (RSS, Blog, Instant Messaging, FaceBook, Twitter, Google Docs, Podcasts, Youtube). It is evident from the chart that 6.25 percent of the libraries applied RSS (3 out of 48 universities), 4.17 percent libraries are using Instant messaging and YouTube (2 out of 48 universities), and each 2.08 percent applied Blog, FaceBook, Twitter and Google Docs (1 out of 48 universities). It is evident that RSS is the only tool that is being utilized at the maximum because of its functional simplicity where as the other tools are least utilized.

## 7. Purposes of Web 2.0 Tools

The below mentioned are different purposes of applying different Web 2.0 tools at different libraries:

- RSS is used to provide library news and events, information about e-journals, databases, current contents of subscribed e-journals. Libraries are also building their own RSS readers.

- Blog is used to provide information about news and events of library, library services, new arrivals of books and periodicals
- Instant Messaging is applied to provide Reference services, to provide advice on library services, guidance about resources
- FaceBook is used only to provide information about the collection of library
- Twitter is applied to provide information about the library collection
- Google Docs are used to create and share documents, spreadsheets, presentation and for survey purposes.
- Pod Casts are used for library orientation and for providing general information.

## **8. Limitations**

The data was gathered from the websites, which is a single segment. Beyond that the authors were unable to record the portion of user participation and data accessed by them. It was not possible to document how many users have subscribed to the RSS feed services, number of reviewers of Face book, etc. As a result the researchers were unable to study users' approach and inclination towards Web 2.0 tools in university libraries.

## **9. Recommendations**

In general, it was noticed that very few library websites are dynamic with rich resources and implementing Web 2.0 tools for providing some information services. Hence, it is necessary that all university libraries should possess dynamic library websites to provide information services that will help the users to get relevant information instantaneously.

The multimedia Web 2.0 tools like podcastings, vodcasts, streaming, file sharing, online communities are to be formed and encouraged which further helps in increase of the Web visibility of university libraries websites.

It is important to conduct user evaluation studies related to user information needs to deploy necessary Web 2.0 tools to provide Web information services as well as post launch studies to understand the user satisfaction levels.

The library staff should be proactive to provide information literacy related to the application and importance of Web 2.0 tools in the libraries.

## **10. Conclusion**

In the present study, though it was noticed that there are very few university libraries in Gujarat that are applying Web 2.0 tools for different purposes, the study has a lot of impact as it addresses the application of Web 2.0 tools in libraries and throws light on areas for further research that are to be required to study that will bring a phenomenal change towards adapting Web technology for providing different information services. During the study the authors were dwelled with different questions that may be taken up for further investigations on impact of Web based technology in Libraries. To mention a few, problems faced by library manager in successful implementation of Web 2.0 tools and their promotion, enhancement of library services through web 2.0 applications, technological influence on perceiving and information seeking behavior of library users etc.

In 21<sup>st</sup> century, libraries should work with a concept of 24X7 accessibility and Web 2.0 tools are to be exploited to the maximum for providing information services and to serve according to the expectations of the users. In order to provide the web based information services the library personnel are to be skilled as well as passionate enough to adapt and implement new technology for providing services. At the same time the users are also required to be well versed with this kind of technology. Otherwise, it is necessary to provide Information Literacy to the required users about the functioning of the library and services provided through web technology. It is always necessary to understand the users perceiving capacity of different web based services before planning to provide new web based services.

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## Chapter 17

# Social Networking Based Ubiquitous Electronic Libraries on Cloud Platform

Ajay Pratap Singh  
Associate Professor & Head, Banaras Hindu University  
Varanasi, India  
[apsingh\\_73@yahoo.co.in](mailto:apsingh_73@yahoo.co.in)

Mayank Yuvaraj  
Junior Research Fellow, Banaras Hindu University  
Varanasi, India  
[mayank.yuvaraj@gmail.com](mailto:mayank.yuvaraj@gmail.com)

**Abstract.** *Cloud Computing has unfurled a new panorama for the organizations striving to cut down the computing costs as well as to execute painless IT. Although, the concept of cloud computing is still in its infancy due to lack of confidence and awareness among people, the present paper attempts to explore the prospects of an Ubiquitous electronic libraries model on cloud platform combining Social networking competencies.*

**Keywords:** Cloud Computing, Social networking, Electronic libraries, Cloud Library, Cloud library models

### 1. Introduction

Novelties are imperative to float with the inescapable drift of change. The first decade of the twenty-first century has not witnessed a world without computing power where pervasive availability of information is pivotal to the development of a nation. Information plays a crucial role in the societal development and moreover, access to right information at right time can open new doors for furthering study and advanced research. With the prolonged expansion of digitized and electronic resources, rise of the Internet, and sea of subscribed and free online resources users are overburdened with heaps of information. Libraries of all types and sizes are now embracing to cloud computing solutions. There is a need to tame this aggravating level of information pollution and develop a solution using the available technologies. The present paper addresses the problem by combining the competencies of cloud computing and social networking for developing a ubiquitous electronic library. The role of the ubiquitous library in the context of development, national unity as well as competitiveness is vital for any nation today. The world itself is being transformed from a production-based economy into a knowledge-based economy and any nation that has aspirations of playing a meaningful role in the new economy must work on developing an innovative information delivery system. (Sidek, 2010).

### 2. Ubiquitous electronic libraries

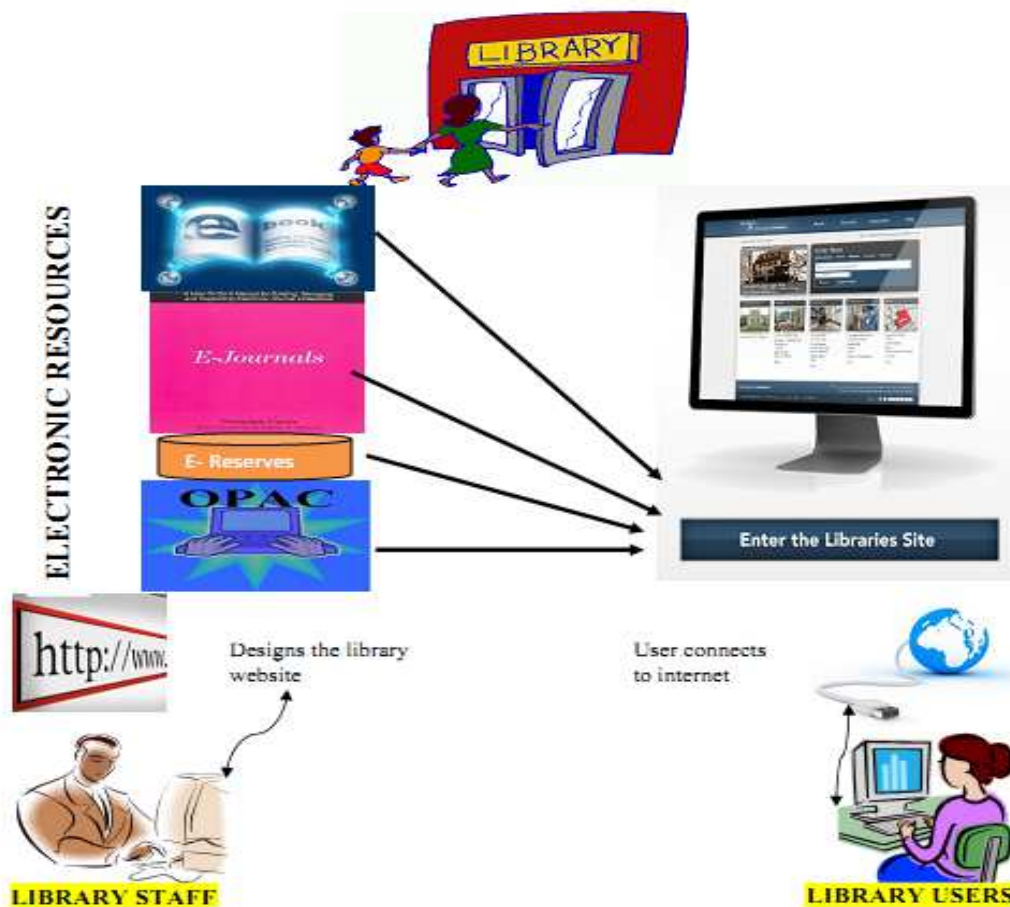
An electronic library contains documents in digital format that exhibit digital coherence where internet connectivity is inescapable for accessing the documents. It does not have physical or logical location, no restriction to entry, no authority control and is fluid and transient. The term electronic library refers to a system in which information is stored electronically and made accessible through electronic systems and networks. It provides collection and/or services in e-format using various types of media. (Singh, 2005).

In the present decade, e-resources are the life-blood of library and information centres. There has been a remarkable shift of users from printed to electronic resources. Libraries also prefer digital collections for many reasons, including, but not limited to, the following: digital journals can be linked from and to indexing and abstracting databases; access

can be from the user's home, office, or dormitory whether or not the physical library is open; the library can get usage statistics that are not available for print collections; and digital collections save space and are relatively easy to maintain. When total processing and space costs are taken into account, electronic collections may also result in some overall reductions in library costs (Montgomery and King 2002).

### 3. Traditional electronic libraries model

Traditional electronic libraries relied on internet for providing electronic resources to end user. Through a library website, electronic libraries disseminate e-resources to the end user. Libraries serve as a gateway to the users.



### 4. Social Networking

During the first decade of the current millennium, the term “social networking” has become almost ubiquitous in certain circles. Active interaction between people has made it an interesting proposition. (Singh & Yuvaraj , 2012). The metamorphosis of the computing power from Web 1.0 to Web 2.0 can be viewed as a cyclical gyration of centralization versus decentralization. The transition of computing power can be divided into five categories: Web 1.0 (publication of hypertext documents), Web 2.0 (social and co-created web), Web 3.0 (Semantic and intelligent web), Web 4.0 (mobile, machine and object web), and Web 5.0 (sensory-emotive web) (Kambil, 2008)

It refers to an online service for building social relation among people who share their activities and interests. It constitutes representations of the user through profiles along with his links and added services. (Singh & Yuvaraj ,

2012). A social network is a set of individuals connected through socially meaningful relationships, such as friendship or information exchange (Wasserman..et al.,1994)

Social network sites are web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system. (Boyd & Ellison,2007). Social networks are formed when people interact with each other (Garton, Harythornthwaite & Wellman, 1997). Combined with cloud computing social networking has provided real time interaction and support service unlike earlier version of Web. In library and information centres, where most of the user needs are unexpressed it is a good platform to interact and understand the user needs and ensure optimal information satisfaction at the user end for which is libraries endeavor.

## **5. Cloud Computing**

Cloud is used as a metaphor for the internet. It is a bigger league of effortlessly usable virtualized computing assets (hardware, platforms and services) offered over internet. As a collective term, (Gartner ,2009) defined a style of computing in which massively scalable IT-related capabilities are provided as a service to external customers using internet technologies. Cloud computing is based on three important principles that depend on each other and can only provide additional value if implemented in concert (Kossmann and Kraska, 2010). These are: automation, virtualization and pay-as-you-go pricing model.

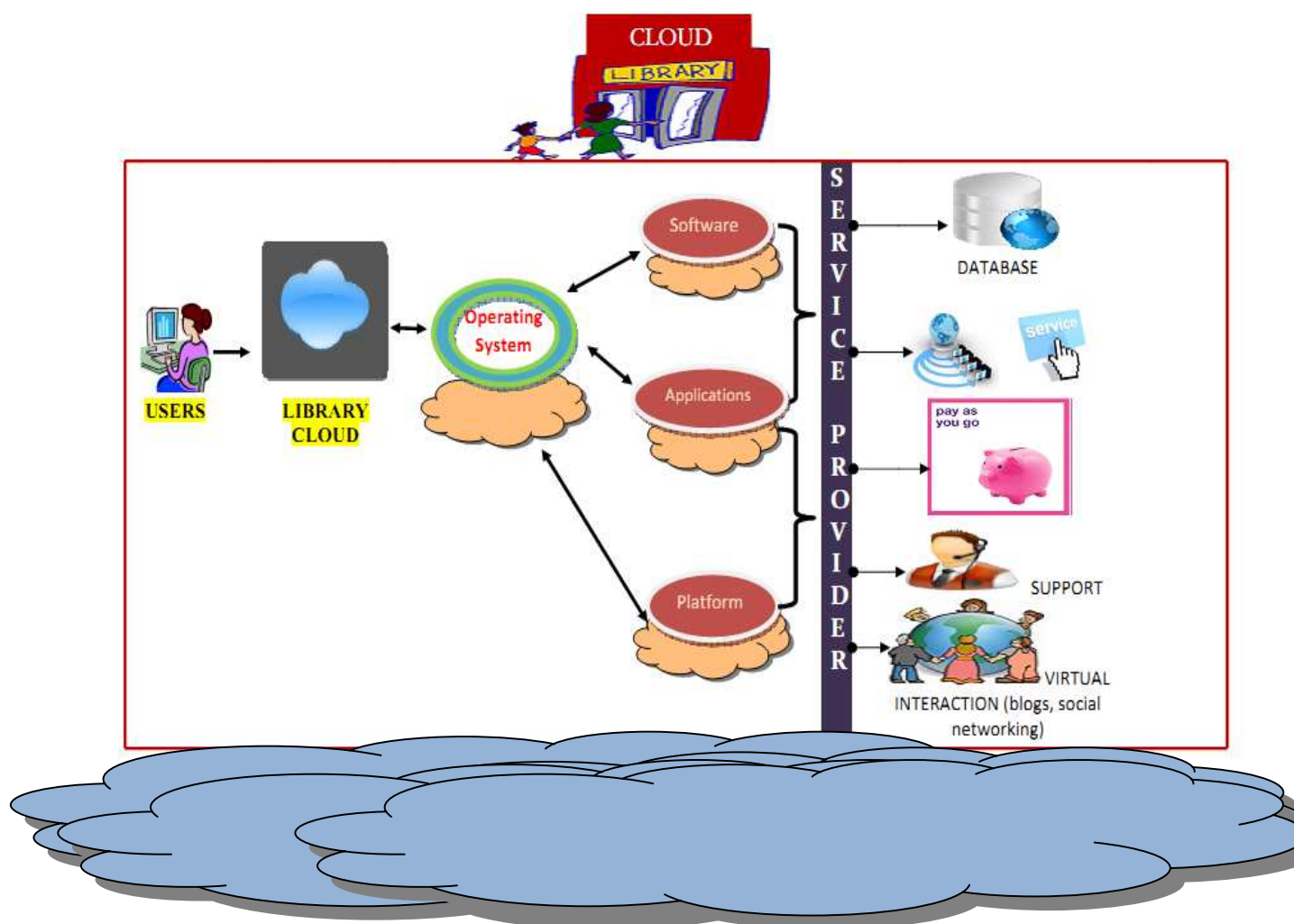
However, at its heart the concept of cloud computing is all about sharing resources, minimizing organizational expenditure and collaboration between networks and organizations which is highly fruitful to libraries. (Weiser and Brown, 1996) described three waves of computing: the mainframe wave, when many people shared a computer; the personal computer wave, when each person has their own computer, where each person shares many computers, most of which remain invisible. This was the foundation of the passage of cloud computing.

Cloud computing is an elixir of computing life offering centralization of computing issues & decentralization of computing power. In Cloud Computing an organization performs its task by approaching the required application through a web browser over internet. Somewhere over the internet the applications reside in the cloud which is unknown to the user. The Cloud Computing service provider carries all the computational work and users get the result. In a cloud computing paradigm organizations deals only with the software and does not have to bother about the hardware at all; unless the organization becomes a data centre service providers.

Empowered with cloud computing libraries can gaze a progressive future. We must get out of the business of buying, configuring, installing, and maintaining servers unless we absolutely must do so. We should be simply and easily requisitioning services from the cloud, and immediately and effectively putting them into service.

## **6. Ubiquitous electronic libraries in cloud**

In cloud library a user will connect through the library cloud. Through library cloud users will get access to the software, applications and platforms provided on pay per use by the service providers.



### ***Classes of cloud computing solutions***

Three ranges of services are available in the cloud by the cloud providers:

#### **1) Software as a Service (SaaS)**

In SaaS model, the end user purchases the ability to access and use an application or service that is hosted in the cloud. For example email and few other services offered by Google, Hotmail, Yahoo, Sify, Skype etc. Cloud computing offers the ability of libraries to use online software to handle a task like video chat through Gmail video chat or through Skype.(Goodman, 2011). Both of these are free services though there is little customization or control available with these applications. (Kroski, 2009). Since the services and application interfaces are often familiar with users, it will decrease the learning curve for library staff and users. (Goodman, 2011)

#### **2) Platform as a Service (PaaS)**

In PaaS model, the end user purchases access to the platforms, enabling them to deploy their own software and applications in the cloud. Operating systems and network access are not managed by the consumer. Special platform or application infrastructure is also being provided to the clients. Moreover, client does not require knowing programming language, database management systems, etc. to run applications. Windows Azure, Google App Engine and Force.com

are the finest examples of PaaS. Libraries can create applications in online environment where they can build, test, and deploy Web-based applications. (Kroski, 2009). PaaS gives the library the freedom to explore development options without having to purchase and maintain the required infrastructure. (Goodman, 2011)

### 3) Infrastructure as a Service (IaaS)

In IaaS model, consumers control and manage the systems in terms of the operating systems, applications, storage, and network connectivity, but do not themselves control the cloud infrastructure. In IaaS, clients are being offered with storage, networking and processing of data. Amazon's Elastic Compute Cloud (EC2) or Simple Storage Service (S3), VMWare vCloud are some of its examples. By using IaaS, a library can purchase server space and computing power. (Goodman, 2011). A library does not need to purchase a server which is underutilized but costs the same to purchase and maintain as if it were using all of its resources at all times. By using an IaaS, a library gains the benefit of only paying for the resources you actually use (Peters, 2010).

Any organizations can deploy applications on Public, Private, Hybrid and Community Clouds

(Craggs, 2009) has put forth the main categories of cloud computing:

- **The public cloud** – IT resources and services are owned by a third party, located off-premise and made available to anyone on a commercial basis as metered services.
- **The community cloud** – IT resources and services are owned and operated on behalf of a community of organizations.
- **The private cloud** – IT resources and services are owned/leased by a single company for its own use.
  - o *The internal cloud* – A private cloud where all resources remain on-premise.
- **The hybrid cloud** – A combination of two or more cloud models.

## 7. Key service providers of cloud computing

Over a period of time various companies have come to light that attempt to harness the competencies of cloud and apply the same in various services sectors. Some of the dominant ones in the computing world are: (Geelan, 2009, 2010)

- ♦ **Google:** Google is the pioneers of cloud landscape which has developed useful utility tools based on Software as a Service (SaaS) and Platform as a Service (PaaS) model to be used in various environments. Varied facets of applications as ad-onns or plug-inns are on offer through google webstores.
- ♦ **3 Leaf System:** It is being considered as the next generation server solutions for implementing cloud computing. It offers a terabyte of DRAM at a nominal cost leading to a virtualized CPU and memory
- ♦ **3 PAR:** It provides infrastructure for storage in the cloud.
- ♦ **3 Tera:** It provides the necessary provisions for deployment of scalable clustered applications from anywhere in the world. It is successfully working in seven countries (United States, Japan, Singapore, Argentina, United Kingdom, Netherlands and Serbia) and four continents (North America, South America, Asia and Europe).
- ♦ **10 Gen:** It is a commercial entity offering innovative platforms for data storage on web and other applications fast and easy.
- ♦ **Adaptivity:** It offers integrated solutions that automate IT delivery optimization across enterprise computing environments. Rapid adoption of cloud computing renders a broader perspective. Emphasis is laid on the IaaS type resources managed externally from the enterprise who deliver and consume IT resources.
- ♦ **Agathon group:** It is a dedicated grid computing environment offering scalability and a charitable character.
- ♦ **Akamai:** It is dedicated to the cause of building a global cloud computing platform making the cherished goal a reality. The cloud optimization services are now a vital part of the company's total offerings. It offers content delivery network (CDN) cache-based technologies. It marks the transition of Akamai from CDN to full-fledged cloud computing player.

- ◆ **Amazon EC2:** Introduction of Amazon Elastic Compute Cloud (EC 2) single-handedly brought virtual computing environment or cloud computing to the very forefront of public awareness by using web services. It runs on Amazon's network infrastructure and allows customers to pay only for what they use.
- ◆ **Appirio:** It acts as catalyst to accelerate the adoption of on-demand cloud computing solutions by offering products and services.
- ◆ **Appistry:** It offers a grid-based application platform that makes it easy to scale-out CPU and data-intensive applications across a virtualized grid of commodity servers.
- ◆ **Aptana:** It has released its beta version AptanaCloud architected to complement cloud infrastructure providers like, Amazon, Google and Microsoft.
- ◆ **Arjuna:** It is positioned to help IT towards a world in which internal IT infrastructure can overtime be increasingly subsumed into the cloud.
- ◆ **Asankya:** It specializes itself in the high speed delivery of Internet-based applications. It provides an Application Delivery Network (ADN) service for leading SaaS companies, cloud storage providers, internal enterprise cloud users and key government entities.
- ◆ **AT&T:** Launched in 2008 it offers next-generation utility computing service with managed networking, security and storage.
- ◆ **Bluewolf:** It is a leading provider of on-demand software deployment services. It offers remote database management and cloud storage infrastructure. It allows users to economically store a virtually unlimited number of files of all sizes through the Salesforce interface.
- ◆ **Boomi:** It is an integrated SaaS platform that does not require software or appliances.
- ◆ **Callidus Software:** It is a scalable, secure, subscriber-based model that does not require additional IT resources.
- ◆ **Cisco:** They are firmly into the Cloud Crowd with the acquisition of WebEx and PostPath.
- ◆ **Citrix:** They are offering an integrated portfolio of Citrix delivery infrastructure products packaged and marketed to the cloud service provider market.
- ◆ **CloudBerry Lab:** These organizations are dedicated to the cause of adopting cloud computing technologies by closing the gap between Cloud vendors propositions and consumer needs through development of innovative low cost solutions.
- ◆ **Microsoft:** One of the leading giants of cloud computing has put forth varied segments of offerings like, online storage (Microsoft skydrive)
- ◆ **Open Nebula:** It is used as a reservoir in cloud projects. It is open-source tool for efficient, scalable and dynamic management.
- ◆ **Rackspace:** It delivers computing power-as-a-service, combining best technologies into a flexible service offering, making computing more affordable and reliable.
- ◆ **HyperOffice:** It is the first company to offer software-as-service.
- ◆ **Jamcracker:** It empowers service providers, cloud providers and IT organizations to unify cloud management and delivery of services for their users and staffs.

## 8. Properties of Ubiquitous electronic libraries in cloud

### ▪ User-centric

Through cloud a user is empowered to access the resources anytime, anywhere. Users can also share their ideas and resources stored with others.

### ▪ Task-centric

Small programs and applications are available in cloud by means of which a user can accomplish his task instead of installing and configuring software on their system.

### ▪ Powerful

Cloud provides substantial computing power on demand. It is based on the notion of virtualized hardware and software providing a painless IT practices and greener computing.

- Economic

Cloud eradicates the risky capital investment and the lengthier implementation process. It counters the “*do it yourself approach*” and provides virtualized and highly secure computing power at low costs.

- Programmable

The added feature of the clouds is the flexibility offered by it where users can deploy requisite applications and software and redesign it as needed.

## 9. Conclusion

In nutshell, Cloud computing is all about virtualized web based services providing a painless and economic computing solutions. It is still evolving and in a state of flux. Although new players are joining the cloud race and everyone is using some form of cloud yet people does not feel confident. We are moving towards a semantic, personal, intelligent, collaborative and ubiquitous Web. With the technological changes and shift from library mission and services by being involved in IT there is urgency to leverage library services on cloud platform. Cloud has an essence of future and by 2020 everything will be in the cloud. So we have to nurture a library structure in cloud landscape.

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## Chapter 18

### Social Media in Libraries: Why and How?

Dhanyasree V.K.

Research and Teaching Assistant, Dept. of Library and Information Science, IGNOU  
New Delhi, India

[vk.dhanyasree@gmail.com](mailto:vk.dhanyasree@gmail.com)

**Abstract.** Social media has a huge impact on bringing about paradigm changes in the way we communicate and exchange information. It has opened hundreds of new doors to be in touch with others and establish online presence. The potential of social media is well experimented in the field of education and is now being greatly utilized by many. Libraries, being a part of the education system and the hub of social education is also sought after the potentials of social media to widen up their reach and augment their services. The present paper explores the essential characteristics that constitute the concept of 'social media' from different viewpoints. The paper also discusses the basic as well as the most popular categories of social media and analyses the ways in which social media can be used productively in libraries. Various social media tools are discussed with examples of libraries using the particular social media tool followed by randomly selected screenshots of social media pages of renowned libraries.

**Keywords:** Social media, Web 2.0, Blog, Wiki, Social Networking, RSS

#### 1. Introduction

The advent of Web 2.0 having its key features such as participatory information sharing, interoperability, user-centered design, and collaboration has enormously added to the information transfer on the Internet to an endless scope. Though Web 2.0 is understood as a new version of the web, it essentially refers to the collective changes in the ways in which the World Wide Web technology and web design is being used by software developers and end-users to enhance creativity, information sharing and obviously, collaboration among users. These concepts have led to the development and evolution of a number of online tools and platforms which are collectively known as 'Social Media' to facilitate the culture of participation and interaction which makes Internet an inevitable part of the routine of the new generation.

Social Media provides a myriad collection of internet based tools and platforms that boost and improve the sharing of information. They make the transfer of information in different forms, namely, text, photos, audio, video and their combinations much more simple and rapid among internet users. Thus they find an important place in all fields, including education, health, business, administration, journalism etc.

Applications that have developed within and around social media platforms, websites, and tools are endless in their number, scope and functionality, but all make online sharing and searching easier in some manner, making possible the flow of enormous amount of information. They integrate technology, social interaction, and content creation to collaboratively connect online information thus enables people or groups to create, organize, edit, comment on, combine, and share content.

#### 2. Social media: Characteristics

Kietzmann et al. (2011)<sup>1</sup> picturize social media as a honey comb with seven functional building blocks. Each social media tool differs according to the extent to which they focus on some or all of these building blocks. The seven functional building blocks of social media honeycomb are:

- **Identity:** the extent to which users reveal about themselves.
- **Conversations:** the extent to which users communicate with each other.
- **Sharing:** the extent to which users exchange, distribute and receive content.
- **Presence:** the extent to which users know if others are available.
- **Relationships:** the extent to which users relate to each other.
- **Reputation:** the extent to which users know the social standing of others and content; and.
- **Groups:** the extent to which users are ordered or form communities.

He states that these building blocks are constructs that allow us to make sense of how different levels of social media functionality can be configured depending on the degree of focus given to each of these.

According to Mayfield (2008)<sup>2</sup>, social media is a group of new kinds of online media which share most or all of the following characteristics:

- **Participation:** Social media encourages contributions and criticism from everyone who is interested. It blurs the line between media and audience.
- **Openness:** Most social media services are open to feedback and participation. They encourage voting, comments and the sharing of information. There are rarely any barriers to accessing and making use of content.
- **Conversation:** While traditional media is about “broadcast” (content transmitted or distributed to an audience) social media is better seen as a two-way conversation.
- **Community:** Social media allows communities to form quickly and communicate effectively. Communities share common interests, such as a love of photography, a political issue or a favourite TV show.
- **Connectedness:** Most kinds of social media thrive on their connectedness, making use of links to other sites, resources and people.

He identified six basic kinds of social media:

- Social networks
- Blogs
- Wikis.
- Podcasts
- Forums
- Content communities
- Microblogging

At the same time, applying a set of theories in the field of media research (social presence, media richness) and social processes (self-presentation, self-disclosure) Kaplan and Haenlein (2010)<sup>3</sup> classified social media in to six specific categories by characteristic:

- Collaborative projects( Wikis)
- Blogs
- Content communities (eg. YouTube)
- Social networking sites (eg. Facebook)
- Virtual game worlds (World of Warcraft) and
- Virtual social worlds (eg. Second Life).

However we can observe that ‘social media’ is a collective term for the online tools and services such as blogs, wikis, social networking sites, photo and video sharing communities, social bookmarking, podcasts, discussion forums, RSS feeds, virtual worlds, presentation sharing and a lot more. As these tools provide with hundreds of new ways to communicate and interact with each other and with huge mass, they create a context for effective use in libraries too.

### 3. Social media in Libraries

All libraries, irrespective of whether they are public, academic, or special, are community libraries serving a specific community. Digital revolution along with the Internet made it possible for users to access the resources they need without really visiting the library, forcing libraries to think of alternate ways to reach and remind the patrons about their presence.

The ever increasing popularity of social media with exponentially growing user base, make it almost impossible for libraries to stay away for a long time being mere viewers of the phenomenon. As a result, an increasing number of libraries are facilitating access to their resources by developing and incorporating tools for patrons to use in their ‘personal slice of the web’, the social media space. These tools are used to complement the traditional methods used by libraries ‘guiding the patrons through the library experience without forcing them to leave the familiarity of their favorite sites’ (Harris and Lessick, 2007)<sup>4</sup>.

The adoption of social media in libraries should be thought of in the context of the developing information environment, changing user needs and attitudes, collaboration among library organizations, and the ways social media may convert the loose connections between library staff members and patrons.

According to *Tyler (2011)*<sup>5</sup>, if a library thinks of having a social media presence, the major factors to consider are:

- The aim of your presence (be it a blog, a social networking site like Facebook, photo sharing site etc.)
- How the site/tool will enable you to achieve your aims
- The audience you target
- How you will evaluate the presence
- Resource implications (although low-cost there is a time and skill requirement)
- Managing potential risks
- How it fits into your library service and marketing plans.

### **3.1 What Libraries actually do on social media?**

The major aim and motto of any library’s presence on social media is “being there where our patrons are”. Outreach to users is a very important factor in an era where users have no time to come and spend hours in the library. Social media emerges as a remedy for this. Once the library establishes a presence on the social media, and connects to its users, they will be reminded of the presence of the library once and every time they log on to their account/profile. By and large, it is observed that libraries are using social media potentially for:

- Outreach purpose
- Promotion and marketing of library services
- Making announcements
- Reference service
- Creating discussion threads
- Networking with other libraries

In a survey conducted by South Carolina State Library among library professionals, nearly all (96.2%) of the respondents agreed the need and importance of incorporating social media tools in to libraries (Rogers, 2011)<sup>6</sup>. The study revealed that the most used social media applications in libraries are social networking sites, blogs, online photo sharing, video sharing and instant messaging followed by wikis and social bookmarking. Most of the libraries use them primarily for:

- Promoting general library services
- Providing quick updates to users
- Marketing specific programs and/or services

- Reaching a new audience of potential users

Other uses of social media that were disclosed in the study are:

- Reference transactions
- Receiving/resolving complaints
- Building community
- Technical instruction/how-to at the library
- Collaborate with other college departments
- Introduce new and showcase existing resources, reminder of special resources available to academic community
- Have conversations with users and learn more about/from them
- Sharing reading suggestions.
- Share items relating to local history via contests and providing links to helpful resources.
- Share "good to know" information like upcoming emergency exercises in the community, disaster preparedness materials, other City goings-on.
- Promoting university archives
- Announce new releases, hot picks on the shelf, day's activities at library, answer questions
- Circulation notifications by text messaging
- Promoting hidden collections
- Recruiting and managing volunteers

Apart from the above listed practices, interesting ways in which two libraries used social media tools are (Giustini, 2010)<sup>7</sup>:

- **Geek the Library-** used Facebook for *community-based public awareness campaign*
- **Brooklyn Public Library-** used their blog for *fundraising through text messaging*

### 3.2 Examples for the use of social media tools by Libraries

Many libraries are now-a-days connecting with their users through different social media tools. While some are utilizing the potential of blogs, some others are experimenting with social network sites such as Facebook or Myspace. While some are creating wiki pages for their users, some others are sharing photos and videos through content communities. A few are using a combination of two or more of these tools to serve their customers. Below are the examples of some libraries using some of the social media tools.

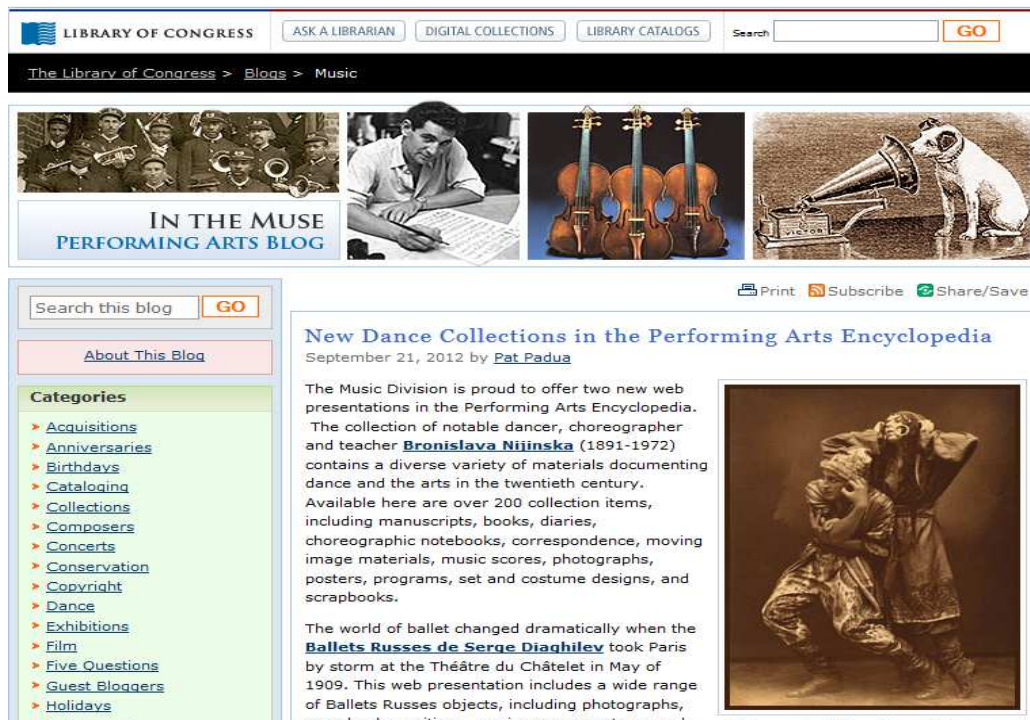
#### 3.2.1 Blogs

Blogs are websites which resemble personal web pages, allowing entries in reverse chronological order with a date stamp on it. They are commonly used as online personal diaries. Blogs are usually managed by one person only, but provide the possibility of interaction with others through the addition of comments (Kaplan and Haenlein, 2010)<sup>8</sup>. They facilitate linking to other websites. Blogs can be subscribed to usually through RSS feeds. Some of the most commonly used blogging services are Blogger and Wordpress. Many libraries make use of blogs to interact with their users in an effective way.

A few examples are:

- Library of Congress- use a number of blogs to cater different communities (<http://blogs.loc.gov/>)
- **Santa Fe Public Library Blog** (<http://santafelibrary.blogspot.in/>)
- **Cook Memorial Library** (<http://tamworthlibrary.org/>)
- Kendriya Vidyalaya Pattom Library, Kerala (<http://librarykvpatom.wordpress.com/>)

The image (Fig: 1) below shows the first page of the performing arts blog of the Library of Congress.



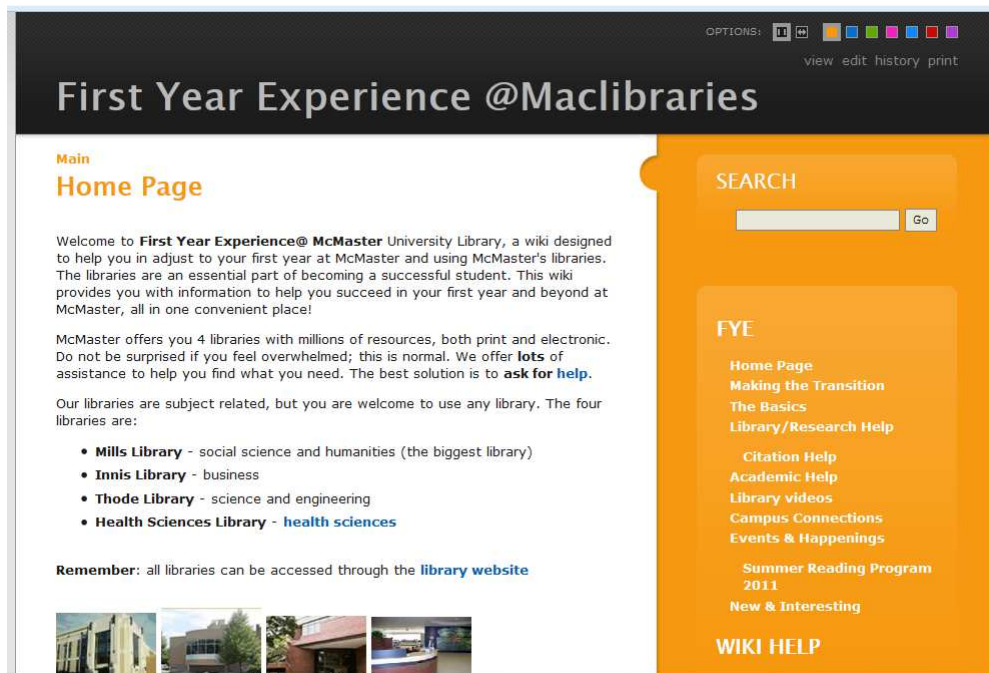
(Fig: 1; Source: <http://blogs.loc.gov/music/>)

### 3.2.2 Wikis

Wikis are websites allow people to add content to or edit the information on them, acting as a communal document or database. They are very useful for collaborative and team works. It can be either private or open depending on the decision of the creator (Mayfield, 2008)<sup>9</sup>. Such collaborative projects enable the joint and simultaneous creation of content by many end-users by means of adding, removing or changing text based content. The most recognized wiki is Wikipedia, the online encyclopaedia which has over 23 million articles and 100000 active contributors (Wikipedia)<sup>10</sup>. A few of the other wiki services are: Wikia, WikiHow, Wikidot, Wikimedia, Wikinews, PBworks, etc. Some of the wiki projects created by libraries can be viewed at:

- Queen's University Library (<http://library.queensu.ca/wiki/elearning/doku.php>)
- National Archives of the United Kingdom (<http://yourarchives.nationalarchives.gov.uk>)
- McMaster University Library (<http://libwiki.mcmaster.ca/fye/>)

The wiki page created by McMaster University Library for first year student is shown in the picture.



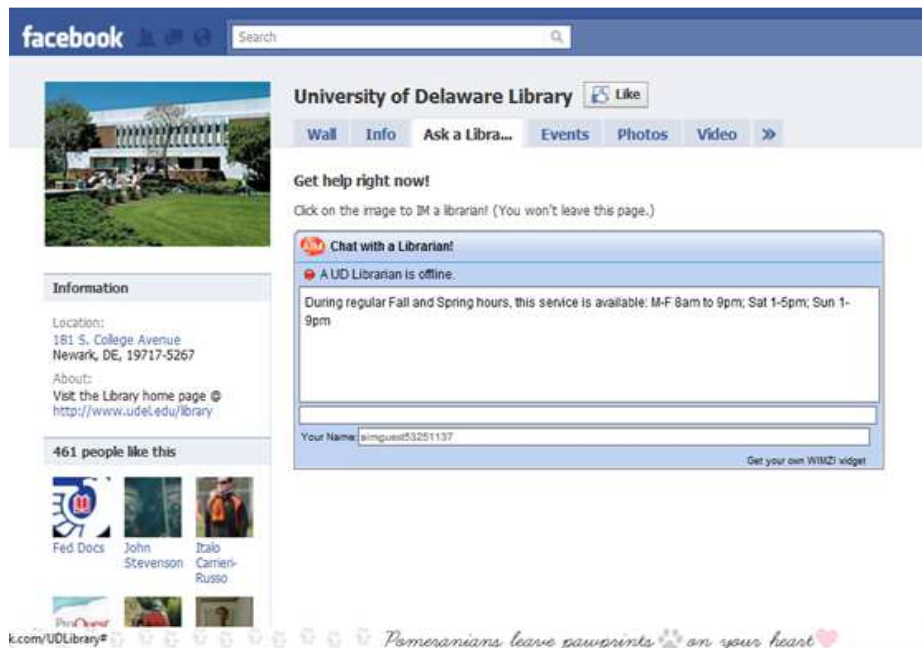
(Source: <http://libwiki.mcmaster.ca/fye/>)

### 3.2.3 Social Networking

These are websites which enable users to create profiles and connect with others to form a network of contacts. Usually such communities are built around common interests and huge amount of information is shared. These communities try to retain the interest of their members by being useful to them and providing services that entertain or help them to expand their networks (Mayfield, 2008)<sup>11</sup>. There are a number of social network sites catering to different audience. However, the most popular ones are Facebook, Myspace, Linked In, Twitter etc. as social networking is unbelievably popular among youth, many of the libraries are creating their presence on these sites. Some of the libraries that are very active on social network sites are:

- The British Library (<http://www.facebook.com/britishlibrary?ref=search>)
- National Library of Wales (<http://www.facebook.com/pages/Llyfrgell-Genedlaethol-Cymru-The-National-Library-of-Wales/12684193278>)
- University of Delaware Library (<http://www.facebook.com/UDLibrary>)
- Bryant University Library (<http://www.myspace.com/bryantuniversitylibrary>)

The image below shows University of Delaware Library's 'Ask A Librarian' service provided through Facebook.



(Source: [http://www.facebook.com/UDLibrary/app\\_10531514314](http://www.facebook.com/UDLibrary/app_10531514314))

### 3.2.4 Content communities

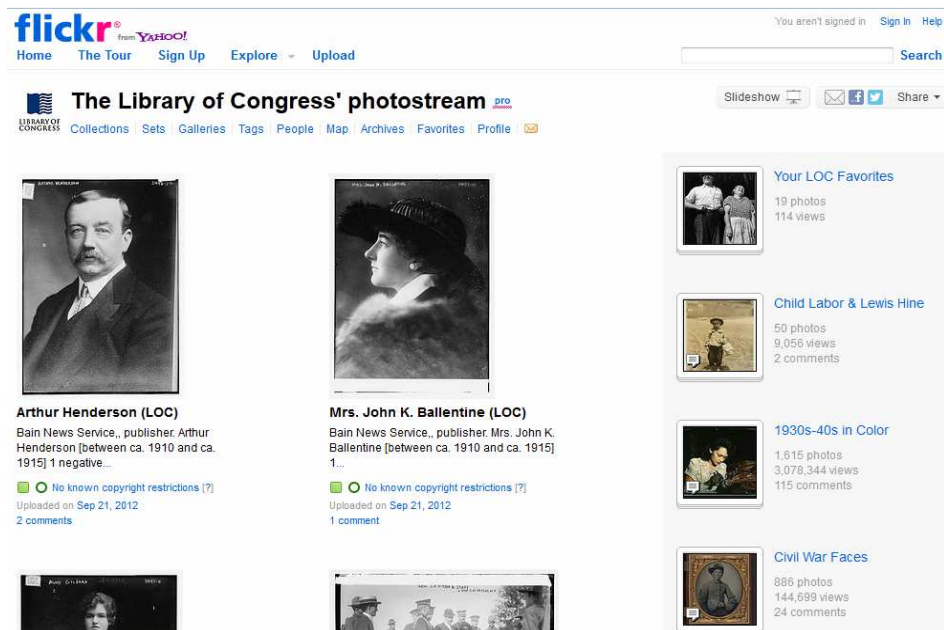
Though content communities have some similarities with Social networking sites, they are more focused on sharing some particular kind of content. They differ according to the type of content (text, photos, videos, power point presentations etc.) they share. Though they carry the risk of being used as platforms for the sharing of copyright-protected materials (Kaplan and Haenlein, 2010)<sup>12</sup>, many of them are gaining immense popularity because of their huge capability for content organization and sharing. Some examples of content communities are:

- Text sharing: BookCrossing
- Photo sharing: Flickr, Picasa, Photobucket
- Video sharing: YouTube, Dailymotion, Metacafe
- Presentations sharing : Slideshare, Prezi, scribd

A few libraries using different types of content communities are listed below.

- Library of Congress - historical photos on Flickr ([http://www.flickr.com/photos/Library\\_of\\_Congress](http://www.flickr.com/photos/Library_of_Congress))
- **Brown Library\_Video Tutorial on- Finding Books** ([http://www.youtube.com/watch?v=9IJ\\_O3dbJqY](http://www.youtube.com/watch?v=9IJ_O3dbJqY))
- **Scottish Library & Information Council (SLIC), CILIP in Scotland (CILIPS)** (<http://www.slideshare.net/scottishlibraries>)

The screenshot below is the Flickr page for British Library's historical collection of photographs.



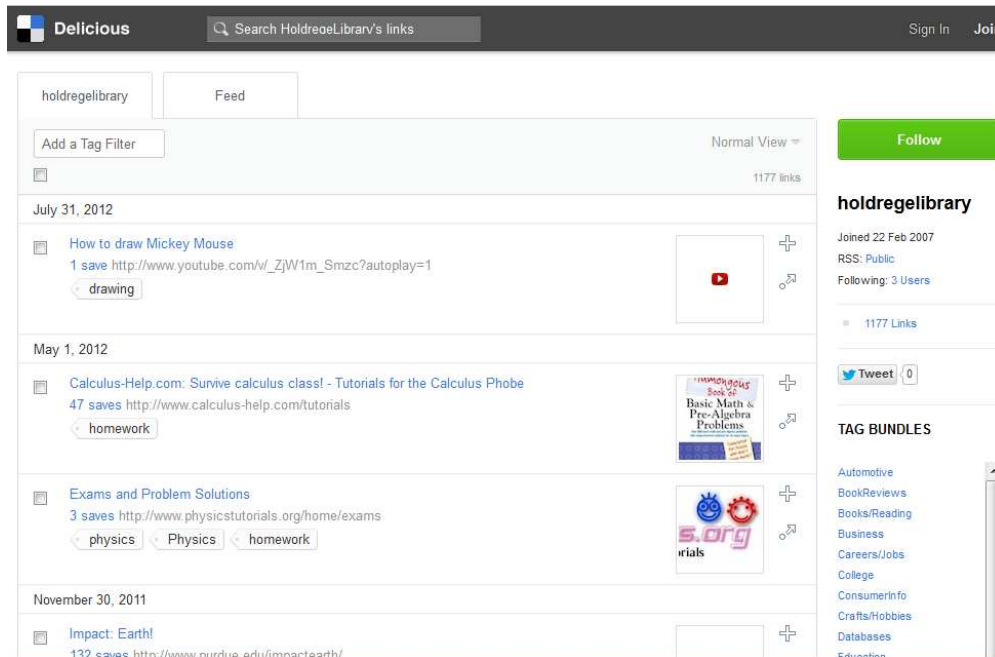
(Source: [http://www.flickr.com/photos/Library\\_of\\_Congress](http://www.flickr.com/photos/Library_of_Congress))

### 3.2.5 Social bookmarking

They are applications which enable the group-based collection and rating of Internet links or media content. One of the predominant online social bookmarking services is Delicious, which allows the storage and sharing of large number of web bookmarks. Other book marking services include CiteULike, Diigo, Google Reader, Folkd etc. Most of them also allow users to assign tags (key words) to resources they add. **Holdrege Area Public Library uses Delicious, to keep and organize important internet links.**

- **Holdrege Area Public Library** (<http://www.delicious.com/HoldregeLibrary>)

The image shows the **Holdrege Area Public Library's links on Delicious.**



(Source: <http://www.delicious.com//HoldregeLibrary>)

### 3.2.6 RSS feeds

RSS, the short form for Rich Site Summary/ RDF Site Summary/ Really Simple Syndication, is an application of the Extensible Markup Language (XML) that adheres to Resource description Framework (RDF). It is a group of web feed formats used to publish frequently updated works (may be blog entries, news headlines etc.). RSS allows users to avoid the difficulty of checking for new contents on all of the websites they are interested in, and instead subscribe to RSS feed available on the website so that users are updated about the new content when it becomes available. RSS feeds can be read with the help of fee reader/ feed aggregator. Some of the feed readers are Bloglines, Google Reader, FeedDemon etc.

Though many of the libraries facilitate RSS feeds on their sites, MIT library stand on top of them through providing RSS feeds for new books separately in each subjects.

- Massachusetts Institute of Technology (MIT) Libraries (<http://libraries.mit.edu/help/rss/barton/>)

MIT library's recent addition to the collection page with RSS feeds is shown in the picture.

**MIT libraries** SITE INDEX | SEARCH

**Recent Additions to the Collections**

Want to know what new items have just arrived in the MIT Libraries?

Link to these lists or subscribe to our RSS feeds!

**Art, Architecture + Urban Studies**

- Architecture [RSS](#)
- Art [RSS](#)
- Urban Studies + Planning [RSS](#)

**Humanities**

- American Literature [RSS](#)
- British + Anglophone Literature [RSS](#)
- Education [RSS](#)
- Film [RSS](#)
- Gaming + Game Theory [RSS](#)
- Graphic Novels + Manga [RSS](#)
- History + Culture of Science [RSS](#)
- History + Culture of Medicine [RSS](#)
- Hayden Browesery [RSS](#)
- Hayden DVDs [RSS](#)
- Library + Information Science [RSS](#)
- Linguistics [RSS](#)
- Literature in French [RSS](#)
- Literature in German [RSS](#)
- Literature in Spanish [RSS](#)
- Music (all libraries) [RSS](#)
- Music: Lewis Music Library [RSS](#)
- just books [RSS](#)
- just CDs [RSS](#)
- just DVDs [RSS](#)
- just games [RSS](#)

**Historical + Archival Collections**

- [Vail Collection](#): Electricity, magnetism, etc. [RSS](#)

**Management**

- Finance [RSS](#)
- Management [RSS](#)
- Marketing [RSS](#)
- Work + Employment [RSS](#)

**Science**

- Astronomy [RSS](#)
- Biology [RSS](#)
- Bioinformatics [RSS](#)
- Chemistry [RSS](#)
- Earth, Atmospheric and Planetary Sciences [RSS](#)
- Energy [RSS](#)
- Environment [RSS](#)
- Hayden Browesery [RSS](#)
- Maps, Mapping + GIS [RSS](#)
- Mathematics [RSS](#)
- Medicine [RSS](#)
- Drugs [RSS](#) (delivery, design, development, action...)
- Neurosciences [RSS](#)
- Nuclear Science + Engineering [RSS](#)
- Physics [RSS](#)

(Source: <http://libraries.mit.edu/help/rss/barton/>)

The above described are only a few examples for the use of diverse social media tools in Libraries. It gives only an outline of the various ways in which these tools are used by libraries. There are several other social media tools that are used by many libraries in different innovative ways. This digital era demands efforts from the part of library professionals to learn and incorporate evolving technology innovations into library services for success and survival in the future.

#### 4. Conclusion

There is no doubt, social media provides with exciting tools for libraries to connect with their users and offer better service delivery. As different social media tools do different things and appeal to different people, it is very crucial to select the social media tool that best suits your library and patrons. It is also necessary to be well clear about why you want to create a social media presence and to have something new to offer your users through this tool. There is no point in creating a social media presence just for the sake of doing it. Being very dynamic is extremely important on social media. "A big difference exists between being where our patrons are and being useful to our patrons where they are" (Farkas, 2006)<sup>13</sup>. A social media profile- be it a blog, Facebook account, or wiki- should be designed to offer something new and exciting to patrons so that they will keep coming back to the library.

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## Chapter 19

# An Analytical Study Of Information Technology Application In The University Libraries Of Gujarat State

Ranjita N. Dash  
Librarian, Babaria Institute of Pharmacy, Varnama  
Vadodara, India  
[ran\\_dash2006@yahoo.co.in](mailto:ran_dash2006@yahoo.co.in)

Bijay Kumar Choudhury  
Retd. Professor.P G Department of Library and Information Science  
Sambalpur University  
Jyoti Vihar -768019, Burla, India  
[bkc\\_123@rediffmail.com](mailto:bkc_123@rediffmail.com)

**Abstract.** *An earnest attempt has been made in this study to present both conceptually and empirically the aspects of IT application in libraries based on primary investigation. The Paper presents an analytical study of Information Technology (IT) application in the University libraries of Gujarat State. It states the objectives, scope and significance of the study. Further, it discusses the research methodology done by the investigator applicable for the present study and collection of data through various sources. Finally, data collected have been analyzed and findings have been enumerated with a few suggestions.*

**Keywords:** Information Technology, University Library, INFLIBNET

### 1. Introduction

Information Technology has revolutionized the information handling activities in academic libraries of India. The university libraries, as centers of information services, have largely benefited from the rapid changes in IT. In fact, it is difficult for the libraries to escape from the revolution in the IT sector as it has revolutionized the way of working of the entire society. The advancement of IT, digital telecommunication technology, CD-ROMs, multimedia, computer networks and the internet have paved the way towards electronic publishing and changed the traditional libraries to digital libraries.

However, in the Indian context, especially in case of Gujarat, only a few university libraries have adopted the new technological changes. There seems to be relatively less effort in the direction of introducing the technological development in the university libraries of the State. This may be due to lack of motivation and awareness on the part of the librarians, non-availability of skilled personnel, lack of training opportunities to handle sophisticated tools and machineries and lack of desirable financial assistance.

The university libraries of Gujarat have developed their databases and also a few university libraries are providing services through the library software, invariably SOUL, developed by INFLIBNET at the Gujarat University, Ahmedabad in 1991. The programme is directed towards the modernization of existing university libraries by introducing the installation of computers and implementation of the nationwide network using 'State of the Art Technologies' for connecting all the university libraries within the country.

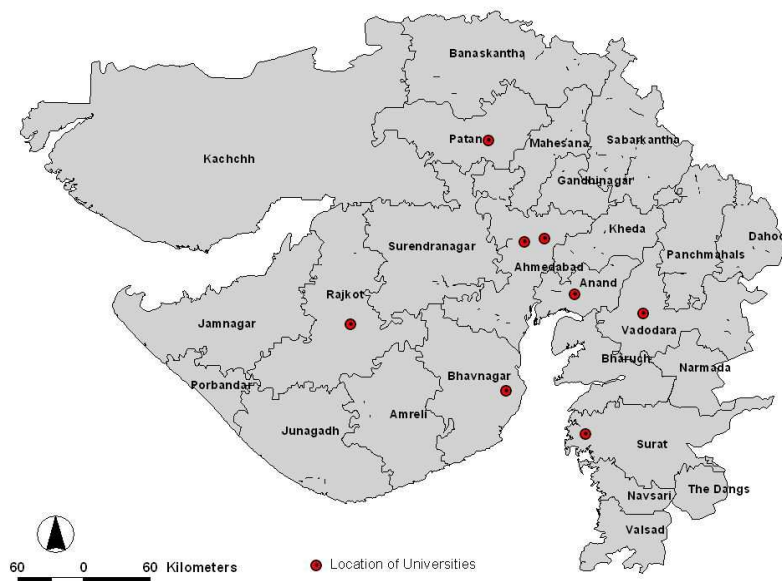
Relatively less number of systematic studies have been conducted to investigate the use of IT in university libraries in India. With the result, no clear insights are available as to how this new technology has been perceived, introduced and used in the library environment, and what effect IT would have on the Library and Information Science (LIS) profession in the years to come.

## 2. University Libraries of Gujarat under Study

Since the formation of Gujarat State in 1st May'1960, university education has marked a significant progress. Out of the nineteen State universities only nine universities impart general education and the remaining ten are specialised universities. For the present study, only the State Universities imparting general education have been considered. Detailed information pertaining to these nineteen universities is provided in the table below.

**Table-1 : Year-Wise Establishment of State Universities of Gujarat**

| Sr. No | Name of the University                                                  | Year Establishment | of Specialization |
|--------|-------------------------------------------------------------------------|--------------------|-------------------|
| 1      | The Maharaja Sayajirao University of Baroda, Vadodara.                  | 1949               | General           |
| 2      | Gujarat University, Ahmedabad.                                          | 1950               | General           |
| 3      | Sardar Patel University, Vallabh Vidyanagar.                            | 1955               | General           |
| 4      | Gujarat Vidyapeeth, Ahmedabad.                                          | 1963               | General           |
| 5      | Veer Narmad South Gujarat University, Surat.                            | 1965               | General           |
| 6      | Saurashtra University, Rajkot.                                          | 1967               | General           |
| 7      | Gujarat Ayurveda University, Jamnagar.                                  | 1968               | Ayurveda          |
| 8      | Gujarat Agricultural University, Sardar Krushinagar.                    | 1972               | Agriculture       |
| 9      | Bhavnagar University, Bhavnagar.                                        | 1978               | General           |
| 10     | Hemchandracharya North Gujarat University, Patan.                       | 1986               | General           |
| 11     | Dr. Babasaheb Ambedkar Open University, Ahmedabad.                      | 1995               | Distance          |
| 12     | Gujarat National Law University, Gandhinagar.                           | 2003               | Law               |
| 13     | Anand Agricultural University, Anand.                                   | 2004               | Agriculture       |
| 14     | Krantiguru Shyamji Krishna Verma Kachchh University, Bhuj.              | 2004               | General           |
| 15     | Centre for Environmental Planning and Technology University, Ahmedabad. | 2005               | Architecture      |
| 16     | Dharmsinh Desai University, Nadiad.                                     | 2005               | Technical         |
| 17     | Shree Somnath Sanskrit University, Veraval.                             | 2005               | Sanskrit          |
| 18     | Gujarat Technological University, Ahmedabad.                            | 2007               | Technology        |
| 19     | Gujarat Forensic Sciences University, Gandhinagar.                      | 2008               | Forensic Sciences |



### 3. Objectives of the Study

The study aims at accomplishing the following objectives with special reference to selected university libraries of Gujarat.

1. To assess the extent and coverage of IT application in the libraries.
2. To study the attitude and aptitude of library professionals towards implementation of IT in the libraries.
3. To examine the initiatives taken towards implementation of IT for the university library services.

### 4. Scope of the Study

The study has been restricted to the libraries of general category State Universities. From among the nine general category university libraries, eight universities established before the year 2000 have been selected for detailed investigation. The library of Krantiguru Shyamji Krishna Verma Kachchh University, Bhuj has been excluded from this study as it is in its infancy stage.

The remaining ten non-general university libraries have also been kept outside the scope of the present study as their nature of reading materials, equipments, clientele are different and are thus not comparable. Besides, if studied together irrespective of their differences, it may tend to introduce distortion and misbalance in the results. Therefore, these ten university libraries have also been excluded from the present study.

The eight state university libraries of general education in Gujarat, for which information pertaining to the last three years (2007-2008 to 2009-2010) have been collected, are the following.

1. Smt. Hansa Mehta Library, The Maharaja Sayajirao University of Baroda, Vadodara (SHML).
2. Gujarat University Library, Ahmedabad (GUL).
3. Bhaikaka Library, Sardar Patel University, Vallabh Vidya Nagar (BLSPUL).

4. Veer Narmad South Gujarat University Library, Surat (VNSGUL).
5. Saurashtra University Library, Rajkot (SUL).
6. Hemchandracharya North Gujarat University Library, Patan (HNGUL).
7. Gujarat Vidyapith Library, Ahmedabad (GVL).
8. Bhavnagar University Library, Bhavnagar (BUL).

## 5. Significance of the Study

The application of IT in library and information services plays a vital role in information handling due to developments such as reduction in computing time, capabilities of resource sharing, economic storage capacities of files on video discs, telecommunication and satellite communication facilities. Besides, it also supports the technical functions associated with technical processing and circulation work. Secondly, it supports information storage, retrieval and dissemination systems. Thirdly, it supports management of information services by librarians, especially analyzing library statistics. Fourthly, it can best be used in service and orientation courses for practicing librarians, continuing education programmes for teachers of LIS, correspondence studies and library extension service. Thus, the new science and technology rest firmly on the foundation laid by the information generated in the past, effectiveness of future and efficiency of present information transfers. Further, the need of this technology arose partly due to the concept of multimedia documents, i.e. the conventional printed book is taking up other forms such as microfilms, cassettes, computer tapes, which require special equipments for their processing, and to meet the requirements of accurate and speedy retrieval of information and their transmission over long distances.

The present research aims at providing knowledge and practical perspectives on the application of IT in libraries and information services by drawing first hand field information and contributions of distinguished National and International scholars in the discipline. Keeping in mind the infancy stage of IT application in the university libraries of the State, the study has great relevance. Besides, in concurrence with the timing of the study, the findings and conclusions of the study are expected to prove extremely valuable for the librarians of university libraries of the State, especially those imparting general education. The study has brought out several intricacies and finer nuances of the IT implementation process in the general university libraries, which could help developing understanding and deciding the correct direction of managing the library or information service cost effectively, while meeting the needs of its users.

## 6. Research Methodology

Research methodology is a critical core of constructing and accumulating knowledge in all scientific disciplines. It plays an important role in the expansion and revision of the knowledge frontier. Research methodology mostly involves straight reporting of what the investigator actually did in her research study. In methodology, the investigator needs to communicate clearly and concisely as to how she went about investigating her research problem.

The present study is primarily aimed at examining the status of university libraries of Gujarat in terms of application of IT in their various library activities and services. In order to achieve the set objectives of the study, the methodology adopted covers the formation of questionnaire, selection of samples, data collection and computation, analysis of the data using suitable statistical techniques and testing of proposed hypotheses.

### 6.1 Formation of the Questionnaire

The questionnaire was designed keeping in view the set objectives of the present study. It was designed in structural form and based on the nature, scope and objectives of the research. The questionnaire was divided into different sections. Each section of the questionnaire consisted of 5-10 questions, covering both objective and descriptive type. The major portion of the questionnaire was 'Yes' or 'No' type questions and multiple choices in format to choose items from the list. The questionnaire method remained the primary source of collecting data. Eight questionnaires were circulated to eight university librarians through post as well as through e-mail.

## **6.2 Data Collection**

The tool used for collecting data was the questionnaire method. In general, various research methods such as literature searches, personal interviews, structured and unstructured questionnaire survey, telephone surveys and e-mail surveys are used for collecting data. The questionnaire was the pivotal data collection process. It was prepared in a lucid and simple manner for eliciting the suitable, correct and relevant data from the librarians of the eight university libraries under study. It is one of the most popular and convenient method for obtaining data, views and opinions of the respondents. Besides, some secondary sources (documentary or non-documentary) were consulted. After obtaining the relevant data through the questionnaire, these were tabulated, computed, represented and analysed.

The interview method was also employed to discuss and gather preliminary, general as well as specific information about IT application in the university libraries. The personal visits to the libraries and discussion with the librarians greatly helped the researcher to formulate basic ideas pertaining to IT application and its implications on library management in the libraries of the universities imparting general education in the State. The researcher could also telephonically contact and clarify doubts with the librarians pertaining to different aspects as and when required. The discussion also equipped the researcher to design suitably the research frame and the questionnaire of the study.

Keeping in view the set objectives of the research, the questionnaire was framed so as to incorporate the following facets; such as (a) Library Background (b) Information Support System aspects. (c) Modernization of Library and Information Services.

## **7. Analysis and Interpretation Of Data**

During the recent decades, the contemporary world has changed characteristically. Through the processes of liberalisation and globalisation the world has shrunk to a global village, wherein immediate and easy access to information in each and every sphere has become a prerequisite. Under the situation, the requirements and demands of the library users have drastically altered making the library profession much more socially relevant but highly challenging. Technological innovations in the tools for dissipation of information have been taking place in an unprecedented manner. Present day librarianship demands not only proper grasping of these modern tools but also their application and utilisation in information dissipation. Traditional methods to provide library services are increasingly being redundant and require to be replaced by the newly invented technologies for information dissipation. In the final analysis, the application of IT in the library and information centres has acquired great significance in the contemporary period and cannot be dispensed with.

It is pertinent, therefore, to evaluate the status of application of IT. An attempt is made in the present chapter in this direction based on the study of the university libraries of Gujarat. For the purpose, an in-depth study of eight general university libraries of the State has been conducted using a structured questionnaire along with personal interview method. The questionnaire was administered to the librarians of all the eight general university libraries, which were received by and large in complete form. Interview and observation methods were also applied as and when required for authentic and detailed information.

## **8. Background Information of the Libraries.**

Automation of libraries, to a very great extent depends upon the existing and prospective characteristics of the library itself. Among all, availability of funds is the first and foremost requirement for automation of any library. Without availability of sufficient financial grants it would absolutely be difficult even to dream of automation work in a library. The library would not only require funds for procuring hardware, software and other accessories along with training of

professionals, but also for creating digitized databases of the existing materials and getting linked to different national and international agencies for the procurement of digitized data.

A completely automated library would be in a position to perform all the functions and render all the services with the help of IT. It would therefore not be wrong to assume that after completion of automation of the libraries in all respect, every library would require by and large a similar financial assistance. However, as the sample university libraries of the State are not yet fully automated and still perform many of the functions and render many of the services manually following traditional methods, their financial requirements would greatly be dependent upon their respective size in terms of number of users. It is therefore pertinent to posit the financial assistance status of the university libraries in relation to their respective number of users.

### 8.1 Number and Category of Users.

The university libraries are used by their faculty members, research scholars, post-graduate and under-graduate students, and administrative staff. Some university libraries also permit membership to individuals and organizations on a temporary basis only for purposes of consultation of library materials.

**Table –1: Category-Wise Number of Users in the University Libraries (2007-2010)**

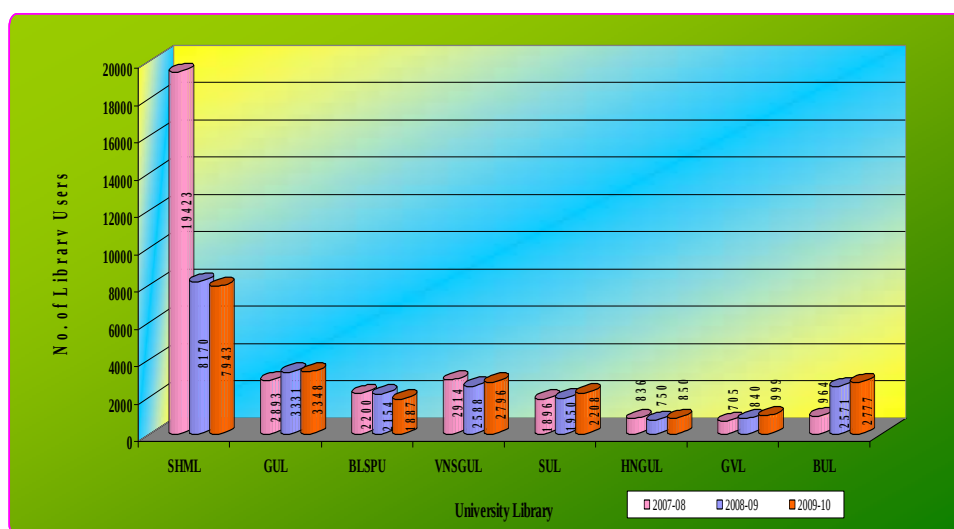
| Sl. No. | University Library | Financial Year | Category of Users |                   |                   |       |             |                    |                       |
|---------|--------------------|----------------|-------------------|-------------------|-------------------|-------|-------------|--------------------|-----------------------|
|         |                    |                | Faculty Members   | Research Scholars | Students          |       | Admn. Staff | Others             | Total (Avg. Per Year) |
|         |                    |                |                   |                   | PG                | UG    |             |                    |                       |
| 1       | SHML               | 07-08          | 479               | 238               | 18,684 (incl. UG) |       | 22          | NM                 | 19,423 (18,605)       |
|         |                    | 08-09          | 163               | 194               | 7,774 (incl. UG)  |       | 39          | NM                 | 8,170 (7,444)         |
|         |                    | 09-10          | 151               | 131               | 7,645 (incl. UG)  |       | 16          | NM                 | 7,943 (7,366)         |
| 2       | GUL                | 07-08          | 85                | 100               | 1,206             | 1,471 | 27          | 04                 | 2,893 (2,400)         |
|         |                    | 08-09          | 79                | 98                | 1,256             | 1,416 | 22          | 460                | 3,331 (2,736)         |
|         |                    | 09-10          | 97                | 123               | 1,370             | 1,145 | 30          | 583                | 3,348 (2,604)         |
| 3       | BLSPU              | 07-08          | 103               | 97                | 1,700 (incl. UG)  |       | ---         | ---                | 1,900 (1,700)         |
|         |                    | 08-09          | 14                | 203               | 1,599 (incl. UG)  |       | 05          | 333 (Reading Room) | 2,154 (1,657)         |
|         |                    | 09-10          | 14                | ---               | 1,507 (incl. UG)  |       | 16          | 350 (Reading Room) | 1887 (1,500)          |
| 4       | VNSGUL             | 07-08          | 335               | 250               | 1,870             | 400   | 49          | 10                 | 2,914 (2,068)         |
|         |                    | 08-09          | 54                | 255               | 1,868             | 355   | 48          | 8                  | 2,588 (2,046)         |
|         |                    | 09-10          | 87                | 310               | 1,994             | 350   | 48          | 7                  | 2,796 (2,091)         |
| 5       | SUL                | 07-08          | 307               | 250               | 1,047             | ---   | 292         | ---                | 1,896 (NM)            |
|         |                    | 08-09          | 150               | 260               | 1,250             | ---   | 292         | ---                | 1,950 (NM)            |
|         |                    | 09-10          | 307               | 250               | 1,352             | ---   | 299         | ---                | 2,208 (NM)            |
| 6       | HNGUL              | 07-08          | NM                | NM                | NM                | NM    | NM          | NM                 | 836                   |

|   |     |       |    |     |     |    |    |       |               |
|---|-----|-------|----|-----|-----|----|----|-------|---------------|
|   |     |       |    |     |     |    |    |       | (250)         |
|   |     | 08-09 | NM | NM  | NM  | NM | NM | NM    | 750<br>(250)  |
|   |     | 09-10 | NM | NM  | NM  | NM | NM | NM    | 850<br>(250)  |
| 7 | GVL | 07-08 | 50 | 15  | 580 | NM | 60 | NM    | 705<br>(600)  |
|   |     | 08-09 | 75 | 90  | 600 | NM | 75 | NM    | 840<br>(735)  |
|   |     | 09-10 | 82 | 103 | 731 | NM | 83 | NM    | 999<br>(705)  |
| 8 | BUL | 07-08 | 59 | 27  | 838 | -  | 40 | -     | 964<br>(874)  |
|   |     | 08-09 | 77 | 42  | 758 | -  | 47 | 15374 | 2,571 (1,936) |
|   |     | 09-10 | 76 | 41  | 928 | -  | 52 | 12899 | 2,777 (2,177) |

NM = Not Mentioned.

The table 1 provides the statistics pertaining to the number of different categories of members during the three years under study in the sample university libraries of Gujarat.

**Fig. –1: Year-Wise Number of Users in the University Libraries (2007-2010)**



It is evident from the above figure 1 that there is by and large a pattern of consistency in the number of different categories of members in all the university libraries excepting for the Smt. Hansa Mehta Library, Vadodara (SHML). The gradually decreasing number of users over the three years period of study in the SHML could perhaps be due to the increasingly easier access to the library materials through the university internet server. The year-wise variation in the total as well as average number of users in the libraries may be related to the fluctuations in the number of admissions in different years. The SHML emerges out as the largest among all the university libraries of the State in terms of number of users as the parent university, i.e. The M. S. University of Baroda is of unitary type. The remaining universities are affiliating in nature, thus their libraries cater to a relatively smaller number of users belonging mostly to the postgraduate and research departments.

## 8.2 Financial Status / Assistance

The libraries of the State are funded by the appropriate agencies through their respective universities. The survey conducted for the present study revealed that, based on the requirements, funds are earmarked on yearly basis for the libraries by the respective universities. The survey tried to extract information on the financial status of the university libraries during the last three financial years, starting from 2007-08.

**Table –2: Total and Per Capita Financial Status /Assistance (in Rs.) of University Libraries (2007-2010)**

| Sl. No. | University Library | 2007-2008               | 2008-2009                | 2009-2010                |
|---------|--------------------|-------------------------|--------------------------|--------------------------|
|         |                    | Total (Per Capita)      | Total (Per Capita)       | Total (Per Capita)       |
| 1       | SHML               | 1,65,00,000<br>(849.51) | 1,63,00,000<br>(1995.18) | 1,62,50,000<br>(2045.83) |
| 2       | GUL                | 74,55,000<br>(2576.91)  | 82,00,000<br>(2461.72)   | 92,99,000<br>(2777.48)   |
| 3       | BLSPU              | 42,00,000<br>(2210.52)  | 42,00,000<br>(1949.86)   | 42,00,000<br>(2225.75)   |
| 4       | VNSGUL             | 9,80,000<br>(336.30)    | 640,000<br>(247.30)      | 7,05,000<br>(252.14)     |
| 5       | SUL                | 9,00,000<br>(474.68)    | 9,00,000<br>(461.53)     | 9,00,000<br>(407.60)     |
| 6       | HNGUL              | 24,10,000<br>(2882.77)  | 36,70,000<br>(4893.33)   | 15,50,000<br>(1823.52)   |
| 7       | GVL                | 96,000<br>(136.17)      | 1,10,000<br>(130.95)     | 98,000<br>(98.09)        |
| 8       | BUL                | 15,00,000<br>(1556.01)  | 15,00,000<br>(583.43)    | 20,00,000<br>(720.20)    |

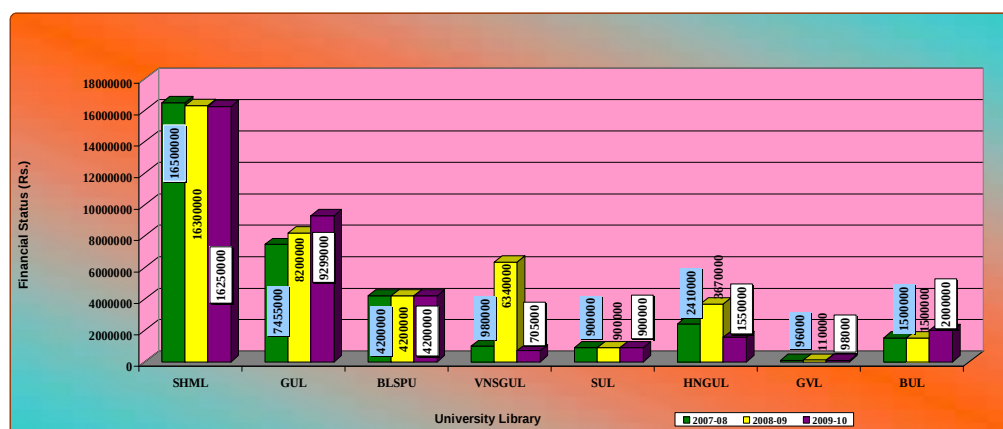
Note: Per capita status has been calculated by dividing the total assistance (Table-2) received during a year with the number of total users (Table -1) of the library in the same year.

The information tabulated and presented in the above table-2, reveals that, while the amount of funds allocated to the Gujarat University Library, Ahmedabad (GUL), the Veer Narmad South Gujarat University, Surat (VNSGUL) and the Hemchandaracharaya North Gujarat University Library, Patan (HNGUL) has remained fluctuating, for the SHML, the Bhaikaka Library Sardar Patel University, Vallab Vidyanagar (BLSPU) and the Saurashtra University Library, Rajkot (SUL) it has remained by and large unaltered during the study period.

The fluctuation during the last three years is in a positive direction in case of the GUL with an enhancement in the allocation amount by around 25 per cent. The VNSGUL and the HNGUL have, of course not been that fortunate as in their case the same has been reduced approximately by around 30 and 50 per cent respectively.

Viewed in terms of library-wise per capita financial assistance, the SHML however, losses its top position among the university libraries. Rather in comparison to the SHML, the GUL, the BLSPU and the HNGUL are better placed with higher per capita financial assistance during almost all the three years under study. On the other hand, it is important to note that the per capita financial assistance is indeed extremely meagre for the VNSGUL, the SUL and the GVL. The HNSGUL and the BUL also suffered from the small grants excepting for one year out of the three years under study. On the whole, it may not be wrong to say at this juncture that there is a great discrepancy in the financial allocation to the university libraries of the State. This is definitely true if the comparison is undertaken on the basis of per capita financial assistance.

**Fig. 2: Financial Status /Assistance (in Rs.) of University Libraries (2007-2010)**



It may be noted from the figure 2 that the SHML receives the largest financial assistance among all the university libraries.

**Table –3: Amount and Percentage of Budget Utilised by the University Libraries (2007-2010)**

| Sl. No. | University Library | 2007-2008              | 2008-2009              | 2009-2010              |
|---------|--------------------|------------------------|------------------------|------------------------|
| 1       | SHML               | 1,62,83,302<br>(98.69) | 1,62,92,833<br>(99.96) | 1,61,75,743<br>(99.54) |
| 2       | GUL                | 53,71,307 (72.05)      | 60,75,734<br>(74.09 )  | 49,86,774<br>(53.63)   |
| 3       | BLSPU              | 21,00,000 (50.00)      | 40,00,000 (95.24)      | 33,50,000<br>(79.76)   |
| 4       | VNSGUL             | 9,39,393<br>(95.86)    | 63,79,893<br>(100.63)  | 7,04,495<br>(99.03)    |
| 5       | SUL                | 8,47,860<br>(94.21)    | 8,78,340<br>(97.59)    | 6,87,824<br>(76.42)    |
| 6       | HNGUL              | 2,410,192<br>(100.01)  | 3,478,634<br>(94.79)   | 1,450,011<br>(93.55)   |
| 7       | GVL                | 98,000<br>(102.08)     | 99,000<br>(90)         | 1,00,000<br>(102.04)   |
| 8       | BUL                | 14,74,595<br>(98.30)   | 14,12,005<br>(94.13)   | 19,38,227<br>(96.91)   |

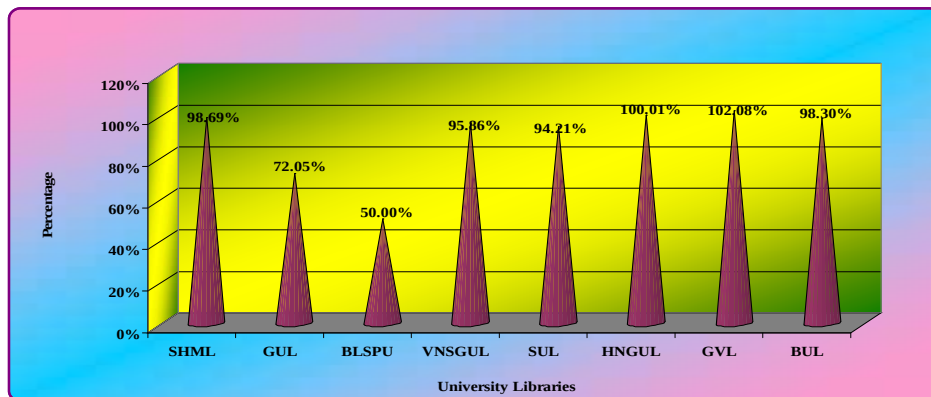
Figures in parentheses indicate percentage of utilisation to total budget mentioned in Table –2.

The libraries have of course, not utilised the available funds optimally. There is also no evidence of uniform utilisation pattern of the available funds. A perusal of table -3 clarifies that excepting the SHML and the VNSGUL, no other university library of the State has made optimum utilisation of the grant during the study period. Their utilisation pattern also does not reveal any consistency. Inconsistency is, however, much more pronounced in case of the BLSPU. The utilisation of funds by the GUL has been rather miserably low (53.63%) during the last financial year. While the SUL displays a remarkable 18 (97.59 – 76.42 = 17.79) point per cent decrease between the last two financial years, the HNGUL is recording a gradual decrease in the level of utilisation from 100.01 per cent in 2007-08, 94.79 per cent in 2008-09 to 93.55 per cent in 2009-10. The GVL, excepting for a decreases level of utilisation (90.00%) during the

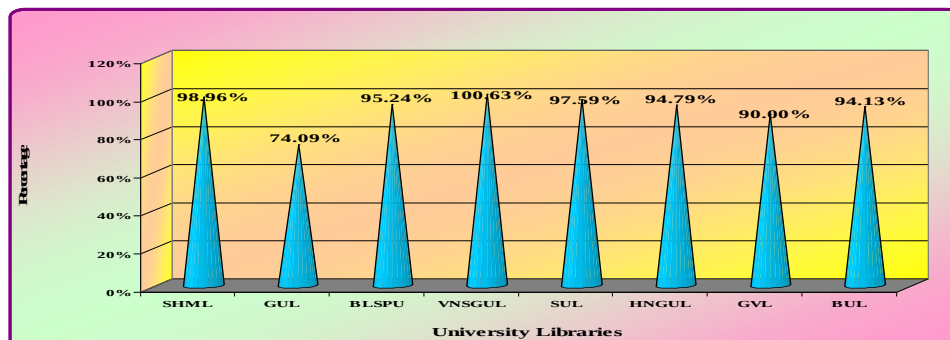
2008-09 financial year, seems to have been over spending. The BUL, however, displays a by and large consistent pattern of budget utilisation.

The data pertaining to utilisation of library budget for the three periods under study for the university libraries are presented in figure 3 (a), 3( b) and 3 (c) for a graphical clarification.

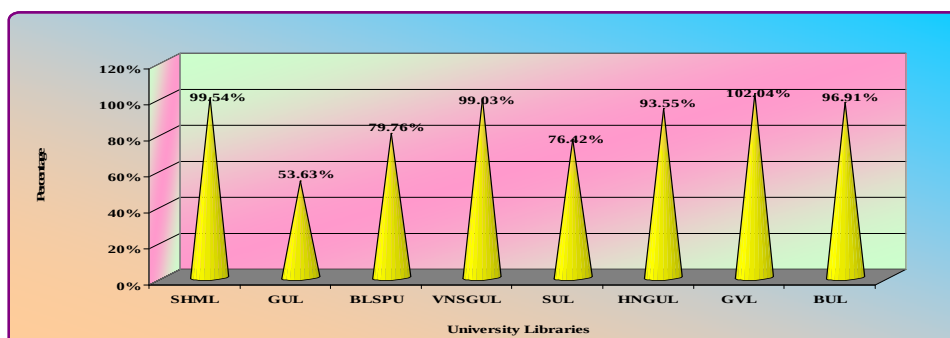
**Fig. 3 (a): Utilisation of Library Budget by the University Libraries (2007-2008)**



**Fig. 3 (b): Utilisation of Library Budget by the University Libraries (2008-2009)**



**Fig. 3 (c): Utilisation of Library Budget by the University Libraries (2009-2010)**



## 9. Circulation and use of Internet

Circulation of materials in the university libraries involves issue and return of books, consultation of books and journals, and use of internet facility available within the library.

**Table – 4: Circulation Statistics of University Libraries (2007-2010)**

| Sl. No | University Library | Financial Year | Circulation Statistics         |                |                 |                       |                       |
|--------|--------------------|----------------|--------------------------------|----------------|-----------------|-----------------------|-----------------------|
|        |                    |                | Attendance of Users (per year) | Issue of Books | Return of Books | Consultation of Books | No. of Internet Users |
| 1      | SHML               | 07-08          | 3,082                          | 70,716         | 70,716          | 1,670,000             | -----                 |
|        |                    | 08-09          | 2,500                          | 72,358         | 72,300          | 1,617,328             | -----                 |
|        |                    | 09-10          | 1,990                          | 71,599         | 71,599          | 1,605,670             | -----                 |
| 2      | GUL                | 07-08          | 68,725                         | 7,021          | ----            | ----                  | -----                 |
|        |                    | 08-09          | 76,899                         | 7,161          | ----            | -----                 | 88(OPAC)              |
|        |                    | 09-10          | 74,999                         | 7,416          | -----           | -----                 | 559(OPAC)             |
| 3      | BLSPU              | 07-08          | NM                             | 6,714          | 6,266           | ----                  | -----                 |
|        |                    | 08-09          | ----                           | 12,720         | 9,727           | -----                 | -----                 |
|        |                    | 09-10          | -----                          | 10,650         | 10,339          | 20,000                | 20,000                |
| 4      | VNSGUL             | 07-08          | NM                             | 20,683         | ----            | ----                  | 2983(+30 wifi)        |
|        |                    | 08-09          | ----                           | 20,466         | ----            | ----                  | 279 (+41 wifi)        |
|        |                    | 09-10          | -----                          | 22,918         | ----            | ----                  | 3,245 (+55 wifi)      |
| 5      | SUL                | 07-08          | NM                             | 31,075         | 31,075          | 4,260                 | 7,200                 |
|        |                    | 08-09          | NM                             | 29,908         | 29,908          | NM                    | 7,500                 |
|        |                    | 09-10          | NM                             | 31,075         | 31,075          | NM                    | 7,200                 |
| 6      | HNGUL              | 07-08          | Average per day > 100          |                |                 |                       |                       |
|        |                    | 08-09          | Average per day > 100          |                |                 |                       |                       |
|        |                    | 09-10          | Average per day > 100          |                |                 |                       |                       |
| 7      | GVL                | 07-08          | NM                             | 2500           | 2100            | 1050                  | 2300                  |
|        |                    | 08-09          | NM                             | 2750           | 2525            | 1101                  | 2520                  |
|        |                    | 09-10          | NM                             | 2957           | 2890            | 1325                  | 2690                  |
| 8      | BUL                | 07-08          | 15,374                         | 5,703          | 5,703           | NM                    | --                    |
|        |                    | 08-09          | 30,936                         | 6,129          | 6,129           | NM                    | --                    |
|        |                    | 09-10          | 12,177                         | 9,493          | 9,493           | NM                    | --                    |

NM = Not Mentioned

As is evident from Table 4, circulation statistics in the university libraries has been more or less consistent excepting in the BLSPU, which has registered an increasing trend. The consistency in the circulation statistics of the SHML is rather surprising and confusing in view of the decrease in the number of members over the three years recorded earlier. It is interesting to note that the number of internet users in the libraries is gradually increasing. Non-availability of statistics on the number of internet users for the SHML is due to the fact that the library has been made accessible through the university server since year 2004.

#### 10. Information Support Systems Available with the Libraries

Availability and provision of proper support system for the application and utilisation of IT is a prerequisite. The basic requirements for making use of IT involve laying of connection cables and installing server etc. However, over and above these provisions, certain electronic gadgets do play important role in the efficient utilisation of IT. With this understanding and in concurrence with the objectives of the research, it was decided to gather information on the availability of a few essential electronic gadgets in the university libraries under study.

##### 9.1 Electronic Gadgets Available for Automation and Networking Services

The electronic gadgets generally involved in IT application are telephone, barcode scanner, scanner, internet connectivity with e-mail service, multimedia computers and teleconferencing facility.

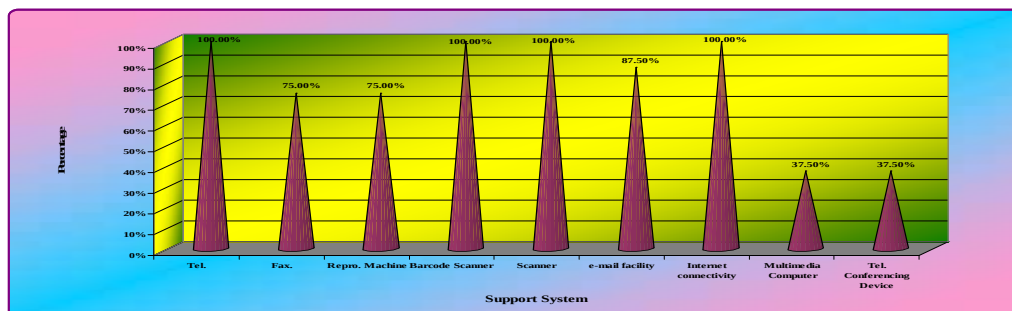
**Table – 5: Availability of Support System for Automation & Networking Services in the University Libraries (2009-2010)**

| Sl. No.          | University Library | Support System |               |                |                 |                |                  |                       |                     |                          | Total |
|------------------|--------------------|----------------|---------------|----------------|-----------------|----------------|------------------|-----------------------|---------------------|--------------------------|-------|
|                  |                    | Tel.           | Fax.          | Repro. Machine | Barcode Scanner | Scanner        | e-mail facility  | Internet connectivity | Multimedia Computer | Tel. Conferencing Device |       |
| 1                | SHML               | Yes            | Yes           | Yes            | Yes             | Yes            | Yes              | Yes                   | No                  | No                       | 7/9   |
| 2                | GUL                | Yes            | No            | Yes            | Yes             | Yes            | Yes              | Yes                   | No                  | No                       | 6/9   |
| 3                | BLSPU              | Yes            | No            | Yes            | Yes             | Yes            | Yes              | Yes                   | No                  | No                       | 6/9   |
| 4                | VNSGUL             | Yes            | Yes           | No             | Yes             | Yes            | Yes              | Yes                   | Yes                 | No                       | 7/9   |
| 5                | SUL                | Yes            | Yes           | Yes            | Yes             | Yes            | No               | Yes                   | No                  | No                       | 6/9   |
| 6                | HNGUL              | Yes            | Yes           | Yes            | Yes             | Yes            | Yes              | Yes                   | Yes                 | Yes                      | 9/9   |
| 7                | GVL                | Yes            | Yes           | Yes            | Yes             | Yes            | Yes              | Yes                   | Yes                 | Yes                      | 9/9   |
| 8                | BUL                | Yes            | Yes           | No             | Yes             | Yes            | Yes              | Yes                   | No                  | Yes                      | 7/9   |
| <b>Total (%)</b> |                    | <b>8 (100)</b> | <b>6 (75)</b> | <b>6 (75)</b>  | <b>8 (100)</b>  | <b>8 (100)</b> | <b>7 (87.50)</b> | <b>8 (100)</b>        | <b>3 (37.50)</b>    | <b>3 (37.50)</b>         |       |

Information gathered on the availability of such electronic gadgets in the libraries has been presented in Table 5. It is heartening to notice that all the libraries are equipped with internet connectivity and are also in possession of telephone,

scanners and barcode scanners. Email facility is also available in all the university libraries excepting the SUL. While multimedia computer facility is available only in the VNSGUL and the GVL, teleconferencing devices are installed in three libraries, viz. the HNGVL, the GVL and the BUL.

**Fig. – 4: Availability of Support System for Automation & Networking Services in the University Libraries (2009 2010)**



On the whole, it would not be wrong to suggest that the university libraries of Gujarat have acquired by and large most of the electronic gadgets required for the application of IT which clearly emerges out from figure 4. It may not be therefore wrong to view the prospects of IT application in these libraries optimistically.

## 10.2 Facilities Available

Along with the computer systems, the libraries do require other technical facilities for the application of IT. Such facilities include LAN, network, online access, CD-ROM drive and CD Net.

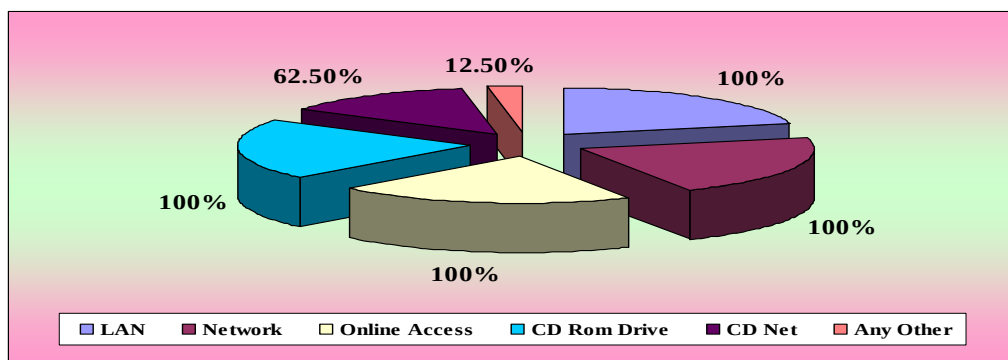
**Table – 6: Facilities Available in the Libraries**

| Sl. No.   | University Library | Facility |         |               |              |           |            |
|-----------|--------------------|----------|---------|---------------|--------------|-----------|------------|
|           |                    | LAN      | Network | Online Access | CD-Rom Drive | CD Net    | Any Other  |
| 1         | SHML               | Yes      | Yes     | Yes           | Yes          | Yes       | No         |
| 2         | GUL                | Yes      | Yes     | Yes           | Yes          | No        | No         |
| 3         | BLSPU              | Yes      | Yes     | Yes           | Yes          | Yes       | No         |
| 4         | VNSGUL             | Yes      | Yes     | Yes           | Yes          | No        | Yes (wifi) |
| 5         | SUL                | Yes      | Yes     | Yes           | Yes          | No        | No         |
| 6         | HNGUL              | Yes      | Yes     | Yes           | Yes          | Yes       | No         |
| 7         | GVL                | Yes      | Yes     | Yes           | Yes          | Yes       | No         |
| 8         | BUL                | Yes      | Yes     | Yes           | Yes          | Yes       | No         |
| Total (%) |                    | 8 (100)  | 8 (100) | 8 (100)       | 8 (100)      | 5 (62.50) | 1 (12.50)  |

The table 6 reveals that all the university libraries are having these technical facilities with minor deviations. The GUL, the VNSGUL and the SUL still remain deprived of CD Net facility. However, it is interesting to note that the VNSGUL has acquired wifi system.

The data further gets clarified through graphical representation in figure 4. As is evident, 100 per cent or all sample libraries have LAN, Network, Online access and CD-Rom Drive facilities. However, CD Net is restricted to 62.50 per cent of the libraries and only one library or 12.50 per cent have an additional facility, i.e. wifi facility.

**Fig. – 4: Facilities Available in the Libraries**



### 10.3 Software Used for Database Creation and Library Services

For the purposes of database creation and their dissemination to the users, appropriate and efficient software are essential.

**Table – 7: Software Used for Database Creation and Library Services in the University Libraries**

| Sl. No | University Library | Software                           |                     |                        |             |
|--------|--------------------|------------------------------------|---------------------|------------------------|-------------|
|        |                    | Operating System                   | Software Packages   | Communication Software | LAN Scanner |
| 1      | SHML               | MS-DOS; LINUX; CD-Rom Drives       | SOUL                | NM                     | NM          |
| 2      | GUL                | MS-DOS CD-Rom Drives               | SOUL                | NM                     | NM          |
| 3      | BLSPU              | Windows CD-Rom Drives              | SOUL                | NM                     | NM          |
| 4      | VNSGUL             | LINUX, CD-Rom Drives, Windows 2008 | SOUL, RFID          | NM                     | Netware     |
| 5      | SUL                | CD-ROM Drives                      | SOUL                | NM                     | Nil         |
| 6      | HNGUL              | MS-DOS; LINUX; CD-ROM Drives       | e-Granthalaya, SOUL | NM                     | Netware     |
| 7      | GVL                | Windows, CD-Rom Drives             | SOUL                | NM                     | NM          |
| 8      | BUL                | MS-DOS, CD-Rom Drives              | SOUL                | NM                     | NM          |

This table 7 depicts the software used by different university libraries. The operating systems used by the libraries mostly include CD-Rom, MS-DOS, LINUX and Windows. While the SHML, the HNGUL and the VNSGUL use at least three operating systems for database creation and library services, the GUL, the BLSPU and the SUL manage only

with two. All libraries have acquired SOUL. However, the VNSGUL has equipped itself with both SOUL and RFID packages. The latter and the HNGUL also have Netware facility.

#### 10.4 Type of Network Access

All the university libraries of the State have acquired network access at National level through INFLIBNET.

**Table 8: Network Access in the University Libraries**

| Sl. No. | University Library | Network Type       |               |
|---------|--------------------|--------------------|---------------|
|         |                    | National           | International |
| 1       | SHML               | INFLIBNET          | Internet      |
| 2       | GUL                | INFLIBNET          | Internet      |
| 3       | BLSPU              | INFLIBNET & DELNET | Internet      |
| 4       | VNSGUL             | INFLIBNET          | Internet      |
| 5       | SUL                | INFLIBNET          | Internet      |
| 6       | HNGUL              | INFLIBNET          | Internet      |
| 7       | GVL                | INFLIBNET          | Internet      |
| 8       | BUL                | INFLIBNET          | Internet      |

The BLSPU has created the provision of network access through DELNET over and above INFLIBNET. As far as international network access, internet is used by all the university libraries of the State, which has been depicted in the table 8.

#### 10.5 Modernization of Library and Information Services

Knowledge scenario in the contemporary world and its dissemination has virtually posed enormous challenges for the library professionals. The present circumstances have in fact, introduced modifications in the definition of librarianship as well as their roles. It has become immensely pertinent for today's library professionals, not only to acquire modern knowledge of handling the new gadgets and tools but also to sufficiently and efficiently equip their libraries to accommodate and apply them. Unless urgent and sincere efforts are made in this direction, librarianship as a profession might have to face the question of its relevance in the contemporary society. The society today expects the librarians to provide a much wider range of data in forms different from the traditional ones and at a speed that is almost closer to the speed of light. Under the circumstances, it is pertinent to make major modifications in the modus operandi of the libraries by way of modernising the library services at the earliest. In order to understand the status of modernization in the university libraries of Gujarat, the survey tried to explore the areas of their library services, where mechanization and computerisation have been introduced. The findings of the study are presented in the following sections.

#### 10.6 Library Services

Generally all libraries provide reference, CAS/SDI, reprographic, press clipping, consultancy, orientation of users, photocopying, microfilm reader, audio-video, lending, multimedia, online search, CD-ROM search services. In today's era of mechanization and computerisation, a few new services have been introduced to the libraries that are immensely helpful in enhancing the level of modernisation of the libraries.

**Table 9: Level of Modernization of Library Services in the University Libraries**

| Sl. No | University Library | Library Services                                                                                         |                                                                    |                                                                              |      |
|--------|--------------------|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|------------------------------------------------------------------------------|------|
|        |                    | Manual<br>(Score = 01 for each)                                                                          | Mechanised<br>(Score = 02 for each)                                | Computerised<br>(Score = 03 for each)                                        | CMS* |
| 1      | SHML               | Reference, CAS/SD, Reprographic, Press Clipping, Consultancy, Orientation of Users = 06                  | Photocopying, Microfilm Reader, Audio-Video. = 06                  | Lending, CAS/SDI, Multimedia, Online Search, CD-ROM Search. = 15             | 27   |
| 2      | GUL                | Reference, Lending, CAS/SD, Bibliographic, ILL, Reprographic, Press Clipping, Orientation of Users. = 08 | Photocopying, Audio-Video = 04                                     | Lending, CAS/SDI, Online Search, CD-ROM Search. = 12                         | 24   |
| 3      | BLSPU              | Reference, Lending, ILL, Reprographic, Consultancy, Orientation of Users = 06                            | Photocopying, Audio-Video = 04                                     | Lending, Online Search, = 06                                                 | 16   |
| 4      | VNSGUL             | Reprographic, Orientation of Users. = 02                                                                 | Photocopying. = 02                                                 | Email, Multimedia, Online Search. = 09                                       | 13   |
| 5      | SUL                | Reference, ILL, Reprographic, Press Clipping, Orientation of Users, Consultancy; Orientation. = 07       | Photocopying, Microfilm Reader, Audio-Video. = 06                  | CAS/SDI, Online Search, CD-ROM Search. = 09                                  | 22   |
| 6      | HNGUL              | Reference, Indexing, Abstracting, Translation = 03                                                       | Photocopying, Microfilming, Microfilming Reader, Audio-Video. = 08 | Email, Multimedia, Hyper Text/Hypermedia, Online Search, CD-ROM Search. = 15 | 26   |
| 7      | GVL                | Reference, Lending, CAS/SD, Bibliographic, ILL, Reprographic, Press Clipping, Orientation of Users. = 08 | Photocopying, Audio-Video = 04                                     | Lending, CAS/SDI, Online Search, CD-ROM Search. = 12                         | 24   |
| 8      | BUL                | Reference = 01                                                                                           | Photocopying = 01                                                  | Lending, E-mail, AS/SDI = 03                                                 | 05   |

\* CMS = Composite Modernization Score.

In order to assess the level of modernisation of the university libraries, information on library services operated manually, mechanically and through computers were collected from the libraries under study. Scores of 1, 2 and 3 were assigned to each library service operated manually, mechanically and through computers respectively and Composite Modernisation Score (CMS) were computed by adding the scores and presented in table 9. The basic assumption was, higher the CMS better is the level of modernisation. The study revealed that highest level of modernisation has been achieved by the SHML with a CMS of 27. While the HNGUL, the GUL, the GVL and the SUL are placed not much far behind the SHML, the BLSPU and the VNSGUL lag much behind with meager scores of 16 and 13 respectively. The BUL however, remains at the bottom in terms of levels of modernization of library services among all the university libraries with a miserably low CMS of only 5.

#### 10.7 INFLIBNET Services

INFLIBNET is providing various types of information services to the academic community of India, which can be accessed from the <http://www.inflibnet.ac.in>. The services offered by the INFLIBNET are Bibliographic Databases Services, CD-ROM Databases Access Services, On-Line Databases Services, COPSAT Services, OCLC's First

Services and the most popular Document Delivery Services (DDS). These services are also being utilized by university libraries through the Internet or other means.

Survey results show that the INFLIBNET services are accessed by all the libraries. It is also indicated that out of eight university libraries under study, the SHML uses all the services available through the INFLIBNET whereas, the GUL, the VNSGU, the BLSPUL and the GVL are using Bibliographic Services with CD-ROM databases, the SUL and the BUL are using OCLC's First Services, the HNGUL is using both Bibliographic Services with CD-ROM databases and OCLC's First Services.

The INFLIBNET has been playing a vital role since its inception for initiating the automation and networking activities of library and information centres in universities, colleges, R&D laboratories, and various institutions of higher learning. The present study covers the status and implementation of automation and networking activities in the universities libraries of Gujarat, which are being funded under the INFLIBNET Programme. The study intends to investigate the extent of library automation and the status of computerization of library activities and services in university libraries under study. What types of computer-based services, use of e-mail/internet, on-line databases, multimedia CD-ROM databases are made available to the users have also been investigated.

## **11. Suggestions**

Based on the findings and conclusions of the study, a few suggestions may be offered.

1. The university libraries, which have initiated application of IT, should try to become fully computerised and the libraries in which computerization is yet to start must begin the work at the earliest.
2. University libraries need better funding, if they are to give more productive and effective information resources and services. In order to access electronic resources such as e-journals and databases, substantial amount of money is needed. Therefore, sufficient funds should be made available by the authorities for library automation, development of digital resources, and application of IT.
3. It should be noted that a library, which has better resources performs better. Libraries should have state-of-the-art infrastructure including hardware, software and skilled manpower. They should procure sufficient hardware like servers, computer terminals, printers, scanners, barcode scanners, data capture unit, CD-Tower, CD-writers, DVD drives, VCD players and UPS. All these should also be maintained properly for sustainable application of IT.
4. University Libraries should also install research software packages to operate and execute all the library management activities. The software should be an integrated version with online help and OPAC/WebOPAC facilities.
5. The university librarians should have skills to evaluate software, which will enable them to identify appropriate software for their libraries. LAN should be set up in all libraries.
6. It was observed that the database development activity in some university libraries seems to be very discouraging. Therefore, university libraries need to make rigorous efforts to use INFLIBNET databases for retrospective conversion of the documents as well as other activities related to computerization may be outsourced to complete the computerization of the library.
7. The staff of university libraries may form online Newsgroup, Listserv to have regular interaction with library professionals in order to share ideas, views, experiences, innovations and to keep abreast with the modern technology.

## **12. Conclusion**

Today, university libraries are functioning under constantly changing environment and facing a variety of complex challenges like information explosion, IT revolution, network evolution, shrinking library budgets, escalating prices of documents, high level of user expectations, and availability of information resources in diverse media and so on. Application of IT in libraries has become inevitable in an era of information explosion and the emergence of a wide

range of new technologies in order to satisfy the changing complex information needs of users. Libraries have been using IT in general and computer technology in particular, to automate a wide range of administrative and technical processes, build databases, OPACs, networks and provide better services to their users. The movements towards the application of IT and Hi-Tech electronic technologies posing new challenges for better management of information in all types of libraries have grown significantly in recent years. University librarians have started thinking about their responsibility to collect electronic materials and ensuring that important scholarly publications are available to the researchers. IT offers a wide range of opportunities, which could provide solutions to some of these major challenges.

The present study highlights the reasons for application of IT in different areas of library operations and services, and for efficient management of the library. The most significant reason why IT application should be encouraged and adopted is, 'application of IT helps in improving access to the collection, quality of existing services and in reducing routine and time consuming clerical operations'.

At present there are thirty six universities of different kinds in Gujarat. Growth in higher education system, rapid development of university and university libraries are increasing day by day. The development of these libraries may be satisfactory but it is necessary to find out whether these libraries fulfill the objectives of the universities. One needs to study the development in collection of reading materials, readers, library staff, library services, satisfaction with the application of modern technologies for the modernization of libraries. There is a continuing evolution of the roles and functions of libraries and librarians, which appears to parallel the growth of acceptance and use of the new technologies. The innovative use of new technologies enables library professionals to reach both local and distant users much more easily and effectively than hitherto possible.

The university libraries of Gujarat present an optimistic picture of the prospects of the IT application. However, the university libraries of Gujarat have been computerised only recently. The study clearly indicates that the university libraries of Gujarat are not yet fully equipped with trained staff for the application of IT. It was evidenced through investigation that modernisation of the university libraries of the State are yet not complete.

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## Chapter 20

# Status of Information Communication Technology in the University Libraries of Uttar Pradesh: A Study

Salma Khan  
Librarian, IFTM University  
Moradabad-244001, India  
[salmakhan@iftmuniversity.ac.in](mailto:salmakhan@iftmuniversity.ac.in)

J. Dominic  
Chief Librarian, Karunya University  
Coimbatore, India  
[dominic@karunya.edu](mailto:dominic@karunya.edu)

**Abstract.** *The study was carried in the central university libraries of Uttar Pradesh. To study the status of Information Communication technology in the university libraries of Uttar Pradesh. It was analysed that nearly all the university libraries under study is automated and majority of them are using commercial software for automation.*

**Keyword:** Information Communication Technology, Hardware, Software, Automation

### 1. Introduction

Information and Communication Technology (ICT) is the biggest achievement in the evolution of mankind ICT is any system designed to gather, process, or distribute information or it is the science and skill of all aspects of computing, data storage, and communication. ICT may be any combination of tools and procedures that facilitate the generation, acquisition, storage, organisation, retrieval, searching, viewing, updating and transmission of information using electronic means. The tools used in ICT include purpose-built computer programs, databases, communication networks, analysis and design methods, programming languages, artificial intelligence, robotics, knowledge bases, etc. ICT has long standing influence in almost all areas of human activity. It acts as a catalyst in all spheres of science and technology.

The information and Communication Technologies have brought many benefits of library and information systems and services. The application of computers in storage, retrieval and dissemination of information has brought new possibilities of automatic indexing and free text searching. Computerized acquisition helps processing purchase requests, receiving and accessioning documents, invoice processing and payment arrangement, order follow-up, online inquiries and preparation of reports, etc. In this process, computers enable libraries in making use of the same data available in different files without entering it again each time. Computerised catalogue is the most efficient tool in retrieving quickly. Computerized serial control helps in creating a database of journals, processing new subscriptions, renewal of subscriptions, order placing and invoice processing, receiving and recording issues, claiming missing issues, bindery management, maintenance of list of periodicals, serials holdings, etc. Circulation procedure in a conventional system is very lengthy and consumes much of the staff time in repetitive works. The use of technological devices such as computers, barcode scanners, smart cards, etc in circulation helps in performing routine operations easily and quickly. It saves lot of time for the staff as well as users. Computerized library can provide information quickly on various library management activities required by the management for budgetary control, preparation of account,

maintenance of records, library statistics, etc. Once the computerization activities are well progressed, information retrieval and database management activities, including the Internet based information service can be strengthened. A wide variety of advantages can be derived by the appropriate use of ICT.

## 2. Need and Purpose of the Study

The aim of the research study is to investigate the status of information and communication Technologies in University Libraries of Uttar Pradesh. However, the specific objectives identified are:

1. To assess the current state-of-the-art information and communication technology infrastructure in University Libraries of Uttar Pradesh.
2. To compare the information and communication Technology status among the University Libraries of Uttar Pradesh.
3. To identify and analyse the specific factors that prompted or hindered to assess application of information and communication in University Libraries of Uttar Pradesh.
4. To study the facilities of training information and communication technologies in University Libraries of Uttar Pradesh.

## 3. Literature Review

A survey undertaken between January and March 1998 by **Barlow and Graham,\_(1999)** investigated the use of information and communication technologies in a sample of 120 industrial and commercial libraries. Ninety-six per cent of the organizations which responded to the questionnaire use computers for some aspect of their library and information services. ICT was used for a range of office and other applications including, in rank order, e-mail, word processing, spreadsheets, presentation packages and database management systems.

The lack of a vision, policies, programs, subsidies or support from the government or private firms to promote and facilitate the development of ICTs in Peru, it constitutes a good practice example in terms of access to the new technologies. The results of this study show that the cabins are effectively improving the daily life of a great part of the residents of Lima, and especially the youth, offering different types of urban services, which have been absent in poor neighborhoods libraries, post offices, recreation facilities, study places, youth centers, training centers, etc., **Fernández-Maldonado, (2002).**

**Nieuwenhuysen, (2004).** This is a consequence of the fast evolution in information and communication technology (ICT) that has lead to more applications of ICT, not only to manage classical libraries, but also to create, distribute and access information resources in digital format through computer networks.

The application of information and communication technologies (ICT) in special libraries in Kerala, India. This study was confined only to the automated special libraries in Kerala. The analyses revealed that though the libraries had hardware, software, and communication facilities to some extent, ICT-based resources and services were not reaching the users to the expected extent. Library automation in special libraries in Kerala was largely commenced during the period 1990-2000. CDS/ISIS was used more in the libraries than any other software. The library catalogue found to be the most popular area for automation. A good number of the library users were not satisfied with the application of ICT in their libraries and indicated "inadequate ICT infrastructure" as their major reason for dissatisfaction **Haneefa (2007).**

**Maharana, Bulu, et al. (2009)** found that ICT can be useful to take to address problems in medical education, but the lack of Technology and resources is still a serious limitation. The inadequacy of qualified technical staff has stood in the way of user satisfaction. Most users are deprived of access to the vast medical literature available in electronic

format. Absence of cooperation among the medical libraries in Orissa or at the national level, including the lack of even interlibrary loan.

**Sinha, Manoj Kumar (2011)** undertaken the study with the view to know the extent of ICT amongst the participants of refresher course in humanities conducted by Assam University Silchar and other teachers. The participants are mainly drawn from the colleges and universities of North Eastern Region of India where the penetration of ICT is very slow and teachers are not very much comfortable using computers. University teachers have a keen interest and also having a positive attitude towards learning ICT and applying it for the classroom teaching learning process. ICT is a boon for us if it is used properly for the benefit of the people in particular and for the society in general.

#### 4. Scope of the Study

Uttar Pradesh is a biggest province of India having maximum number of general, agriculture, technical and other professional universities. The researcher has selected 32 university libraries, four Central, eight Deemed, fourteen State and six Private university Libraries.

#### 5. Methodology

The data and information collected were examined with special reference to the impact of information communication technology. Questionnaire method was used to collect the data. The investigator went directly and collects the data. All the collected data have been used for analysis. The data collected through the questionnaire was analyzed by employing the following statistical techniques. The statistical analysis of the data for the present study was done by applying (i) Simple percentage (ii) Chi-Square

#### 6. Analysis and Interpretation

Uttar Pradesh is a biggest province of India having maximum number of general, agriculture, technical and other professional universities. The researcher has selected 32 university libraries.

##### 6.1 Collections

**Table 6.1 Documents collection of central university libraries under study**

| Document                      | Central | State       | Deemed    | Private    | Total       |
|-------------------------------|---------|-------------|-----------|------------|-------------|
| <b>Books</b>                  | 4(100%) | 14(100%)    | 8(100%)   | 6(100%)    | 32(100%)    |
| <b>Journals</b>               | 4(100%) | 14(100%)    | 8(100%)   | 6(100%)    | 32(100%)    |
| <b>Online/E-journals</b>      | 3 (75%) | 11 (78.57%) | 7 (87.5%) | 6(100%)    | 27 (84.37%) |
| <b>E-Books</b>                | 3(75%)  | 4 (28.57%)  | 4 (50%)   | 3 (50%)    | 14 (43.75%) |
| <b>Theses / Dissertation</b>  | 4(100%) | 13 (92.85%) | 8(100%)   | 5 (83.33%) | 30 (93.75%) |
| <b>Floppies</b>               | 3(75%)  | 8 (57.14%)  | 6(75%)    | 4 (66.66%) | 21 (65.62%) |
| <b>Conference Proceedings</b> | 3(75%)  | 9 (64.28%)  | 7 (87.5%) | 5 (83.33%) | 24(75%)     |
| <b>Video films</b>            | 4(100%) | 4 (28.57%)  | 4 (50%)   | 3 (50%)    | 15 (46.87%) |
| <b>Micro-finch/ Microfilm</b> | 3(75%)  | 4 (28.57%)  | 3(37.5%)  | 1 (16.66%) | 11(34.37%)  |

|                         |         |             |           |           |             |
|-------------------------|---------|-------------|-----------|-----------|-------------|
| <b>CD-ROM</b>           | 4(100%) | 10 (71.42%) | 8(100%)   | 6(100%)   | 28 (87.5%)  |
| <b>DVDs</b>             | 4(100%) | 7 (50%)     | 8(100%)   | 4(66.66%) | 23 (71.87%) |
| <b>Online Databases</b> | 3(75%)  | 6 (42.85%)  | 7 (87.5%) | 5(83.33%) | 21 (65.62%) |
| <b>Web-OPAC</b>         | 3(75%)  | 3 (21.42%)  | 5(62.5%)  | 4 66.66%) | 15 (46.87%) |
| <b>Manuscripts</b>      | 3(75%)  | 3(21.42%)   | 3 (37.5%) | -         | 9 (28.12%)  |
| <b>Any other</b>        | 2 (50%) | 1 (7.14%)   | 1 (12.5%) | -         | 4 (12.5%)   |

Library collection forms a sound foundation for efficient services. The type of quantum of collection in the University Libraries has been presented in the Table 5.3. It presents the availability of different types of documents in the University libraries. It is observed that all the libraries have book and periodicals. Nearly (84.37 percent) of them have online journal. Majorities (93.75 percent) of the libraries have thesis and dissertation, and next to it CD- ROM databases (87.5 percent). About 71.87 percent of libraries have DVDs. Very few libraries have manuscripts (28.12 percent). Only one (34.37 percent) library has Micro films and micro finch. This may be due to the fact that the central universities have comparatively good financial assistance than other types of universities.

It is found that most of the libraries have different types of collections like books, journals, etc. a very few of them have subscribed to E-books. Majority of them have thesis, Cd-roms, e-journals and conference proceedings. It is found that majority of libraries about 34.37 percent of libraries have less than 50000 volumes of books. Among these, 9 (28.12 percent) of them have greater than 50000 volumes of books. 18.75 per cent of libraries have less than 150000 volumes of book and about 2(6.25 percent) libraries have a collection ranging between 200000-250000 volumes.

Majority (34.37 percent) of libraries of state universities 28.75 percent have less than or equal to 100000 volumes of books. A good number (50 percent) of the libraries of deemed universities have book collection ranging less than 500000 volumes. The majority of university libraries under study have below 50000 volumes of books. A few libraries have greater than 100000 volumes of books.

## 6.2 Hardware

**Table 6.2 Hardware Available in Libraries**

| <b>Hardware</b>      | <b>Central Univ.</b> | <b>State Univ.</b> | <b>Deemed Univ.</b> | <b>Private Univ.</b> | <b>Total</b> |
|----------------------|----------------------|--------------------|---------------------|----------------------|--------------|
| Computers            | 4(100%)              | 14(100%)           | 8(100%)             | 6(100%)              | 32(100%)     |
| Servers              | 4(100%)              | 10 (71.42%)        | 6 (75%)             | 4 (66.66%)           | 24(75%)      |
| Printers             | 4(100%)              | 14(100%)           | 8(100%)             | 6(100%)              | 32(100%)     |
| Audio Video Sources  | 1(25%)               | 4 (28.57%)         | 1 (12.5%)           | 1 (16.66%)           | 7(21.85%)    |
| Overhead Projectors  | 4(100%)              | 4 (28.57%)         | 2 (25%)             |                      | 10(31.25%)   |
| Multimedia Projector | 3 (75%)              | 7 (50%)            | 3 (37.5%)           |                      | 13(40.62%)   |
| Slide Projectors     | 4(100%)              | 3 (21.42%)         | 2 (25%)             |                      | 9(28.12%)    |

|                       |          |            |           |            |             |
|-----------------------|----------|------------|-----------|------------|-------------|
| TV , VCR, DVD Players | 2 (50%)  | 4 (28.57%) | 3 (37.5%) | 1 (16.66%) | 10(31.25%)  |
| Scanners              | 4(100%)  | 8 (57.14%) | 5 (62.5%) | 5 (83.33%) | 22(68.75%)  |
| Fax                   | 2 (50%)  | 3 (21.42%) | 2 (25%)   |            | 7(21.85%)   |
| Barcode Reader        | 1(25%)   | 3 (21.42%) | 4 (50%)   | 5 (83.33%) | 13 (40.62%) |
| Dvd , Cd Writer       | 4 (100%) | 14(100%)   | 8(100%)   | 6(100%)    | 32(100%)    |

The analysis reveals that most of the (100 per cent) libraries of Central Universities and (75 per cent) of state and (75 percent) of Deemed and (66.66 percent) of Private Libraries have server in the library. All the libraries of different categories of universities have computer nodes or workstations. All the university libraries have printers. Nearly all the libraries have barcode reader 5(83.33 percent) are available in private universities library under study. All the universities have CD or DVD writer, scanner in the libraries.

It is found that majority of the University libraries under study have basic hardware facilities like server, computers, printers, etc. The libraries of central universities have more better hardware facilities including scanner, barcode printer, barcode scanner, CD-Writer, etc. it is observed that most of the library professionals are not aware of the operations hardware properly, so they are underutilized .A good number of the libraries need more computer terminals and devices like printer to provide ICT based resources and services. Seven libraries (23.3 percent) have very poor hardware; it is not at all adequate for library automation and ICT application. It is very essential to have sufficient hardware for providing ICT based services and resources. The cost of hardware is decreasing day by day and it will boost the ICT application in University libraries. All the Private University Libraries do not have Overhead Projectors, Multimedia Projector, Slide Projectors and Fax.

### 6.3 Software

**Table 6.3 Software Available in Libraries**

| <b>Software</b>             | <b>Central Univ.</b> | <b>State Univ.</b> | <b>Deemed Univ.</b> | <b>Private Univ.</b> | <b>Total</b> |
|-----------------------------|----------------------|--------------------|---------------------|----------------------|--------------|
| Library Automation Software | 3 (75%)              | 6 (42.85%)         | 6 (75%)             | 6 (100%)             | 21 (65.62 %) |
| Operating System            | 3 (75%)              | 13 (92.85%)        | 6 (75%)             | 6 (100%)             | 28 (87.5%)   |
| Dos                         | 1 (25%)              | 4 (28.57%)         | 2 (25%)             | 1 (16.66%)           | 8 (25%)      |
| Unix                        | -                    | 1 (7.14%)          | 3 (37.5%)           | 2 (33.33%)           | 6 (18.75 %)  |
| Window                      | 4 (100%)             | 11 (78.57%)        | 7 (87.5%)           | 5 (83.33%)           | 27 (84.37 %) |

|                             |          |             |           |            |              |
|-----------------------------|----------|-------------|-----------|------------|--------------|
| Ms-Word                     | 4 (100%) | 13 (92.85%) | 7 (87.5%) | 5 (83.33%) | 29 (90.62 %) |
| Ms-Excel                    | 4 (100%) | 13 (92.85%) | 7 (87.5%) | 5 (83.33%) | 29 (90.62 %) |
| Power Point                 | 4 (100%) | 13 (92.85%) | 6 (75%)   | 5 (83.33%) | 28 (87.5%)   |
| Digital Library Software    | 3 (75%)  | 3 (21.42%)  | 5 (62.5%) | 2 (33.33%) | 13 (40.62 %) |
| Antivirus Software          | 4 (100%) | 6 (42.85%)  | 5 (62.5%) | 6 (100%)   | 21 (65.62 %) |
| Cd- Net Management Software | 2 (50%)  | 2 (14.28%)  | 4 (50%)   | 1 (16.66%) | 9 (28.12 %)  |
| Any Other Software          | 2(50%)   | 1 (7.14%)   | 4 (50%)   | 1 (16.66%) | 8 (25%)      |

To bring the hardware establishment into activation, proper software facilities are required by the University libraries to serve up-to –date information to the clientele. Table 4.12.2 gives the availability of software in University Libraries. All the libraries of different category of Universities have Library Management Software (65.62%). Only (42.62 percent) of them have digital library software. Half of the University Libraries (50 percent) of Central and Deemed universities Libraries have CD-Net management software, i.e. 2 of the Central University and 4 of the Deemed University. Majority of institutions have DTP software Ms-office in their libraries.

#### 6.4 Status of Automation

**Table 6.4 Automation in Libraries**

| Name of the software | Central Univ. | State Univ. | Deemed Univ. | Private Univ. | Total      |
|----------------------|---------------|-------------|--------------|---------------|------------|
| Alice for Window     | 2 (50%)       | 1 (7.14%)   | -            | 2 (33.33%)    | 5 (15.62%) |
| CDS/ISIS             | -             | 1 (7.14%)   | -            | -             | 1 (3.12%)  |
| Liberty              | -             | -           | 1(12.5%)     | -             | 1(3.12%)   |
| Libsite              | -             | -           | 1 (12.5%)    | -             | 1(3.12%)   |
| Libsys               | 1 (25%)       | 1 (7.14%)   | 3 (37.5%)    | 1 (16.66%)    | 6 (18.75%) |
| Libware              | -             | -           | 1(12.5%)     | -             | 1 (3.12%)  |
| Softlink             | -             | -           | -            | 1 (16.66%)    | 1(3.12%)   |

|               |          |            |          |            |            |
|---------------|----------|------------|----------|------------|------------|
| Soul          | -        | 2 (14.28%) | -        | -          | 2 6.25%)   |
| TLSS          | -        | -          | -        | 2 (33.33%) | 2(6.25%)   |
| No Automation | 1 (25%)  | 9 (64.28%) | 2 (25%)  | -          | 12 (37.5%) |
| <b>Total</b>  | 4 (100%) | 14 (100%)  | 8 (100%) | 6 (100%)   | 32 (100%)  |

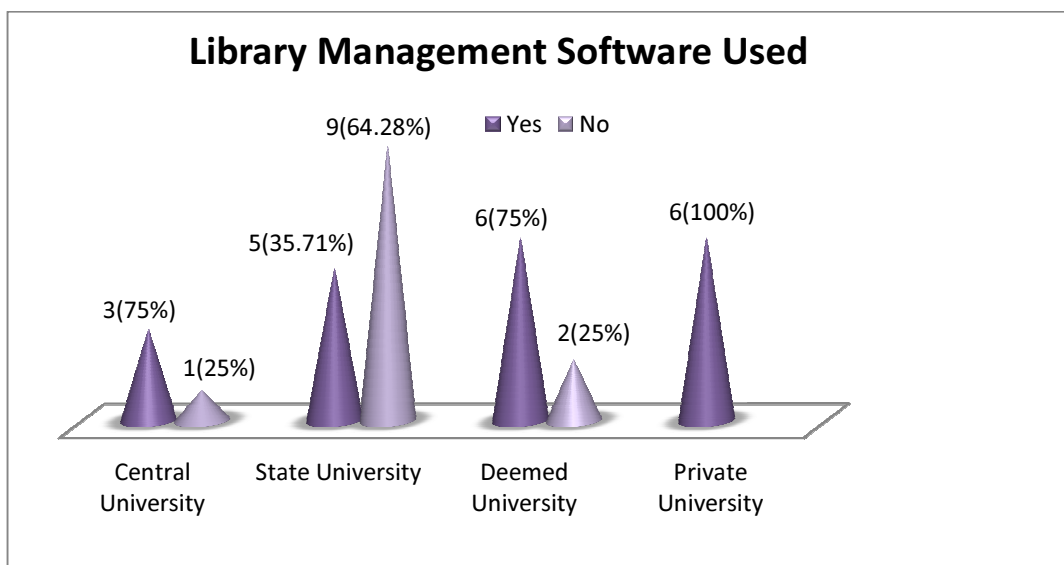
**Table 6.5 Type of the Software Available in University Libraries**

| Type of Software | Central Univ. | State Univ. | Deemed Univ. | Private Univ. | Total       |
|------------------|---------------|-------------|--------------|---------------|-------------|
| Commercial       | 3 (75%)       | 5 (35.71%)  | 4 (50%)      | 6 (100%)      | 18 (56.25%) |
| In-house         |               |             | 2 (25%)      |               | 2 (6.25%)   |
| Not Available    | 1 (25%)       | 9 (64.28%)  | 2 (25%)      |               | 12 (37.5%)  |
| <b>Total</b>     | 4(100%)       | 14(100%)    | 8(100%)      | 6 (100%)      | 32 (100%)   |

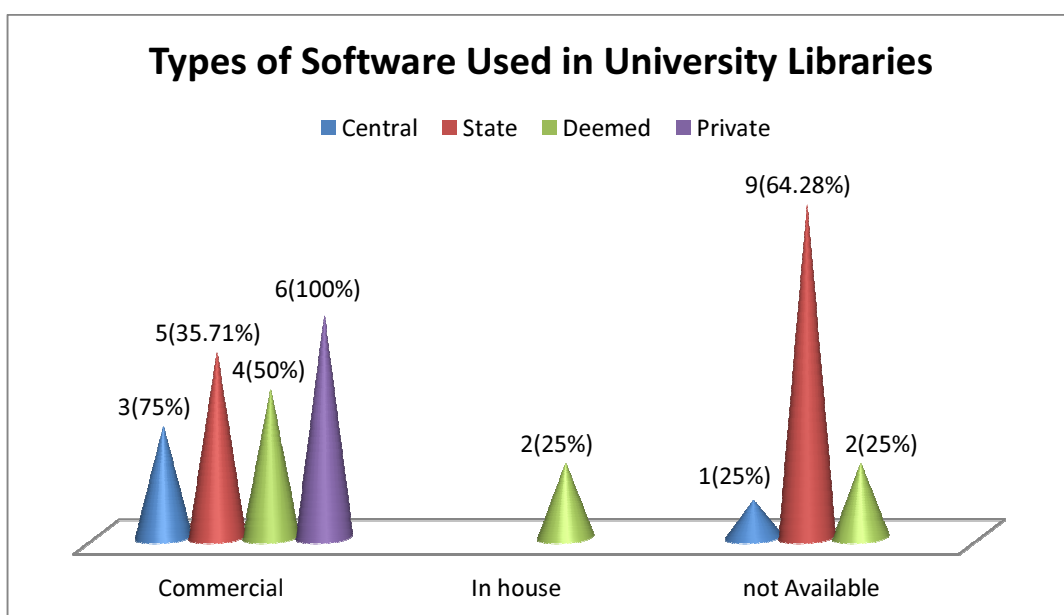
Library Management Software package place a key role for the success of the library automation, and there are a number of library automations software packages in India .

Responses indicate that the organizations surveyed use a wealth of different software packages depending upon particular applications. Table 6.4 and 6.5 shows the different library management software used in University libraries under study. The analysis shows that Universities libraries are more interested in commercial software packages. There are Nine software preferred by 20(62.5 percent) libraries. It is found that Libsys is used more in libraries (18.75 percent) than any other software. Alice for window software is a used as second with 15.72 percent of libraries, 50 percent of the Central universities and 33.33 percent of deemed universities are using Alice for window. Only two Deemed universities developed in house library management software.

Two libraries are using SOUL and TLSS library management software and two libraries have developed the library management software in house. The analysis revealed that 20 libraries have library management software and still 12(37.5%) libraries has no automation. Libsys is the more used software and Alice for Window is the second. Central and Deemed Universities libraries (75%) are better in library management software. All the private universities are automated and all are using the commercial software.



**Figure 1**



**Figure 2**

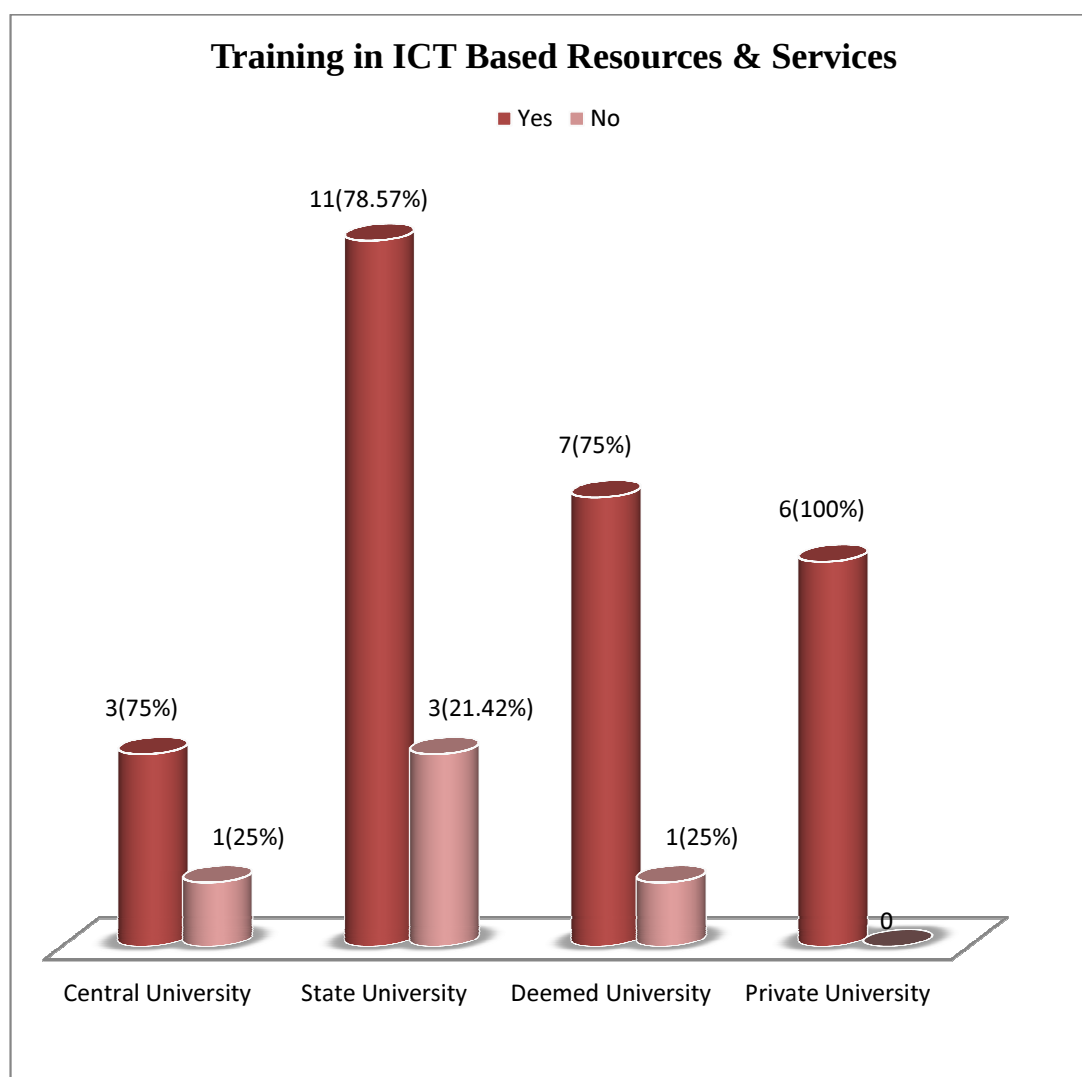
## 6.6 Training In Ict Based Resources And Services

**Table 6.6 Training in ICT Based Resources and Services**

| Type of the University | Yes         | No         | Total     |
|------------------------|-------------|------------|-----------|
| Central University     | 3 (75%)     | 1 (25%)    | 4 (100%)  |
| State University       | 11 (78.57%) | 3 (21.42%) | 14 (100%) |
| Deemed University      | 7 (75%)     | 1 (25%)    | 8 (100%)  |
| Private University     | 6 (100%)    | -          | 6 (100%)  |

|              |             |            |           |
|--------------|-------------|------------|-----------|
| <b>Total</b> | 27 (84.37%) | 5 (15.62%) | 32 (100%) |
|--------------|-------------|------------|-----------|

Training is an integral component of development. Training is an important method of professional development, awareness and makes use of the resources, which enables an organization to prepare its people for various operations. Training is expected to bridge the performance gap. Training in ICT based services and operation is very important that enable the library professionals and provide value added services to their users. It also prepares its users and creates awareness about its resources and trained them to make use of its resources. It also prepares future information professionals and users through formal and informal means, and poses a serious challenge to those responsible for their education and training. It is found that 84.37 percent of the universities library conduct training in ICT based services and resources. All the Private universities (100 percent) library conduct training in ICT based resources and services, and 15.62 percent do not conduct training.



**Figure 3**

## 6.7 Allocation Of Budget

**Table 6.7 Allocation of budget influence ICT based services in libraries**

| Type of the University | Not Satisfactory | Satisfactory | Good       | Very Good | Excellent  | Total    |
|------------------------|------------------|--------------|------------|-----------|------------|----------|
| Central University     | -                | -            | 1(25%)     | 1(25%)    | 2(50%)     | 4(100%)  |
| State University       | 2(14.285%)       | 6(42.85%)    | 4(28.57%)  | -         | 2(14.28%)  | 14(100%) |
| Deemed University      | 1(12.5%)         | -            | 2(25%)     | 3(37.5%)  | 2(25%)     | 8(100%)  |
| Private University     | -                | 1(16.66%)    | 4(66.66%)  | -         | 1(16.66%)  | 6(100%)  |
| Total                  | 3(9.375%)        | 7(21.875%)   | 11(34.37%) | 4(12.5%)  | 7(21.875%) | 32(100%) |

Chi-square = .113

Pearson Chi-Square Value at 12 df and 0.5 level of Significance 18.087

Null Hypothesis is accepted

Table 6.7 gives us the option about 'Allocation of Budget' as a factor influencing the provision of ICT application in universities libraries under study. The analysis revealed that about 21.87 percent of the libraries stated that budget allocation is satisfactory and only (9.37 percent) libraries stated that budget allocation is not satisfactory. Majority (34.37 percent) libraries stated that budget allocation is good and 12.5 per cent stated that it is very good.

It is seen that 50 per cent of Central Universities have stated the budget allocation is excellent and about 42.85 per cent of State Universities and 16.66 per cent of Private universities have stated that budget allocation is satisfactory. Majority (34.37 per cent) of the libraries have stated that budget is good. A good number of State Universities libraries (28.57 percent), Deemed universities (25 percent) and private universities (66.66 percent) have stated that allocation of budget is good. Only (37.5 percent) of Deemed Universities Libraries have stated that budget is very good. Only (21.875 percent) of the universities have stated that budget allocation is excellent.

It is found that in good number of universities libraries under study allocation of budget is good. It is also found that the budget allocations to majority of the libraries are satisfactory. It is observed that there is no association in the allocation of budget among different type of organization.

The Chi Square value computed for testing the association between the type of organization and the option about the allocation of budget is .113. This value is less than the Table value (18.087) at 12 degree of freedom and at 5 per cent level of significance. Hence it can be concluded that there is no association in the allocation of budget among different type of organization.

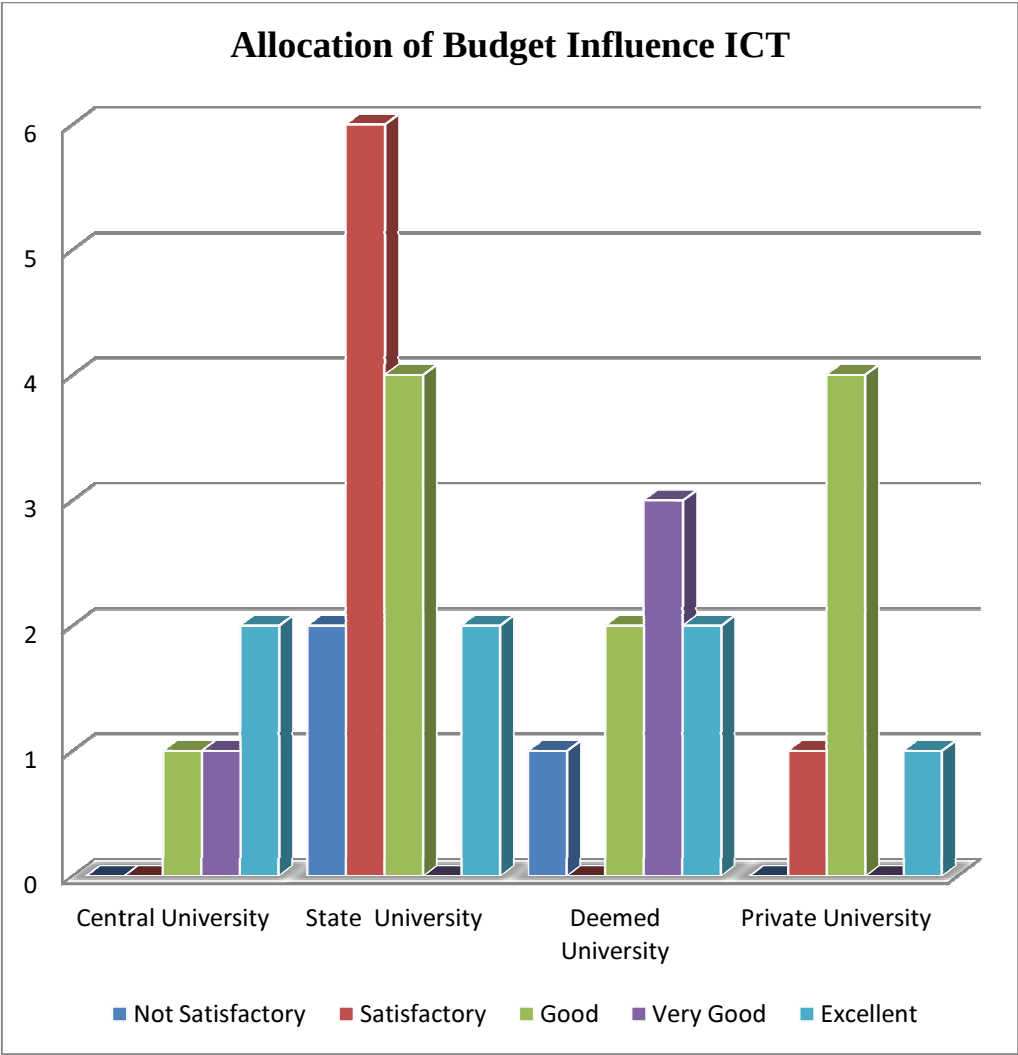


Figure 4

6.8 Internet Facility In University Libraries

Table 6.8. Availability of Internet Facility in University Libraries

| Type of the University | Yes        | No        | Total    |
|------------------------|------------|-----------|----------|
| Central University     | 4(100%)    | -         | 4 (100%) |
| State University       | 14(100%)   | -         | 14(100%) |
| Deemed University      | 7 (87.5%)  | 1 (12.5%) | 8(100%)  |
| Private University     | 6(100%)    | -         | 6(100%)  |
| Total                  | 31 (96.87) | 1 (3.12%) | 32(100%) |

ANOVA =  
.407

Anova at 3 & 28 df and 5 percent level of Significance is 2.95

Null Hypotheses = Rejected

The internet has become an indispensable resource for University Libraries worldwide to enhance the collection and improve services and operations. Librarians were asked to indicate the extent of use of internet in the library. All the universities under study have the internet connectivity in the library. Majority (96.87 per cent) of the Universities Libraries under study have internet connectivity, and only one (3.12 per cent) library have no internet connectivity.

One-way ANOVA test was carried out to test the association between the organization type and internet facility available in university libraries. The hypothesis tested was availability of internet is dependent of the type of organization. The computed Value is .407, which is smaller than table value (2.95) at 5 percent level of Significance. As the computed value is less than corresponding table value. Hypothesis is rejected. Hence it can be conclude that there is no association in the availability of internet facility and different type of organization.

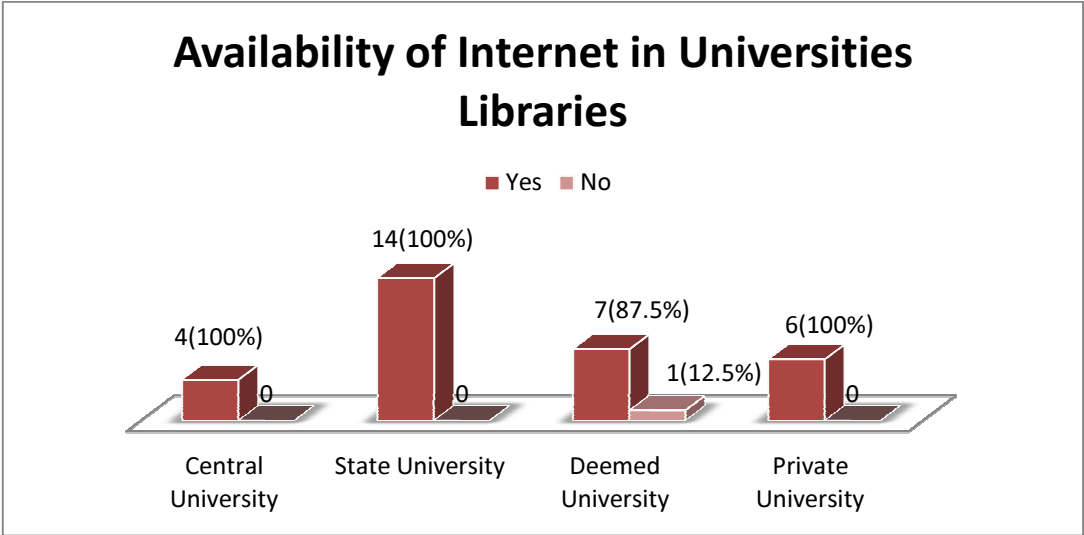


Figure 5

7. Conclusion

The present study has been carried out in the university libraries of Uttar Pradesh. It is find out that Libraries of Universities have gone far ahead in computerized and automation. Majority of the libraries have gone for the automation. Libraries are providing internet facility to its users and staff and also provide training to its users.

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**PART 4:**  
**COLLECTIONS AND SERVICES:**  
***REFORMATTED AND REDESIGNED***

## Chapter 21

# Implementing Patron-Driven Acquisitions Models for E-books: A Case Analysis at a University Library in U.S.

Shali Zhang  
Dean of Libraries and Professor  
Maureen and Mike Mansfield Library, University of Montana  
Missoula, MT 59812-9936, USA  
[shali.zhang@mso.umt.edu](mailto:shali.zhang@mso.umt.edu)

**Abstract.** *Patron-driven acquisitions (PDA) model for acquiring electronic books is a relatively new concept which has helped redefine the collection development policies and ensure the purchased materials are used. At the University of North Carolina at Greensboro (UNCG) Libraries, the pilot PDA project for computer science books and the expanded PDA project for four additional disciplines were successful and the usage data show that all e-books selected by users and purchased by the Libraries were used more than the numbers of their counterparts of print books. The libraries are now using this Patron-Select model for all disciplines to select and purchase electronic books. The impact of the PDA e-book projects on collection development includes increased user access to PDA e-book; more students' participation in selection of PDA e-books; critical budget planning process, and decisions on avoiding duplicate formats.*

**Keywords:** Patron-driven Acquisitions, Collection Development, Academic Libraries

### 1. Introduction

The advancement of technologies is rapidly changing the methods of delivering scholarly and instructional contents to library users. When the number of circulation for print monographs has declined, academic and research libraries in U.S. are looking for new ways in acquiring monographic contents in order to meet the needs of their users who are “digital natives.” Upon the waves of successfully replacing most print reference materials (i.e., indexes and abstracts, statistics, dictionaries, bibliographies, etc.) with electronic platforms such as databases and data sets, and replacing many print journals with electronic journals, scholarly and instructional monographs in an electronic format have witnessed rapid growth. Libraries have continued spending more on acquiring e-books than before. In the Primary Research Group’s annual report, it provides data of the survey results on the library use of e-book. The Report shows that libraries in the sample anticipated in spending a mean of \$128,712 on e-books in 2012, representing an increase of 43 percent from the previous year (PRG, 2012). The data on expenditures of e-books from 38 research libraries within the Association of Southeastern Research Libraries (ASERL), the largest regional research library consortium in the United States, indicate that these libraries increased spending on e-books from \$3,545,607 in 2006 to \$10,384,484 in 2011 (Chart 1), though the 2012 expenditure data are not available. The number of e-books has grown from 5,452,850 volumes in 2006 to 21,346,014 in 2012 (ASERL Data, 2012).

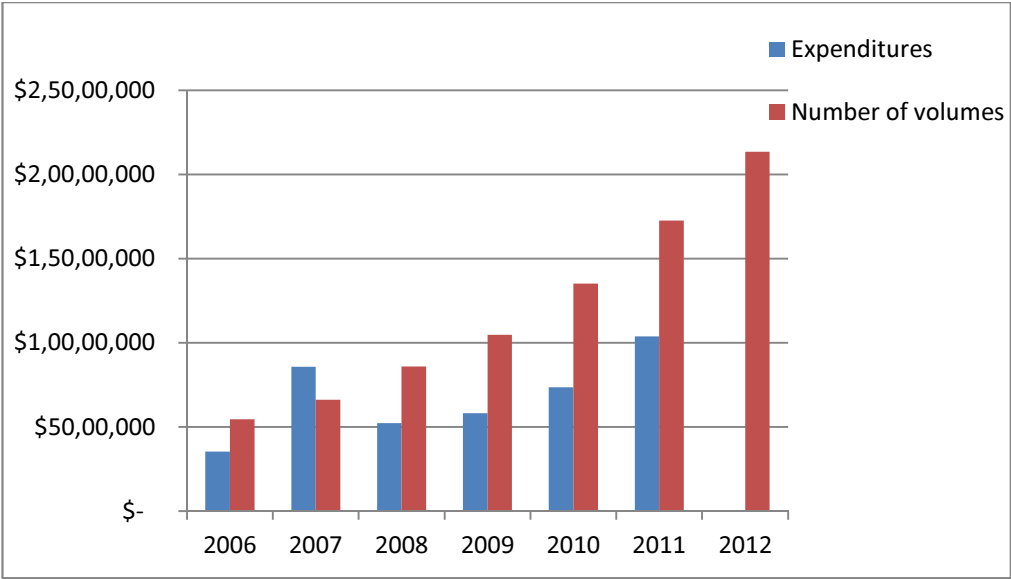


Chart 1. ASERL e-books information, 2006-2012

Academic libraries in U.S. are continually looking for new ways in selecting and purchasing electronic books to meet the needs of users. One of the methods is patron-driven acquisitions (PDA) model for electronic books which have helped redefine their collection development policies and ensure the purchased materials are being used.

In responding to the needs of users from different subject disciplines, the University of North Carolina at Greensboro (UNCG) Libraries in U.S. started a pilot project by using a Patron-Select model from Mylibrary, a patron-driven acquisitions platform provided by Coutts Information Services in purchasing electronic books for the subject of computer science in summer 2008. The pilot project was a successful one. The usage data show that all e-books selected by users and purchased by the Libraries were used more than the numbers of their counterparts of print books. Based on the pilot project data, one year later, the Patron-Select model was expanded to four additional disciplines which achieved the similar positive outcomes. The libraries are now using this Patron-Select model for all disciplines to select and purchase electronic books.

2. The institutional context

The University of North Carolina at Greensboro (UNCG), located in the southeast region in U.S., is one of the seventeen campuses of the University of North Carolina System, with more than 18,000 students and over 2,000 faculty and staff on this campus. In 2006, UNCG was classified by the Carnegie Foundation for the Advancement of Teaching as a Research University with “High Research Activity.” The designation is expected to help UNCG attract outstanding faculty and graduate students, and to raise the university’s profile in North Carolina and beyond. With this new classification, transitioning funding in recurring money was provided to the university subsequently, including additional funding for library resources.

The students at the UNCG campus are diverse in their cultural backgrounds, social-economic status, learning styles, and residence choices. Among over 18,000 students, only 21 percent of undergraduate students live on campus housing or other living facilities provided by the University. Most of the students commute to and from the campus daily (UNCG Common data Set, 2012-2013). Furthermore, the University offers numerous distance learning programs through which the students are able to complete their academic degrees without coming to the campus. Accessing library resources through electronic platforms via internet has become necessity for students on campus and off campus in pursuing their education goals.

The UNCG Libraries have been recognized by faculty, students, and communities as an intellectual hub of the University. The Libraries have been a leader in the region to support teaching, research, and life-long learning activities of the University and local communities through enhanced access to library materials. By December 2012, the Libraries provided users with more than 65,000 subscribed serials. Among these titles, less than 2,000 are counted as print journals. The Libraries offer more than 600 databases which have replaced most print reference materials. With shifting from checking out print materials within the library building to accessing scholarly and instructional resources anytime and any places, the UNCG libraries have aggressively expanded and facilitated access to monographic materials through electronic platforms.

### 3. A case analysis at the UNCG Libraries

In responding to the needs of faculty and students from various subject disciplines and from different locations, the UNCG Libraries started exploring access to e-books in early 2008. Several vendors provided patron-driven acquisitions (PDA) e-book platforms, including ebrary, ebook library (EBL), and Mylibrary. Because the UNCG Libraries uses Coutts Information Services for some of the print materials at that time, the representatives from the company provided a demo on the platform during their visits at the Libraries. Based on Patron-Select Model offered by Coutts, the vendor offers Mylibrary as an electronic platform to deliver e-book contents. The aggregated platform is integrated with libraries' OPAC for searches and views. The full MARC records are down-loaded into libraries' cataloging systems. The loaded records are integrated with other MARC records so that users' searches to e-books on OPACs are seamless. When users view and download an e-book title twice, the title is considered for a purchase. Libraries then are charged for a payment on the title. After the demo, the librarians at the UNCG Libraries had good impressions on Mylibrary for its ability of being able to search e-books through OPAC and on the Libraries' web site respectively.

Back in early 2008, purchasing e-books was still a new phenomenon. One of the library liaisons did a couple of informal pooling with students at the instructional classes on using e-books. None of the students showed any favor on this new monographic format. Nonetheless, seeing promising on the e-book platform such as Mylibrary encouraged the UNCG Libraries to explore the potential benefits on this new format. In order to gaining needed experience and usage data, the Department of Computer Science at UNCG was initially chosen to participate in the pilot project. With uncertainty on how many titles would be chosen by users each year and on how much would be spent on e-books for one department, the Libraries looked into the pilot project to provide answers to these questions. Once the decision was made, several steps were taken to implement this pilot project.

- Determine the budgetary amount -

Each year, the Libraries allocate \$4,000 annually to the Department of Computer Science on print monographs. Because of a short life-span on publications for the discipline, the department liaison agrees to use the print monographic fund for the e-book pilot project. If expenditures on the pilot project went over the original allocation, additional fund from general collections budget would be added. Therefore, the funding was not a major issue for this pilot project.

- Set up profiles -

The initial subject profile was set up based on Library of Congress class schemes. The non-subject parameters on the profile focus on e-books published by university presses, with publication dates from 2008 to present, and \$300 as a maximum ceiling price per item. Other non-subject parameters specify countries of publications, languages, readership levels, sets and series, and editions. These are the similar criteria on the profiles for e-books with that of print materials.

- Review license agreement -

As it is with the case of procurement on any other electronic products, prior implementing the Coutts' Patron-Select e-book platform, a license agreement with the vendor was reviewed by a UNCG Counsel who is responsible

for examining all license agreements related to purchasing electronic materials at the University. Fortunately, all major clauses were reviewed, negotiated, and agreed upon quickly by both parties.

- General workflow -

Prior to down-loading MARC records according to the Libraries’ e-book profiles, the vendor offers to check the Libraries’ integrated cataloging system on a monthly basis to avoid duplications. In this way, the MARC records for the duplicated titles on e-books would not be down-loaded into the libraries’ cataloging database. Since then the vendor has continued this practice.

Each month, the profiled MARC records for e-books are down-loaded into the Libraries’ cataloging system by one of staff at the Department of Cataloging. During the pilot period, the library liaisons were informed on loaded MARC records for e-books. Subsequently, the liaisons have included the option of e-books in their instructional classes, but did not use any of these e-books as examples. In this way, any item that was viewed or down-loaded two times or more would be true usages by users. Each month, the vendor sends the Libraries an invoice which lists the titles being viewed and down-loaded for purchases. Because the Libraries have deposited collection funds to cover the expenditures on e-books, the vendor automatically deducted the funds according to the amount listed on each invoice.

The library staff at the Department of Cataloging have accepted most of down-loaded MARC records with little enhancement for purchased e-book titles. They only overlay a handful of brief records with a full record from OCLC if the vendor-provided MARC records deem incomplete. The full MARC record displayed on OPAC also informs users on the format of e-books as it shows in Chart 2.

|                         |                                                                                                                      |                              |                 |               |
|-------------------------|----------------------------------------------------------------------------------------------------------------------|------------------------------|-----------------|---------------|
| <b>Title:</b>           | <b>Evaluation and testing in nursing education [electronic resource] / Marilyn H. Oermann, Kathleen B. Gaberson.</b> |                              |                 |               |
| <b>Personal Author:</b> | <u>Oermann, Marilyn H.</u>                                                                                           |                              |                 |               |
| <b>Holdings:</b>        | <b>Call Number</b>                                                                                                   | <b>Status</b>                | <b>Location</b> | <b>Format</b> |
|                         | <b>EBOOK</b>                                                                                                         | <b>World Wide Web Access</b> |                 | <b>Online</b> |
| <b>INTERNET Link:</b>   | <a href="#">Available online.</a> <b>e-book</b>                                                                      |                              |                 |               |
| <b>Publisher:</b>       | New York, NY: Springer Publishing Company, c2009.                                                                    |                              |                 |               |
| <b>Edition:</b>         | 3rd ed.                                                                                                              |                              |                 |               |

Chart 2.An e-book record on OPAC display

A special code was added to the 910 field of the MARC records to indicate where the records come from and the dates of down-loading. This process helps cataloging staff to generate reports when it is time to delete the MARC records for non-purchased e-book titles. Once a title is purchased, the wording in the 910 field is changed by cataloging staff to indicate that the Libraries own the title. This special code enables library staff in the Department of Acquisitions to collect data on e-book expenditures at the end of fiscal year.

The Libraries have decided to delete MARC records from the cataloging system for non-purchased e-book titles after they are down-loaded for two years. In this way, the Libraries are able to ensure that the most current e-books are being viewed and purchased by users.

4. Funding models on PDA projects

Libraries have applied a variety of funding models to facilitate purchasing requested items from users. For instance, Texas A&M University Libraries in U.S. allocated six percent of its monographic budget to be used for materials requested by “a university student, staff, or faculty member” through a “Suggest a Purchase” project (Reynolds, et al, 2010). With that model, the Libraries purchased all requested items by users which cost less than \$150 per item and which were not owned by the Libraries. From 2007 to 2009, the Libraries purchased 8,665 items through the special funds. Among these items, 63 percent are printed books, 33 percent are DVDs, and four percent are other type of materials. This purchase model is valued by users at all levels of the university community, according to the authors’ survey results (2010).

The Greater Western Library Alliance (GWLA), a library consortium which includes 33 research libraries in Midwestern and Western states in U.S., on the other hand, required all participants to allocate a minimum amount of funds as a deposit to be used for the user-initiated purchases on e-books when the consortium used Mylibrary as its e-book platform. To meet the required funding mandate, Southern Illinois University (SIU) Libraries, one of the GWLA members, used the end-of-year funds from collection budgets on this project. When SIU Libraries’ fund ran low, the Libraries would temporarily suppress the available e-book MACR records until new funds were added to the deposit account. The Libraries purchased 470 e-book titles through this project between November 2008 and April 2010 (Nabe and Imre, 2011).

University of Florida Libraries in U.S. set up a deposit account of initial \$20,000 with Coutts Information Services in 2009 when the Libraries began a PDA project for e-books. During the Libraries’ first six-month pilot period from May to October 2009, 193 e-books were purchased with expenditures of \$20,624.26 (Carrico and Leonard, 2011).

The University of Newcastle Library in Australia modified its policy for purchasing e-books through a PDA model after more than \$67,000 was spent within the first five weeks when the library implemented a PDA project (Tenopir, 2010). “Now the library restricts purchases to one per day, per person, and starts with an on-screen reading version rather than an immediate download when a patron clicks on a title. The library also pays for a loan before acquisition and has increased the number of loans to five before a book is purchased outright,” Tenopir reports (2011).

At the UNCG Libraries, a separate pre-payment account was set up with the vendor (Coutts Information Service) who provides an e-book platform (Mylibrary) as designated funding source for user-initiated selection and purchases on e-books. The UNCG Libraries maintain a separate account with the vendor on purchasing other types of materials such as print monographs and continuation titles.

Though expenditures on PDA projects at the libraries in above-discussed come from different funding sources, it is obvious that for PDA projects, these libraries have set up designated accounts with committed amount of funds to help facilitate purchasing process for items selected by users. In comparison with their annual monographic funds at these libraries, the designated funds for the PDA projects are still relatively a small percentage. Nonetheless, the expenditures will continue increasing when more monographs are published in an electronic version (i.e., born-digital) and more items are available for users to select.

5. Expenditures on the UNCG Libraries’ PDA Project

The UNCG Libraries started the PDA project as a pilot model from July 2008 to December 2009 on the subject of Computer Science. During that period, the total expenditure on e-books with the PDA model was over \$7,000, with 70 titles being viewed or downloaded two times or more by users. The expenditures for these titles were subsequently charged to the UNCG Libraries’ pre-payment account designated to purchase PDA e-books, as it shows in Chart 3.

| Dates | Invoice Amount | Number of titles purchased |
|-------|----------------|----------------------------|
|-------|----------------|----------------------------|

|               |            |    |
|---------------|------------|----|
| Jul-08        | \$125.40   | 1  |
| Aug - 08      | \$0.00     | 0  |
| Sep-08        | \$119.93   | 2  |
| Oct – Dec- 08 | \$0.00     | 0  |
| Jan-09        | \$607.06   | 6  |
| Feb-09        | \$2,496.87 | 20 |
| Mar-09        | \$784.57   | 10 |
| Apr-09        | \$289.11   | 4  |
| May-09        | \$530.58   | 9  |
| Jun-09        | \$0.00     | 0  |
| Jul-09        | \$287.90   | 5  |
| Aug-09        | \$1,456.72 | 6  |
| Sep-09        | \$503.94   | 7  |
| Oct- Dec-09   | \$0.00     | 0  |
| Total         | \$7,202.08 | 70 |

**Chart 3.Expenditures from July 2008 – December 2009** (for Department of Computer Science)

Based on the data of the pilot project, in January 2010, the UNCG Libraries expanded the PDA e-book project to four additional departments in nursing, business, chemistry, and foreign languages. The expansion of the project achieved the similar positive outcomes. Between January and December 2010, a total expenditure on PDA e-books was \$17,817, with 172 e-book titles purchased.

In January 2011, the Libraries started using this model for all disciplines to select and purchase electronic books. Due to expansion of subject areas, more MARC records were down-loaded into the online cataloging system each month. Therefore, users have more options to choose e-books in their interesting subject areas. The expenditures on PDA e-books were \$37,562, with 450 e-books purchased in 2011, a significant increase in comparison with those of the previous year. This trend has continued in 2012. Between January and June 2012, the first six months of the year, the Libraries spent \$23,577 and purchased 281 e-books. Chart 4 shows the summary on expenditures and the number of e-books purchased through the patron-driven acquisitions project.

| Description                                                                                                    | Invoice Amount | Number of titles |
|----------------------------------------------------------------------------------------------------------------|----------------|------------------|
| July 2008 - September 2009 with Computer Science Dept. only                                                    | \$7,202.08     | 70               |
| Jan. - Dec. 2010, with depts. of Business, Chemistry, Computer Science, Literatures and Languages, and Nursing | \$17,817       | 172              |
| Jan. – Dec. 2011, with all 42 depts.                                                                           | \$37,562       | 450              |

|                                      |             |     |
|--------------------------------------|-------------|-----|
| Jan. - June 2012, with all 42 depts. | \$23,577.00 | 281 |
| Total                                | \$86,158.08 | 973 |

Chart 4. Summery on expenditures and the number of e-books, 2008-2012

6. Content distribution on the selected e-books

Due to the expansion of the PDA project for e-books at the UNCG Libraries, users are able to access and select from broad subject disciplines on needed e-books. The contents on the purchased e-books through a PDA program in many ways reflect the users’ needs and their comfortable levels with which they select and use e-books. Carrico and Leonard (2011) conducted a six-month pilot project from May to October 2009 at the University of Florida (UF) Libraries. Among the 193 e-book titles selected by users and purchased by the UF Libraries, fourteen percent are the economics/management (H-HJ) titles; science (Q) titles are 17 percent; medicine/nursing/health(R) titles are 11 percent, and the technology (T) titles are 18 percent, the highest percentage among the titles in all subject areas (2011).

At the UNCG Libraries, the content distribution on the purchased e-books through a PDA project focuses on economics/management (19 percent), medicine/nursing/professional health (15 percent), and technologies (14 percent). The detailed content distribution is shown in Chart 5.

| LC classes schemes               | LC class schemes | Percentage | Number of Pages viewed |
|----------------------------------|------------------|------------|------------------------|
| Philosophy, Religion, Psychology | B                | 10%        | 3463                   |
| History                          | D-E              | 6%         | 2429                   |
| Economics, management            | H-HJ             | 19%        | 9366                   |
| Social Sciences                  | HM-HX            | 6%         | 2279                   |
| Political sciences               | J                | 5%         | 2220                   |
| Education                        | L                | 4%         | 2500                   |
| Music-Fine Arts                  | M-N              | 3%         | 705                    |
| Literature/languages             | P                | 5%         | 2272                   |
| Science                          | Q                | 5%         | 4735                   |
| Medicine/Nursing/health          | R                | 15%        | 7016                   |
| Technologies                     | T                | 14%        | 6828                   |
| Other                            |                  | 7%         | 816                    |
| Total                            |                  | 100%       |                        |

Chart 5. Content distribution on e-books purchased through a PDA project

It is obvious that the more items were selected by users, the more pages are viewed in these categories or subject areas. For instance, there are 9,366 pages being viewed on the subjects of economics/management which represents 19 percent of e-book titles being selected and purchased.

When the UNCG Libraries set up the profiles for the PDA project, only university presses and scholarly publishers were chosen. This protocol may have to some extent limited useful e-book titles published by other trade publishers.

Nonetheless, among the chosen publishers, about 15 percent of the selected titles are published by Wiley which produces more titles on management, economics, nursing, and technologies, as it shows in Chart 6.

| Publishers                 | Percent of total purchased |
|----------------------------|----------------------------|
| Wiley                      | 15%                        |
| Cambridge University Press | 6%                         |
| Palgrave Macmillan         | 6%                         |
| Oxford University Press    | 5%                         |

Chart 6. E-books purchased from top publishers

7. The PDA E-book Projects’ Impact on Collection Development

In general, library literature reports positive outcomes and impact of various PDA projects on their collection development and on meeting the needs of their users. Nonetheless, in an extensive literature review and analysis, Walters (2012) presents a series of problems coming with PDA models. Specifically, the author points out four problems which are related to PDA e-book projects: limited availability of academic titles as e-books; digital embargoes; high prices of e-books, and licensing issues (Walters, 2012). Some of the problems identified by the author may have also been the problems with other purchase models such as big or package deals for e-journals. Because the concept and practices of PDA e-books are relative new, more research data are needed to further explore pros and cons of this model. Several characteristics on the PDA e-book projects in relations to collection development are worthy of notice:

- PDA e-book projects increase users’ access: At the UNCG Libraries, the increased number of MARC records from the PDA e-book project has resulted in the increased number of access to these items since the inception of the project at the UNCG Libraries. In Chart 7, it shows a substantially increased number of access to the available e-books through the Libraries’ online cataloging system, from 4,492 in 2008-2009 when the pilot project started with one subject area to 61,322 in 2011-2012 when the Libraries implemented the PDA e-book project on a full scale, with all subject areas related to UNCG’s curricular and research priorities.
- 

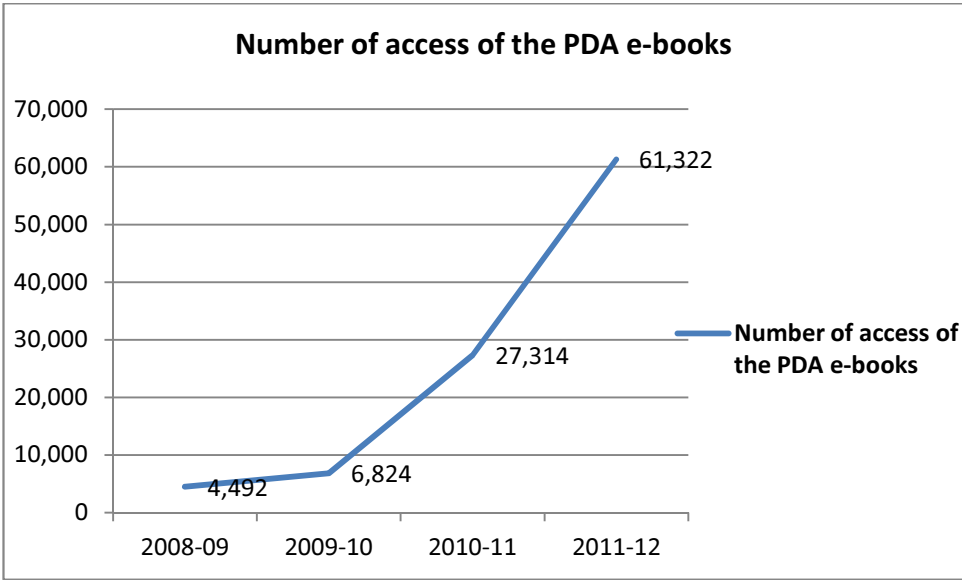


Chart 7. Usage numbers on the PDA e-books

- More students participate in selection of PDA e-books: Unlike the selection process for print books which are conducted in most cases by librarians and faculty, PDA e-book models have made selections, purchases, and access to full text of e-books a seamless process. Therefore, the selectors may have included undergraduate and graduate students, in addition to faculty members. That is, students, especially undergraduate students, may have selected e-book titles which meet their immediate needs on their classes or research projects. The profiles of the UNCG Libraries' PDA e-book project almost mirror these of print approval plans, excluding trade publishers. This conservative approach has helped ensure that all selected PDA e-books are for academic uses.
- Budget planning is more critical than ever: As it displays in Chart 4, with the expansion to cover all subject areas at the UNCG Libraries, the expenditures for the PDA e-books have continued increasing. How do libraries make informed decision on funding allocations each year to ensure users' access to needed e-book titles through PDA models? How much should be enough to cover the selected titles throughout the fiscal year? The change or increases on the number of published e-books will influence or affect the number of available titles which will ultimately affect the amount of expenditures. Exploring a predicting funding allocation model will be helpful to ensure that the allocated funds will be sufficient to cover the selected e-books at an annual basis.
- Decisions are needed on handling duplicated formats: At the UNCG Libraries, there have been discussions on making adjustments on print approval plans and removing the publishers who also produce e-books from the print approval profiles. The goal is to reduce duplicated titles to be purchased through PDA e-book project and through regular print approval plans. This issue is quite complicated. Some publishers release their e-books at the same time when print versions are published. Some has set up certain embargo periods (from six months and up) for e-books in order to push more sales on print books. Faculty and students in certain disciplines have much embraced e-books (i.e., Compute Science, Nursing, Business, etc.) while others (e.g., in Arts, Architectures, etc.) may still want to keep print books as a major media of reading. How to balance the needs of users and at the same time efficiently use limited funds for more materials? These topics are worthy of further exploration and discussion.

## 8. Conclusions

The UNCG Libraries in U.S. started a pilot PDA e-book project in 2008, with one subject area in computer science. The pilot project was a successful one, with needed data to expand the project to four additional academic departments (in nursing, business, chemistry, and foreign languages) in 2010. Built upon the positive experience with the expanded disciplines, the Libraries implemented the PDA e-book project with all academic departments in January 2011 which has resulted more e-books being selected, purchased, and viewed. The content of the purchased e-books through the PDA project focus on economics/management (19 percent), medicine/nursing/professional health (15 percent), and technologies (14 percent). Among all purchased e-books, 15 percent of the titles are published by Wiley. The impact of the PDA e-book projects on collection development includes increased user access to PDA e-book; more students' participation in selection of PDA e-books; critical budget planning process, and decisions on avoiding duplicated formats. Because the concept and practices of PDA e-book projects are relatively new, more research data are needed to further explore pros and cons of this model.

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## Chapter 22

### Academic Libraries' Mutations: The Introduction of Video Games

Stephanie Cadieux  
 École de Bibliothéconomie et des Sciences de l'information  
 Université de Montréal, Montréal, Canada  
[stephanie.cadieux@umontreal.ca](mailto:stephanie.cadieux@umontreal.ca)

**Abstract.** *The development of video games collections in academic libraries is a recent phenomenon and very little research has been done so far. This paper aims to review the available literature addresses four main subjects: video games in academia, or how the games are influential supports for both students and professors; video games in academic libraries, or the current practice; selection criteria, which are an important aspect of collection's development; and consoles, which are the supports to read video games. With the interest from institutions and individuals, the need for academic libraries to adapt and to offer adequate resources to their users is stressed and modifications of collection policies and adaptation of different platforms are also called for.*

**Keywords:** Library Collections, Video Games, Academic Libraries

#### 1. Introduction

Academic libraries need to be in constant mutation in order to adapt to their users' needs. Over time, we have assisted to the creation of many information supports, which forced both academic and public libraries to acquire books, but also video tapes (Lavigueur 1984), CD-ROMs (Dyer 1990; Batterbee and Nicholas 1995), DVD (Carr 2005), compact discs (Haddad 1996, Lai and Chan 2010) and, more recently, e-books (Rao 2005; Parkes 2007; Berger-Barrera 2008) and video games (Bubak 2008; Smith 2008; Tappeiner and Lyons; Laskowski and Ward 2009).

The important presence of video games in today's society raises the need to define and study them. Since the launch of Nintendo's first console, the growth of the video game industry has led to different perceptions on this medium, ranging from the negative, such as video games causing health issues, to the positive, i.e. their contribution to developing intelligence. To prove or refute these theories, researchers need to study video games. To be able to do so, university libraries must expand their collections and start to acquire video games.

The goal of this paper is not to discuss whether or not libraries should introduce video games to their collections, but rather to expose what has been written on the development of video games' collections in academic libraries. Since this is a rather recent trend, the literature is not yet abundant; nevertheless, these works are interesting to create a portrait of the current practice and to give ideas for future developments. We will address four main subjects: video games in academia, or how the games are influential supports for both students and professors; video games in academic libraries, or the current practice; selection criteria, which are an important aspect of collection's development; and consoles, which are the supports to read video games.

#### 2. Video Games in Academia

Video games' popularity among college and university students is well established: 70% of American college students mentioned them as being the medium which has the most influence on them (Squire 2008). This has caused many students in diverse disciplines such as anthropology, sociology and cinematographic studies to be interested in this medium (Copier 2003). Some argue that video games cannot be studied in actual disciplines because there are too many differences between games and other audiovisual media. For instance, the story and the visual may not be identical each time the game is played (Laskowski and Ward 2009) and multiplayer games combine aesthetics with social relationships to an unseen level (Copier 2003). Furthermore, as Aarseth (2001) points out "[g]ames are both object and

process; they can't be read as texts or listened to as music, they must be played. Playing is integral, not coincidental like the appreciative reader or listener” (p.3). This means that the student's physical involvement is mandatory to study every aspect. As a result, some academic institutions felt the need to develop a new discipline: Game Studies (Aarseth 2001; Copier 2003; Smith 2008).

The creation of this discipline sparks two fears: first, that diplomas related to video games would not be taken seriously by other academics, as for some, games are for children (Smith 2008). This tendency seems to diminish with the blooming of specialized grants, notably from the Library of Congress (National Digital Information Infrastructure and Preservation Program) as well as from the MacArthur Foundation (Laskowski and Ward 2009). The second fear is that degrees related to video games would not be taken seriously by the industry because it would not meet its expectations (Smith 2008). Partnerships between the video game industry and universities, such as Nintendo and DigiPen, and Entertainment Arts and the University of Southern California and Carnegie Mellon, address this issue by providing industry's insight; this kind of partnership shows that the industry wants qualified and educated employees (Smith 2008).

### 3. Video Games as Academic Resources

Be it to support existing programs or newly created ones, some academic libraries are developing video games collections. As Smith (2008) and Laskowski and Ward (2009) point out, developing such a collection at the beginning of a discipline may help position the library favourably inside academic institutions. Also, video games can support teaching in other disciplines than those explicitly related to video games (Bubak 2008; Burek Pierce 2009). For example, the collection of the University of Illinois at Urbana-Champaign supports many departments, such as psychology, informatics, information science and literature (Tappeiner and Lyons 2008). Video games can be effective in natural and medical sciences: a medical center in Phoenix, Arizona, proved that students playing *Kororinpa: Marble Mania* an hour before a virtual gall bladder surgery had better results than those who had not, because their hand-eye coordination had been exercised during the game (Tappeiner and Lyons 2008). Furthermore, in a survey conducted in 2010, it was found that video games supported mainly programs related of the creation of video games and informatics, but also in education, sociology and psychology (Cadieux and Beaupré-Lavallée 2011). Finally, Simon Fraser University (Vancouver) offers courses on new media critical analysis, and video games are one of the media studied (Gick In Harris and Rice 2008).

Video games are also used in research in many academic disciplines: in education, the impact of games on teaching and the students' receptivity are studied (Annetta et al. 2009; Annetta 2008; Annetta et al. 2006; Dodge et al. 2008; Powell 2005; Simms 2001; McFarlane 1997). Video games are also used for research in sociology to study immersion and flow (Lee 2009), perceptions carried in them (Williams 2006, 2003), and the effects of violence (Farrar, Krcmar and Nowak 2006; Jantzen and Jensen 1993). Information scientists are also using them for the studies of informational behaviours (Adams 2009). Finally, game studies are doing research on the playability (Fabricatore, Nussbaum, and Rosas 2002) and on the human-computer interactions (Barr, Noble, and Biddle 2007). This means that with this collection, libraries may support a large array of disciplines studying video games directly or indirectly, whether they study physical or societal effects (Bubak 2008).

### 4. Selection Criteria

The selection criteria for video games in academic libraries are not often mentioned in the literature, as some authors have noted (Kane, Soehner and Wei 2007; Tappeiner and Lyons 2008). Tappeiner and Lyons (2008) offer some basis to help any professional who wishes to create a new collection; they identified four categories for the criteria: 1) physical characteristics and needed equipment 2) disciplines in which the games could be used, 3) the game itself, and 4) the cultural and historical values of the game. Kane, Soehner and Wei (2007) also offer criteria based on their experience at the University of California Santa Cruz (UCSC). The two criteria they considered to be the most important were the quality of the content (graphics, sounds, playability, game's value and added value) and the usefulness for the Computer Game Designer program. USCS' library is not the only one developing the collection with a specific program in mind: the library of the Pennsylvania College of Technology is considering its use for the Game Design program (Amey 2008) and the situation is similar at Brown College (Mastel and Huston 2009). Laskowski and Ward (2009) remind that

the development of video games collection begins by identifying the needs for the courses [and the research done at the institution], the students' recreational needs and other potential uses. In our research conducted in 2010, librarians have identified the suggestions of professors and students as main selection criteria, along with the usefulness in related courses (Cadieux and Beaupré-Lavallée 2011). This finding stresses the need to develop and maintain good relationships with the library's users. Moreover, there are online sources that are used by librarians for developing their collection such as Metacritic, Game Developers Choice Awards, Game Developer Magazine and the games' critiques in the School Library Journal (Amey 2008; Gick c2008).

One important criterion that is easy to forget is the storage and the cataloguing costs; when Kane, Soehner and Wei (2007) received an offer from Sony for 1600 to 2400 games, they had to calculate the available physical space in the library to be sure to be able to handle such a collection. As video games have not been in libraries for a long time, the need for cataloguing may be higher and the associated cost in personnel time must be taken into account (Kane, Soehner, and Wei 2007; Laskowski and Ward 2009). However, recent and popular games' notices can be found in OCLC; for example, the notice for Halo 3 was available as soon as the day after the release (Gick c2008).

## 5. Reading devices

Before thinking about buying games, it is essential to decide if the library is going to accommodate its users by allocating space within its walls for people to use the games. To do that, the library has to provide games, reading devices, televisions, seats and a support for players to save their game. When UCSC (which has 15,000 students) implanted their pilot project, the team determined that five televisions, nine different consoles and two controllers for each of these were needed (Kane, Soehner and Wei, 2007). A gaming area can include computers because they are also a very popular gaming platform.

Even if the library decides not to create a gaming area, a choice has to be made whether to buy gaming reading devices. At the moment, providing both consoles and games can seem like a big investment, but not buying the consoles does not necessarily translate into saving. For instance, if a game comes out on every actual platform, even if they offer the same playability, librarians may have to buy each version to accommodate users, who may have only one platform at home. Aside from the games available on the reading device, one must also consider the backward compatibility, as a console offering it may be interesting for developing both a collection of actual games and a retrospective collection (Cadieux, 2010).

This brings us to the fact that some professors or researchers will ask for retrospective collections, maybe on platforms that are not on the market anymore. The decision to buy these reading devices or not will depend on their availability in specialised used shop or on websites like eBay (Kane, Soehner and Wei, 2007). It is also important to be sure that the console will be able to read games bought in the country in which it is to be used; both games and consoles have "regions" and they have to be compatible for the game to be read. It is also possible to download emulators on the Internet which allow the user to play old games on the computer, but they mostly are illegal and do not respect copyrights, thus they cannot be a solution for academic libraries (Chaplin, 2007).

Many games being on computers, it is important to ensure that the computer supplied has the necessary components in order to read the games. If a retrospective collection is considered, the acquisition of an old computer may be necessary to be able to read older games. It is to be kept in mind that libraries do not have to acquire reading devices to offer a good service. Some libraries will prefer to acquire only games and to develop a larger games collection. What matters is to offer a consequential service: if the library's aim is to offer current games, consoles are not necessary, but if a retrospective collection is to be built, consoles for older games must be acquired since most of the users will not have access to them at home and will not be able to easily buy them.

## 6. Conclusion

Universities offer more and more academic courses focusing on video games ranging from their creation to their study,

even going as far as to create the new discipline of Game Studies. The industry responded well to the focus given to video games by universities by establishing partnerships with some libraries. Video games have proven to be useful resources to teaching in various disciplines, be it in social sciences or natural and medical sciences. Furthermore, researchers are interested in the impact of this medium popular among children and adults and study them in psychology, sociology, education and library sciences, to name but a few. This interest from both institutions and individuals stresses the need for academic libraries to adapt and to offer adequate resources to their users. One important aspect of developing a collection of a new medium is the selection criteria; from the literature, we can see that the physical characteristics, the usefulness, the game in itself, and the cultural value are the main aspects considered by librarians. The collection development is closely linked to the addition of a gaming area and the acquisition of consoles. Backward compatibility and the choice of games have to be taken into consideration for the choice of reading devices. For retrospective collections, the acquisition of platforms is highly recommended, since most users will not have them at home and thus will not be able to read the games in the collection.

Since the development of video games collections in academic libraries is a recent phenomenon, very little literature can be found. Many documents exist about video games in public libraries, but since their mission is drastically different from that of academic institutions, the data cannot be transposed; this lack of knowledge prompts us to call for more study of video games in academic libraries. One interesting area that could be studied is how the existing collections have been created and how professors and students use them. To study the creation of the collection would give guidelines to academic librarians; to study how they are being used would also be of interest to understand the users as well as to give political leverage to the librarians who wish to create such a collection. The acquisition of a new medium is never an easy task in academic libraries because the number of documents available for purchase has risen exponentially over the past years. Nevertheless, the study of video games in academic libraries would offer a new point of view on a medium which is too often perceived simply as pure leisure; it could prove that games can be useful to comply with the academic libraries' mission: to support teaching and research.

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## Chapter 23

### COST – BENEFIT ANALYSIS OF PERIODICALS: A REVIEW

**Ranjita N. Dash**  
**Librarian, Babaria Institute of Pharmacy, Varnama**  
**Vadodara, India**  
[ran\\_dash2006@yahoo.co.in](mailto:ran_dash2006@yahoo.co.in)

**Mayank Trivedi**  
**University Librarian , The M S University of Baroda**  
**Vadodara, India**  
[libmsu@gmail.com](mailto:libmsu@gmail.com)

**Abstract.** *Importance of periodicals as bearers of the most ancient and nascent micro thought is well established. However, libraries find it difficult to cope up with periodical subscriptions due to a recent spurt in periodical literature and the alarming rate of rise in their price. The rising costs of periodicals and the associated difficulties faced by the librarians in satisfactorily catering to the requirements of their clients can be adequately handled through the application of cost-benefit analysis. It is felt that a cost-benefit analysis can increase the awareness of librarians, administrators and others concerning costs and use patterns, but cannot be truly effective without the help of intuitive value judgment.*

**Keywords:** Cost–Benefit Analysis, Periodical Subscription, User Studies, University Library

#### 1. Introduction

Library services in the recent years are exceedingly becoming difficult due to spurt in the literature. The question of satisfactory performance of the services is acquiring greater concern of the librarian's day by day. The question becomes difficult due to lack of suitable techniques for measuring and evaluating the quality of a service or a function. Most of the existing evaluation techniques do not seem to be sufficiently sensitive to quantitative and qualitative factor of library service, and are therefore, not completely acceptable to librarians or non-librarians<sup>1</sup>.

The basic problem is however, related to the very purpose of the library service, i.e. libraries are non-profit organizations similar to government hospitals which are concerned with providing benefits to the users. These benefits correspond to the satisfaction of the users. The incidence of reduced budgets, inflation and the increased expectation of the users during the 1970s necessitated a greater evaluation of many systems.

This paper intends to present a brief review of the literature pertaining to the evaluation of library service performance with special reference to periodical services.

The available literature has been organized under the following categories:

- i) Conceptual issues
- ii) Measurement issues
- iii) Methodological issues

Under the conceptual issues some of the important aspects such as importance of periodicals, impact of price rise on periodical subscription, rationalization of periodical subscription and resource sharing, scatter of journals according to their productivity (Bradford's law) etc. which have direct or indirect relationship with the cost-benefit analysis of periodicals have been discussed.

In the second category of issues, different measuring techniques prescribed by various scholars have been discussed. The discussion differentiates between the three ways of measuring library performance, i.e. cost-accounting, cost-effectiveness analysis and cost-benefit analysis, while reviewing the relevant literature.

Review of literature concerned with application of different methods to the evaluation of library performance, particularly periodical service, has been undertaken in the third section entitled methodological issues. Works relating to use, calculation of unit cost, cost-effectiveness, cost-benefit analysis of periodical services have been separately dealt with.

An attempt is made in the concluding section to identify the gaps in the available literature and to specify areas for further research.

## **2. Conceptual Issues**

Certain conceptual issues relating to periodicals and periodical services have attracted the attention of researchers. These issues can be seen as having direct or indirect relationship with the cost-benefit analysis of periodicals. The issues are rationalizations of periodical subscription, rising costs and Bradford's law.

### **Importance of periodicals**

The importance of periodicals as bearers of the most ancient and nascent micro thought is well established. Perhaps, this is the reason why rigorous attention is scarce on the issue. Grogan<sup>2</sup> devotes a small portion of his book to discuss the pre-eminence of periodicals in the literature of science and technology. Similarly R.L. Collision and E.J. Crane in their respective works, try to highlight the importance of periodicals over books and other printed materials<sup>3</sup>. Elsewhere one would only come across passing remarks on the significance of periodicals.

### **Rising costs**

The alarming rate of rise in the price of printed materials has been the cause of concern among many. Librarians find it particularly difficult to cope up with periodical subscriptions as their prices are generally high.

One of the reasons for the rapid increase in prices of periodicals is that the publishing industry is still labor-oriented. Besides the increase in postal rates and material costs significantly contribute to the price hike of periodicals<sup>4</sup>.

Innumerable literature has been gathered exploring the impact of rising costs of periodicals on the library services. Prominent among them are the works of Isaac and Satyanarayana<sup>5</sup>, Kundu and Sinha<sup>6</sup> and Omotoso<sup>7</sup>, Saxena and Khare<sup>8</sup>, Sharma<sup>9</sup> and Singh<sup>10</sup>.

Most of these studies concludingly suggest that, to overcome the problem of price rise, approaches such as resource sharing and cooperative acquisition of periodicals may be resorted to. In the words of Singh<sup>11</sup>,

*“Libraries located with close geographical proximity can share their subscription to journal to avoid unnecessary duplication and the money thus saved can be utilized to add more titles”.*

In this context Saxena and Khare<sup>12</sup> believe that establishment of document exchange centers at regional, national and international levels and the introduction of SDI services in all the scientific and technical libraries may lessen the burden. In fact, UGC had a proposal for the establishment and development of an Information Library Network, known as, INFLIBNET in the country by the end of Eighth Five Year Plan (1990-95) period<sup>13</sup>. Although resource sharing inter library loan etc. are exceedingly being considered as the best solution, some fear that an increase of new titles in the future will make the situation more difficult<sup>14</sup>.

An increase in the cost of providing library services during the past few decades has also necessitated the costing of library services, but costing of library services like any other non-profit making service oriented organization is a complex task. Nevertheless, cost-accounting methods are devised to help in planning and controlling future operations.

### **Rationalization of periodical subscriptions**

Characterized by the financial crisis, the low purchase value of the rupee in comparison with foreign currencies and the escalation of subscription rates, the contemporary library and information centres find it difficult to build up their collections. No library can perhaps afford to work in isolation under the budget crunch. Rather inter-library cooperation is an imperative need in the present environment. In this context, rationalization of periodical subscriptions and organized resource sharing may offer a possible pragmatic solution. Heads of institutions and librarians of local institutions can jointly and cooperatively work out their needs and avoid duplication of periodical subscriptions. Methods can be adopted to permit exchange of photocopies of concerned pages, supply of photocopies of periodical articles, circulation of periodicals etc.

Besides, the users should be taken into confidence for the rationalization of periodical subscriptions. They should be convinced of the grave financial crisis and need for rationalization. In this direction NISSAT (National Information System for Science and Technology) undertook a study of twelve major libraries of Calcutta in 1990 and revealed a duplication of 203 periodical titles out of a total 499 periodicals subscribed to by these libraries involving an expenditure of 37,02,825 rupees. The same study estimated an overlap of rupees 6 million during 1993<sup>15</sup>. Through careful rationalization of periodical subscriptions, a major portion of this expenditure can be avoided.

Although NISSAT was taking commendable steps towards popularizing rationalization of periodical subscriptions and resource sharing, only a few researchers have explored into the area. One such work is that of Rao and Chandra<sup>16</sup> which describes the case of Hyderabad city wherein rationalization of periodical subscription and resource sharing has been possible through the initiative of the Department of Library and Information Science of Osmania University. It is suggested that such initiation should also be taken up in other cities in the face of contemporary financial crisis. Recently, Saroja and Padmini<sup>17</sup> have examined the impact of rupee devaluation on libraries. They have taken into consideration the periodical subscription in the five universities and professional libraries of Tirupati over the past 10 years. One of the measures suggested to counter the adverse effects of rupee devaluation is, setting up of a Local Area Network (LAN) to promote cooperation among the five universities and professional libraries of Tirupati.

### **3. Measurement Issues**

Measuring the profit of any social service such as, the library service, is extremely difficult. No standard measurement technique can be prescribed to for measuring library service. Nevertheless, a few studies have been conducted in the direction and the techniques evolved thereof have been stated.

The results of these studies furnish information about the economic health of the library and help the library management to:

- i) Plan and control the library operations,
- ii) Appraise performance of the library and take decisions as to its future function,
- iii) Decide about resources in terms of time and money to be invested in the services.<sup>18</sup>

The purpose is accomplished basically in three ways:

- i) Cost-accounting,
- ii) Cost-effective analysis and
- iii) Cost-benefit analysis.

### **Cost-Accounting**

Cost-accounting is basically a quantitative process involving the estimate of money spent on various function whereas cost-effectiveness and cost-benefit analysis are qualitative process and therefore, much more difficult to assess. Almost all librarians and their governing bodies estimate the running costs of the library before deciding on the extent to which various requirements can be met.

Therefore, cost-accounting of library system has received ample attention from scholars. The popularity of cost estimation according to Roberts<sup>19</sup>, has increased due to “operational reasons” i.e. its significance in the annual budgetary cycle, and its various financial nuances peculiar to an organizational set up. Cost accounting has a number of important uses for library management and a number of studies of its application in libraries have been conducted. Weight<sup>20</sup> has developed the topic quite fully based on the findings of the studies of his time, i.e. till the middle of the last century.

Prominent works in the latter phase include that of Brown<sup>21</sup>, Brucher et al<sup>22</sup>, Clements<sup>23</sup>, Price<sup>24</sup>, Rather<sup>25</sup> and Welch<sup>26</sup>, who have estimated cost of library systems in different countries. In India, works of Bhatia<sup>27</sup> and Subba Rao<sup>28</sup> are worth-mentioning. Butcher et al<sup>29</sup> have tried to convey the basic principles of cost accounting and have shown how this tool can be applied in the library with the help of “hypothetical job costing model”. In their view, application of this cost-accounting model will have several benefits in the library such as; (a) standards of performance can more easily be established, (b) improved knowledge of cost can aid in administrative planning, (c) budget requests can be substantiated by the detailed analysis of cost, and (d) the most important aspect of any cost-measurement system can be identified. Welch<sup>30</sup> in her study of cost of library materials specifies that every area of library expenditure should be properly studied in view of the decreasing financial resource allocation to the libraries over the years. Clements<sup>31</sup> presupposes costing as the hard core of any system that aims at measuring and monitoring progress towards stated objectives and contends that it is essential for libraries to become familiar with the problems of costing and with the handling of finance related information. This helps in controlling the day to day library operation, planning for the future and improving overall effectiveness of the library systems. He provides a twofold framework for library costing; (1) routine cost-accounting system for regular management information, and (2) special exercise costing to deal with particular questions such as, whether to mechanize a given procedure or how much it costs to process a new acquisition.

Different types of cost study of library and information service have been discussed by Roberts<sup>32</sup>. The basic framework for calculation of costs, measurement of labour time input and specific issues and problems which arise in implementing a programme in a library or information unit are vividly discussed.

In India, the problem of shrinking library budget and rising price of books and serials have attracted the attention of cost analysis. Bhatia's<sup>33</sup> work reveals that there is a need for greater cooperation between libraries to cope with the problem of finance. Subba Rao<sup>34</sup> offers a solution to the problem of rising prices and shrinking budgets through a budget formula. It is based on “country quotient/weightage” method. Hayes and Baker<sup>35</sup> argue cogently for the adoption of cost accounting by libraries. In their words, “a cost-accounting system is continuing rather than intermittent: it is concerned with the total library and not with some detailed aspect of it; and it ties together costs with effectiveness rather than being concerned with simply one or the other. Cost-accounting is a management tool of primary value to the librarian in his/her day to day control of the library.

#### **Cost-Effectiveness and Cost-benefit Analysis:**

The value and profitability of information service can be qualified by using modern management techniques to generate numerical data. By and large, all approaches of assessing the value and profitability of information services are directed towards achieving improvement in the system. Until recently, major thrust has been on the measurement of cost-effectiveness.

*Cost-effectiveness refers to the cost of achieving a particular level of effectiveness within an information service. Some types of unit cost measure will be needed. Examples of cost-effectiveness measures would include cost per document answered successfully, cost per relevant and so on. The cost-effectiveness of a service can be improved by holding costs constant unlike raising the levels of cost-effectiveness or by maintaining a particular level of effectiveness while reducing the cost<sup>36</sup>.*

However, since the early 1970s cost-benefit analysis in the library and information services have attracted greater attention.

*A cost benefit evaluation relates the benefits (outcomes) of a service to the cost of providing it. Again, the cost benefit relationship can be improved by increasing benefits without increasing costs and by reducing costs without reducing benefits..... However, true cost-benefit studies are virtually unattainable in our field<sup>37</sup>.*

Some library areas in which cost benefit analysis can be tried are; (a) determining the cost and benefits of book use, (b) budget allocation for acquisition and cataloguing, (c) cost advantage of using printed catalogue card instead of preparing them, (d) economics of library and information networks, on-line search cost (e) weeding and retirement of documents and reference service<sup>38</sup>.

The new trend of using cost-benefit analysis acquired momentum with the work of Mason<sup>39</sup>. Around this time Lancaster<sup>40</sup> differentiated between cost-effectiveness and cost-benefit and listed the basic requirements for each type of analysis. Cost-benefit analysis is quite different from cost-effectiveness study. Cost-benefit clearly refers to a relationship between the costs of some activity and benefits derived from it. Lancaster clarifies that a cost-benefit study is one that tries to justify the existence of the activity by demonstrating that benefits outweigh the costs. Ideally, the benefits should be expressed in the same unit of measurement of cost, i.e. in \$ (Dollar) £ (Pound) or some other currency. Unfortunately, it is exceptionally difficult, if not completely impossible to express the benefits of library service in monetary terms.

A large volume of literature has gathered in recent years, which stresses on the need for methods of measuring performance in information centres. A variety of approaches have also been proposed. Many of these have been reviewed by Landau<sup>41</sup>, who has brought out the essential features of cost-reporting procedure. As is evident the vast majority of studies either treats the problem in a somewhat subjective way or relates it to specific library processes and systems.

In the following paragraphs an attempt is made to review the available literature under the above two categories.

A perusal of the available literature on the measurement of the quality of library services clearly brings out the difficulty of the task. Perhaps, this is the reason why no standard measurement technique has been evolved so far to measure library services. Most studies subjectively outline the characteristics and criteria by which effectiveness and benefits can be measured.

Gilchirst<sup>42</sup> identifies twelve characteristics which could provide potential benefits. These are, (i) response time-savings in time to answer enquiries, (ii) increase in complexity of enquiries leading to further time saving, (iii) reliability or accuracy of data, (iv) up to-datedness, (v) depth of data for products – including ease of comparison, (vii) presentation including ability to provide hard copy (viii) brows ability, (ix) user convenience, (x) feed back to users, (xi) feed back to manufacturers, and (xii) reliability of system.

Klement<sup>43</sup> suggests the adoption of “Entrepreneurial Model” propagated by David C. McClelland to increase library effectiveness. The basic characteristics of this model are; (i) risk taking as a function of skill, not chance-that is, decisiveness; (ii) energetic and/or novel instrumental activity; insistence upon individual responsibility; (iii) a need for knowledge of the results of decision (money is regarded as a measure of results; (iv) anticipation of future possibilities and (v) organizational skills.

Wessel<sup>44</sup> considers that there are four types of criteria which affect the measurement of effectiveness. These are, (i) policies and instructions which already exists; (ii) gathering mission statement of the parent organization which they serve; (iii) there exists a substantial body of library statistics which could form the basis of effectiveness criteria; (iv) utilization of certain management techniques.

Mott<sup>45</sup> on the other hand, states 3 basic criteria for effectiveness such as, organizing centres of power or routine service, qualitatively and efficiently. Secondly, organizing centres of power to change routines, i.e. adaptability whether symbolic or behavioural adaptation and subsequently, organizing centres of power to cope with temporarily unpredictable overloads of work, i.e. flexibility considering the stages of cost benefit analyzing. Magson<sup>46</sup> points out 5 such stages. These stages are, (i) activity function (by time and cost), (ii) cost activity (present situation), (iii) cost activity in alternative situation, (iv) activity of cost benefit by difference of alternative situation and the present situation, (v) benefit function analysis by substitution of present situation data in the activity function by time and cost.

There are also various steps involved in the study of cost-benefit analysis. According to Lancaster<sup>47</sup> these stages are, (i) definition of the objectives, (ii) identifying the various alternatives, (iii) determining the cost of various alternatives, (iv) establishing one or more model that relates to costs and lastly, establishing a criterion for ranking the alternatives. He also identifies 5 basic criteria for measuring benefits; (i) cost saving in using the system compared to another system, (ii) avoidance of loss of productivity (iii) improved decision making, (iv) avoidance of duplication, and (v) stimulation of inventions.

On the basis of all these characteristics and criteria, Majumdar<sup>48</sup>, while measuring the library effectiveness, analyses only five approaches and techniques in a cost-effectiveness analysis. These are; (i) description of alternatives, (ii) identification of pertinent measures of effectiveness, i.e. benefits, (iii) expression of both mission performance and cost as function of the characteristics of each alternative, (iv) estimation of appropriate value for equation parameters, and (v) computation analysis and the presentation of results.

Many measures have been employed in attempts to evaluate library performance. Obviously, not all of these measures are unique. They are, in fact, slight modification of one another. Even, Edward et al<sup>49</sup> in their article “Review of Criteria Used to Measure Library Effectiveness”, report the result of a survey of literature on measure of library effectiveness. This survey led to the formulation of six criteria concepts such as accessibility, costs, user satisfaction, response time, cost/benefit ratio and use.

The UNESCO “Hand Book for Information System and Services”, mentions that “benefits are usually more difficult to express and to measure”<sup>50</sup>. It prescribes the following criteria which may possibly help in measuring benefits of different information services; (a) cost savings in using system as compared with the cost of finding the needed information elsewhere, (b) avoidance of loss of productivity that would result if information sources were not readily available, (c) improved decision-making or reduction in the level of personnel required to make decisions, (d) avoidances of duplication or waste of research that has either been done before or proved unfeasible by earlier investigators, and (e) stimulation of invention (serendipity factor)<sup>51</sup>.

#### **4. Methodological Issues**

Periodical subscriptions constitute the largest segment of budget of academic libraries. It also happens to be the most complex operation involving a series of decisions in respect of ordering routines, uncertain budgeting, annual price acceleration, varying terms and conditions and irregular supply coupled with growing demands of the users.

In the light of the above, numerous studies have been undertaken to make the periodical services much more fruitful. One important area of such studies is the aspect relating to the cost of periodicals. Scholars have analyzed the cost of periodicals and periodical services from various points of view. On the one hand, there are users’ satisfaction or effectiveness studies and various kinds of budget and expenditure distribution studies. On the other hand, there are more rigorous and systematic types of cost study for library and information services including unit costing, cost-effectiveness and cost-benefit evaluation. Of the first set, users’ satisfaction or effectiveness has received significant attention of researchers.

#### **Effectiveness**

A valuation of effectiveness is an evaluation of users’ satisfaction. Such an evaluation should determine how well an information service or library as a whole satisfies the needs of its users. This type of evaluation is restricted to consideration of how well the service meets the expressed demands of users. Rout<sup>52</sup> presents a quantitative model to measure users’ satisfaction (Fig. 1). With the help of this model he has measured the users’ satisfaction over the important services offered by the Central Library, Sambalpur University. A scale ranging between 0 to 2 (i.e. Fully satisfied = 2, partially satisfied = 1, and not satisfied = 0) was used to quantify users’ satisfaction and which were statistically analyzed to obtain the final level of satisfaction for individual services.

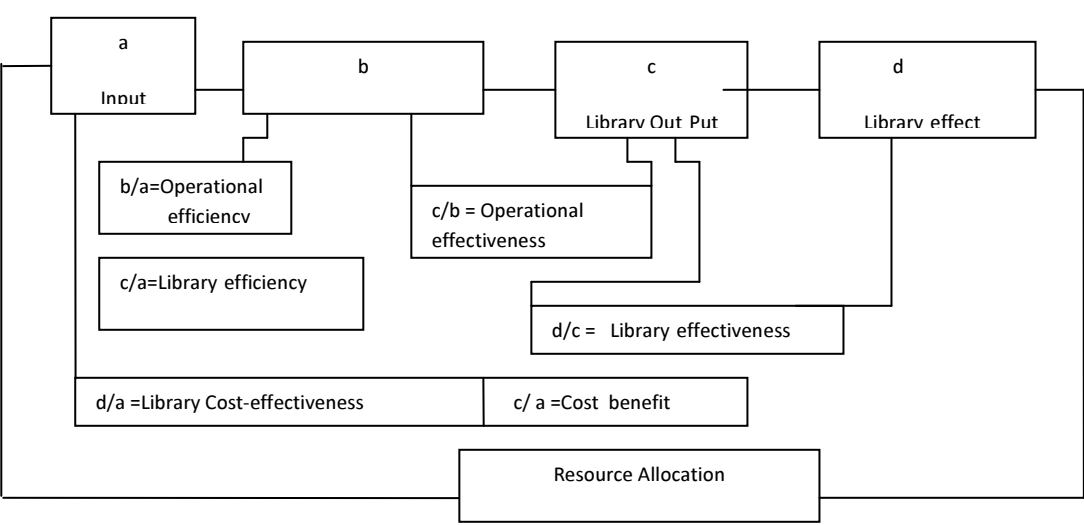


Fig 1: Library Operational Efficiency Measurement Model (Source: Rout, 1982, 5).

A few studies have specifically evaluated the use of periodicals. Satyanarayana<sup>53</sup> studies the utility of periodicals in Andhra University Library by conducting two months long survey of the users. Lack of easy accessibility (as the periodical section of the library is located on the fourth floor without lift facility) is ascribed to be the prime cause behind poor utilization of periodicals. A similar, but more exhaustive work is done by Ramaiah<sup>54</sup> to study the use of periodical literature in chemistry at the Central Science Library of University of Delhi (DUCSL) wherein, various suggestions are made to improve the service.

Among cost-accounting, cost-effectiveness and cost benefit analysis, the latter two as stated earlier, are the most difficult to measure particularly in case of social sciences. Evidently, cost-benefit analysis is undertaken by a limited number of scholars concerned with library and information science services. However, one comes across numerous works relating to unit-cost and cost-effectiveness evaluation of library services.

Unit cost:

An exhaustive work on unit cost calculation is presented by Dougherty and Heinritz<sup>55</sup>. It is suggested that “unit cost is the basis of cost accounting. It allows an organization to compare its performance with the performance of others engaged in similar work and to compare its performance for one period with another period. Unit costs also provide a certain power of prediction”<sup>56</sup>. It is obtained by dividing the total cost of producing a given number of units by the number of unit produced, i.e.

Unit cost        =        
$$\frac{\text{Cost of producing N unit of work}}{N}$$

The above mentioned significance of unit cost in assessing performance of any department or organization and its formula is reiterated in the UNESCO hand book<sup>57</sup>. To control resources carefully and effectively within the library it is essential to know the amount of cost incurred upon each of its activities and services. It means, the cost of each unit of activity/services, known as the unit cost, needs to be determined and standardized. Thus, in an attempt to determine the unit cost of the periodical section of Marathwada University Library and compare it with that of periodical section of Burdwan University Library, Deo<sup>58</sup> has calculated the individual cost of building, stationary, salary of the personnel, furniture, postal charges, electrical charges and cost of periodicals. It is assumed that determination of unit cost of different services of different libraries can help in controlling the cost by recognizing the activities, avoiding duplication of work and adoption of new techniques of work etcetera. Some even rate unit cost as a superior measure than that of ranking journals on the basis of citations<sup>59</sup>. In contrast, however, Robert<sup>60</sup> suggests that “it is unwise and misleading to use unit costs as the exclusive indicator of performance”.

### **Cost-effectiveness**

Cost-effectiveness deals with the relationship between level of performance (effectiveness) and the costs involved in achieving this level. Under costs, both the costs that relatively fixed (equipment purchase or rental, developmental costs etc.), costs involved in acquisition and indexing, and the costs that are relatively variable are considered. The performance of effectiveness of an information service can be measured in a number of different ways and different information services have different performance criteria. Scholars have attempted cost-effectiveness study of periodicals mostly based on Bradford’s law.

The traditional Bradford Method of ranking journals is based on the single unit of the number of relevant papers in the journal. No attempt is made to make the ranking more objective by relating the relevant items to the cost of acquiring the journal. It contains two major components:

- a) The suggestion that journals in a special subject field should be ranked in terms of their “productivity” or how many relevant items they produce in a year;
- b) A technique for modeling the total productivity of a set of journals on the basis of (a).

Virtually all subsequent work has concentrated on the development of the modeling technique (b)<sup>61</sup>. Indeed a whole new field of investigation has developed around the kind of ranked distributions, such as the Bradford and Zipf distributions, needed for this modeling process. But little attention has been devoted to the method (a) by which the objects of interest are ranked. Houghton and Prosser<sup>62</sup> investigate the use of the Bradford model as an aid to decisions on which journals a library should take but conclude that other factors relating to the cost of journals should be taken into account. Line<sup>63</sup> proposes ranking of journals in order of references per unit cost. Robertson and Hensman<sup>64</sup> have suggested improvement upon the Bradford’s original proposals in order to arrive at a more realistic picture. In this paper they discuss a number of alternative methods of ranking the journals contributing to a special subject field and how these methods relate to cost effectiveness and cost-benefit measures.

Robertson and Hensmans’ modified formulation has been applied by Raghvan and Salini<sup>65</sup> to journals subscribed to by the Central Food Technological Research Institute (CFTRI) library, Mysore. The foremost thing in their work was to assess the relevance of papers appearing in the journals subscribed to the CFTRI library. The period selected for the purpose of the study was the year 1975. For each journal the total number of relevant items (relevance judged by a panel of specialists regularly scanning every journal received in the library) published in 1975 was computed. This figure was divided by the subscription cost of that journal to yield a measure of relevant items per unit cost. The subscription cost and relevant papers were cumulated and graphically presented. This study is a further improvement and rationalization of Brooker’s method and traditional Bradford’s approach.

### **Cost-Benefit Analysis**

Cost-benefits refer to the relationship between the benefit of a particular product or service and costs of providing it. Generally speaking, benefits are more difficult to measure than performance (effectiveness) except that, in a commercial sense, benefits equate to return on investment<sup>66</sup>.

With information services various levels of benefits are evident. For example, a society or institution may, quite properly measure the benefits of its information services in terms of income from sale of publications or services and balance this income against production costs, i.e. calculate return on investment. It weighs costs against income benefits. On the other hand, a government agency may be partially subsidizing this information service and may adopt a broader view of its benefits in terms of the less tangible factors. Moreover, within the environment of information service, relationship between cost and effectiveness may be somewhat difficult to distinguish from the relationship between costs and benefits. For example, we reduce the average number of terms assigned in indexing, and thereby reduce the average indexing time per item. So the immediate benefit of this action is to reduce input costs. On the other hand, such an action is likely to have a very definite influence on the effectiveness of the system (the average precision of the system may increase and this in itself may be regarded as a form of benefit while the average recall will almost certainly decrease). In other words, this action has had an immediate observable benefit (in terms of cost saving at input), it will have a long range influence on the effectiveness of the system and it may have an even longer influence on the benefits of the services and products for the end user<sup>67</sup>.

The most effective and beneficial system is likely to be one that sets out to satisfy the great majority of the demands placed upon it, but not all of them. We can design a system capable of satisfying 90 percent of the users' requirements efficiently and economically but to satisfy the remaining 10 percent would require a disproportionate increase in cost and effort<sup>68</sup>.

Any experiment to measure the cost-benefit of a library or library service is likely to be costly. But it is clear that various levels of approximation are available. Cooper's<sup>69</sup> discussion on retrieval system is an example. Each item which is acquired for a collection could (in theory at least) be judged by its utility to the users, rather than simply by its relevance. This process might be somewhat complex. Nevertheless, a number of user studies of journals have been conducted. Chen<sup>70</sup> has studied using patterns of physics journals in MIT science library and has observed that 62.7 per cent of the journals were used only once during a 3½ month period. She also found that 90 per cent of the use had been covered by only 49 core journals out of 220 journals subscribed to in the library. Longlois Schulz<sup>71</sup> in a journal usage survey at the Applied Physics Laboratory Library of the Johns Hopkins University found that 7.5 per cent additional shelf space could be added by deleting 9.6 per cent of journals which were not being used by the researchers. Cambell<sup>72</sup> in a survey at the Wolverhampton Polytechnic Library found that 106 journals out of 358 were consulted not more than once during a five month survey period. It was also observed that 80 core journals provided 75 per cent of the total use. Houghton and Prosser<sup>73</sup> have employed such statistics to their study.

Ramaiah<sup>74</sup> has made an attempt to identify the ore periodicals in Chemistry and its allied subjects at the DUCSL, Delhi. Although such studies do not undertake a cost-benefit analysis of subscribed journals, they provide a reasonable approximation to it.

Unfortunately, applied examples of cost-benefit analysis to periodical services or for that matter any library service is highly limited. Magson's work<sup>75</sup> can be cited wherein, he has taken up a "specimen analysis" of library functions and activities. Robertson and Hensman have used data relating to the set of journal articles published in 1969 and selected by the Biodeterioration Information Centre as being relevant to biodeterioration. The prime objective of their study was to use the various ranking methods (Bradford's method) to answer the following questions:

- a) How can we acquire 90 per cent of the items at minimum cost?
- b) How can we save 10 per cent of the cost of acquiring all the items with minimum loss of items? <sup>76</sup>

Even here, the authors themselves admit to have described the various levels of approximation to cost-benefit decisions on the basis of which a library should take journals. They have examined various levels up to cost-effectiveness rather to a true cost-benefit measurement.

Mahapatra<sup>77</sup> deals with the application of industrial cost techniques following the work of Raffel and Shisko<sup>78</sup> who applied it in a university library in USA. This is a sort of cost-benefit analysis that looks at policy making situations. The study becomes more illustrative than applied. Biswas and Sen<sup>79</sup> have attempted to measure cost and benefits separately in their study in terms of use frequency of the journals by different users and savings achieved through different methods of subscription respectively. They also conclude that the cost of a journal is not directly related with its use. A similar study has also been undertaken by Ojha and Das<sup>80</sup>.

Dealing with the concept of cost-benefit analysis in libraries both theoretically as well as empirically, Sridhar<sup>81</sup> believes that it is difficult to apply the technique to libraries. However, “cost per use” of a journal appears to him as a useful ratio for assessing journals subscribed to by a library. His empirical study of cost-benefit analysis of journals indicates that such a study does not answer all questions, but provides an additional dimension over and above what appears in a simple user study to an understanding of journal usage. He rather concludes that many non-economic factors dominate the decision to subscribe to a journal and a cost-benefit analysis can increase the awareness of librarians, administrators and others concerning costs and use patterns, but cannot be truly effective without the help of intuitive value judgment.

## 5. Conclusion

The ideas gathered from the foregoing discussion may be summarized as under:

The three measurement techniques of library performance, viz. cost-accounting, cost-effectiveness and cost-benefit, have not been attended by scholars at an equal footing. Of the three, cost-benefit analysis of library and information services has remained by and large a neglected field of investigation. The most probable and immediate explanation that can be ascribed to the situation is the difficulty of conducting cost-benefit analysis with accurate quantification. A great number of scholars are unanimous in their view regarding the difficulty.

As is evident, works relating to cost-benefit analysis of periodicals is rare, and of other library services is negligible. However, some of the available literatures provides significant guidelines (e.g. Robertson and S. Hansman, 1975) for future research. Unfortunately application of these guidelines has been quite poor.

Considering the multitude of tangible and intangible features of library and information services, it is not very surprising that a single clear cut frame is yet to be evolved to measure their benefits. May be in the coming years, particularly with the help of sophisticated computer software, the task can be accomplished but qualitative reference can never be measured in terms of cost and time.

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## Chapter 24

### Collection Development: An Experience At Smt.Hansa Mehta Library (Shml); The M. S. University Of Baroda

Mayank Trivedi  
University Librarian, The Maharaja Sayajirao University of Baroda  
Vadodara-390 002, India  
[libmsu@gmail.com](mailto:libmsu@gmail.com)

Ranjita N. Dash  
Librarian, Babaria Institute of Pharmacy, Varnama  
Vadodara, India  
[ran\\_dash2006@yahoo.co.in](mailto:ran_dash2006@yahoo.co.in)

**Abstract.** *Academic library collections were previously composed of print materials. The selection of books and periodicals were through familiar procedures, and budgets were decided on the basis of years of academic experiences and research needs of the University as well as on the publishing trends. However, the advent of electronic resources has transformed the work of collection development and their availability is highly demanded. The collection development program of Library system has always strived to provide information in the most appropriate formats. The authors have shared their experience about the collections at Smt. Hansa Mehta Library, The M S University of Baroda, which is in vibrant mode for developing the library as a digital library by creation of digital collections and Institutional Repository. There is huge thrust and also increased awareness for the use of e-resources and open source resources at Smt. Hansa Mehta Library.*

**Keywords:** Library Collection, Library Resources, University Library, Collection Development Policy

#### 1. Introduction

Collection means the holdings of materials. In the context of library, collection means several types of documents - Books, Periodicals and Serials, Government Publications, Academic Thesis and Dissertations, Research Reports, Annual Reviews, Conference Proceedings, Pamphlets, Standards and Specifications, Patents, Trade Literature, Maps, Atlases, Globes, Photographs, Illustrations, Painting, Microfilms, Microfiches, Rare Books, Manuscripts, Slides, Audio Cassettes etcetera and with the advent of electronic media like computerized databases, Floppies, CD-ROM, DVD, e-journals, e-books, e-thesis, Internet etcetera in addition to books as principal constituents. The present paper highlights the various trends in collection development at Smt. Hans Mehta Library ;The M S University of Baroda.

#### 2. Collection Development: Scope And Objective

Collection development involves understanding the nature of requirement of users and anticipating their demands. “It is a systematic activity well planned from the budget provisions made to any library”<sup>1</sup>. It has to do with determining the location of copies of materials. It is also at times referred only to the selection of materials for acquisition<sup>2</sup>, because selection itself is an important aspect of collection development. A carefully selected collection is an asset for a library. In other words, selection of items and the actual process of acquiring them constitute in itself a wide area of professional work. Systematic, reliable and continuous collection evaluation and management is more important in getting appropriate feed back for collection development process and also to identify obsolete, irrelevant and unused part of collection. Thus, collection development which is one of the key activities of librarianship is concerned with information contained in documents.

A great deal of work is being done to develop and organize collection development in libraries, since it involves the selection and acquisition of reading materials and also involves a well thought over plan to develop existing collection. In both the cases, primary governing factors are availability of funds, ample space and staff to render service to the users at the right time. If these conditions are satisfied one can infer that collection development is appropriate.<sup>3</sup>

The objective of collection development is to provide “Library Service for the Community”. Besides, the collection development should be able to:

- (1) Meet the needs of the majority of the clientele.
- (2) Constrain the duplication of documents or near text of documents.
- (3) Control the bias or over attention to any particular section of clientele.
- (4) Buy books which have greater half life i.e. the contents of documents should be such that is valuable to its clientele for a longer period.
- (5) Buy on a modular basis, i.e. spread out document acquisition on a modular structure.
- (6) Meet the library networks demand for core subject in which the host organization of the library belongs.
- (7) Identify the acquisition of a balanced set of documents from what is published, to what is required and to what can be bought efficiently.
- (8) Enhance the value of the documents already bought.
- (9) Help the general knowledge of its clientele in all the spheres of its activity.
- (10) Understand the cost-benefit and cost-effective aspects of the documents acquisition<sup>4</sup>.

### 3. Definition

With increase in the demand of collection in libraries, there arose the concept of ‘collection development’. Collection as defined by the Webster Dictionary is a “publication containing a variety of works”. However, in the connotations of library science, the term collection refers to book selection, library acquisition, building the collection and developing it. All these terms are used to describe the process of building a collection in the library, following certain canons and principles. Today, ‘collection development’ has replaced all these terms.

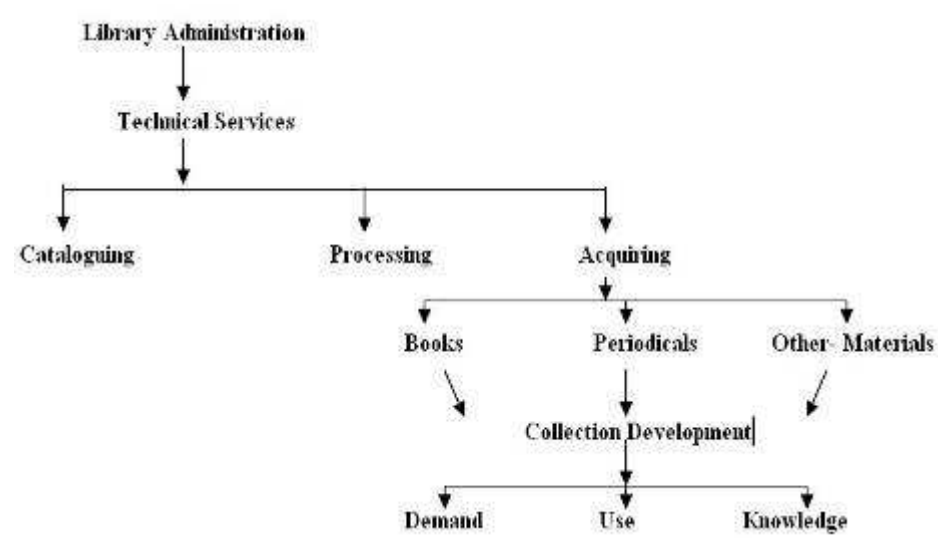
Collection Development is a universal process for all types of libraries. It is a dynamic process which involves the information professionals as well as the community of users. It is generally geared to the requirements of the identified clientele. The requirements must be satisfied with the help of a standard and balanced collection of library materials<sup>5</sup>. These constitute the holdings of a modern library.

Collection development is defined as “a process of making certain the information needs of the people using the collection which are met in a timely and economical manner using information resources produced both inside and outside the organization”<sup>6</sup>. According to Encyclopedia of Library and Information Science, collection development is defined as “the process of identifying the strength and weakness of a library’s materials collection in terms of patron needs and communicating resources and attempting to correct existing weakness if any. This requires the constant examination and evaluation of the library’s resources and constant study of both patron needs and changes in the community to be served”<sup>7</sup>.

An analysis of this definition identifies six elements of collection development such as:

- (1) Objectives of the library;
- (2) Users need;
- (3) Library policies;
- (4) Selection, acquisition and weeding;
- (5) Evaluation and;
- (6) Implementation.

Now, it is a clear fact that library cannot function without an appropriate collection. The efficiency of library service is governed largely by the strength of the library collection both in terms of quantity and quality<sup>8</sup>. In a nutshell; it can be defined as the systematic building of a library collection based on meaningful data rather than subjective choice. The process of collection building includes selection of current as well as retrospective material, rejection of obsolete and unwanted materials and evaluation of the existing collection. Ranganathan’s two laws of Library Science fulfill the ethics of collection development. “Every book its readers” and “every reader his/her book”. In other words, no reader should have the portal of a library without getting the book of his need and every book’s existence in the stock should be justified. This naturally expects that the librarian ought to be very cautious in selecting of journals. Hence, the libraries should try to acquire all types of materials to satisfy their users and keep them abreast in their field of interest. Parry Commission also opines that “the policy document of a university library will consider all subject fields which are to be developed in relation to the needs of the students and staff of the university, all types of collection and all types of materials whether printed or not.....”<sup>9</sup>. Collection development is one of the most challenging and imaginative process of the library profession whereby, the library staff acquires a variety of materials to meet the demands of the users. The meaning to the term collection development has undergone considerable change with the progress in the field of librarianship. “Collection Development Policy”, “Selection Policy’ and “Acquisition Policy” are the terms used interchangeably by the librarians but they are by no means, synonymous to each other. They represent a hierarchy in which collection development, being a planning function is placed at the highest level. Selection is the second level of decision making and acquisition the third level. It is the process by which library acquires various materials. Hence, selection and acquisition policies, though independently different, form the content of the collection development plan<sup>10</sup>.



In today’s library structure, collection development stands as an individual department having strong relationship with acquisition process.

**4. Traditional Collection Development: An Overview**

Building suitable collections for scientific and technical libraries is a process of prime importance. Many users, when asked to evaluate scientific and technical libraries, put collections on high priority.

The classifications of traditional library collection according to Ranganathan, Hanson and Grogan are as follows:

**• S. R. Ranganathan’s Classification**

- |                   |                                       |
|-------------------|---------------------------------------|
| Conventional:     | Books, Periodicals, Maps, and Atlases |
| Neo-Conventional: | Standards. Specifications, Data       |

|                   |                                                        |
|-------------------|--------------------------------------------------------|
| Non-Conventional: | Microforms, Audios, Visuals, Audio-visuals             |
| Meta-document:    | Directly produced document without human intervention. |

• C. W. Hanson’s Classification

|            |                                                                                                          |
|------------|----------------------------------------------------------------------------------------------------------|
| Primary:   | Books, Periodicals, Dissertations, Reports, Patents, Standards, Trade Literature, Conference proceedings |
| Secondary: | Catalogues, Bibliographies, Indexes, abstracts, Indexing and abstracting journals                        |

• Denis Grogan’s Classification

|            |                                                                                                                                                             |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Primary:   | Periodicals, Research reports, Conference proceedings. Patents, Standards, Theses „and Dissertations, Trade Literature                                      |
| Secondary: | Reference books, Indexing and abstracting journals, Reviews of progress, Text-books, Monographs, etc.                                                       |
| Tertiary:  | Bibliographies of bibliographies, Yearbooks, Directories, Guides to Literature, Lists of research in progress, Guides to libraries, Guides to organizations |

Collection development is the systematic building of a library collection based on meaningful data rather than subjective choice. It is the process of assessing the strength and weakness in a collection and then creating plan to correct the weakness and maintain the strength. The process of collection building includes selection of current as well as retrospective material and the evaluation of the existing collection.

The basic steps involved in traditional collection development can be outlined as follows.

1. Formulating a collection development policy (including a needs analysis).
2. Establishing a budget and maintaining a record of funds.
3. Receiving notification of the resources.
4. Evaluation of the publications.
5. Prioritization of the publications.
6. Purchasing or subscribing to the publications (current/back files).
7. Delivery of the publication to the readers.
8. Monitoring usage of the publications.
9. Subscription renewal or cancellations.

A Collection Development Policy (CDP) will boost the library staff for better performance and also facilitate continuous, consistent and balanced growth of library collection. A CDP has a great impact on all the activities of the library. The policy should consider:

1. What forms of material are to be emphasized? e.g. films, recorded or printed material only.
2. What subject fields are to be emphasized?
3. What are the levels of materials to be considered? e.g. scholarly, specialized or popular.
4. Who will select the material?
5. Who will decide the distribution of fund for each discipline?

The policy statement should be under fairly constant review and should certainly be reviewed frequently. In recent years, information technology has advanced to such an extent that its impact on libraries is significant, particularly developments in the field of;

1. Electronic Mail
2. Electronic Publications
3. Internet

- 4. CD-ROMs
- 5. Multimedia and Personal Digital Assistant (PDA)
- 6. Digital Libraries, Virtual Libraries and Data Banks

These factors have forced the librarians to change the way they are now functioning. In this context, librarians are giving more importance to accessing the other library’s collection (resource sharing) rather than possessing almost all documents on a given subject. In the electronic environment a publication needs to be owned to be readily accessible. An electronic collection can be more flexible and dynamic, having wider variety<sup>11</sup>.

5. E-Collections

The library environment is currently under going a rapid and dynamic revolution leading to new generation of library collection with an emphasis on e-resources. On one side, there is an increasing demand for good library collection in terms of large amount of data/information and on the other hand, the publishing media is striving hard to support this demand at lightning speed by way of e-publications as well as on-line access. As a result, a large number of e-resources are published on all subject areas. Therefore, library needs to adopt electronic media for its collection development in a better way to fulfill the requirements of users. With advancement of technology the libraries are moving towards digital resources, which are found to be less expensive and easily accessible. These are more helpful especially to the type of users who have limited time to access the libraries from out side by the commonly available e-resources mainly CD-ROM, OPAC, electronic publications (e-journals, e-books, e-thesis etc.) and Internet<sup>12</sup>.

The classification of library collection in present electronic era is shown in **Fig-1**

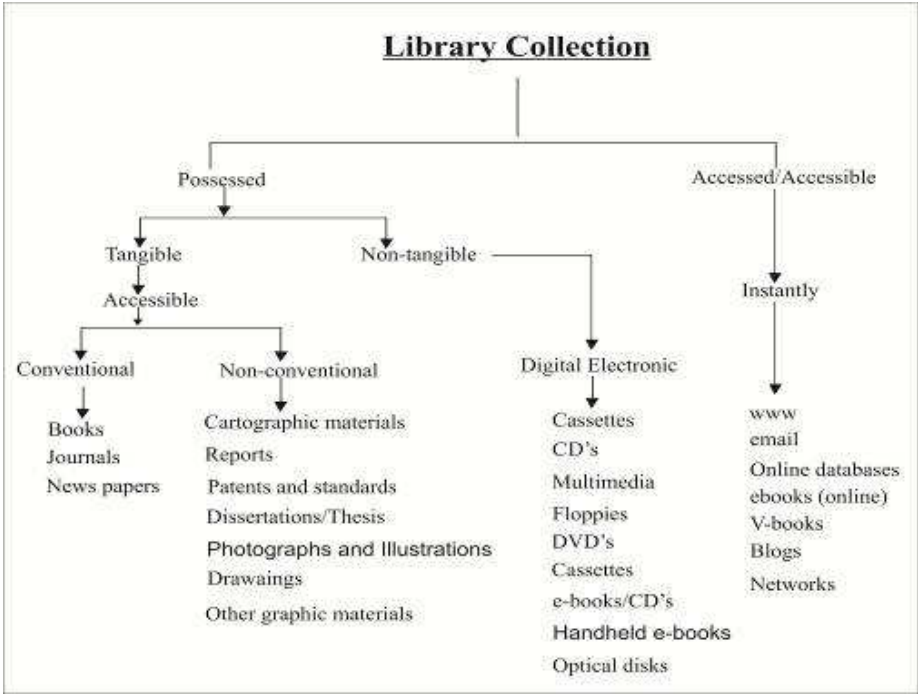


Fig-1

The formats of library collection in present electronic era is shown in **Fig-2**

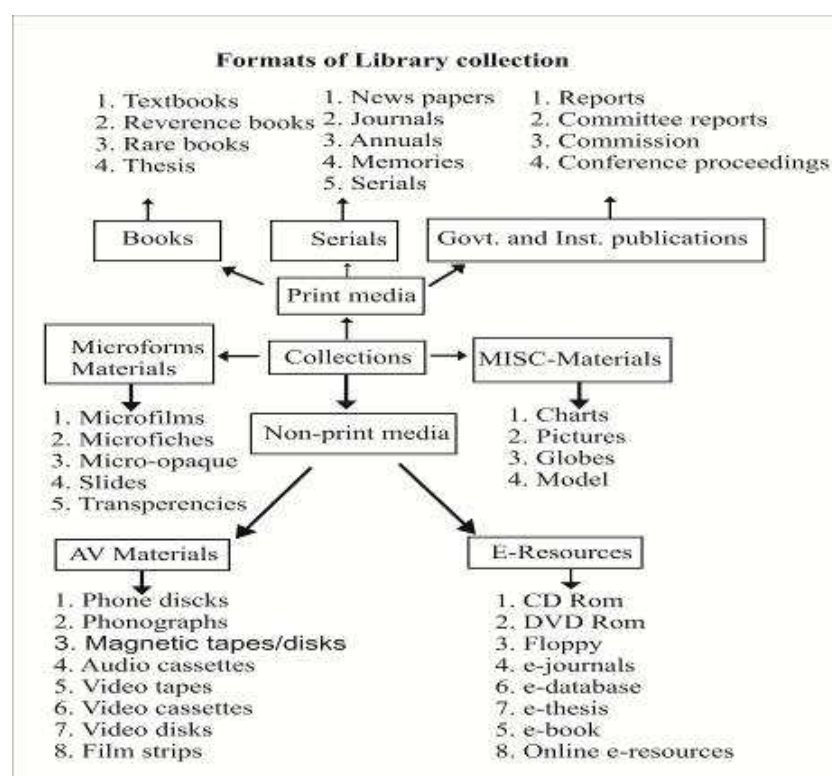


Fig-2

## 6. Collections Development: Requirements

- a. A policy well done;
- b. Analysis of users' needs;
- c. Development of a libraries (inter and intra) communication policy;
- d. Budget and resource allocation;
- e. Contracts negotiations;
- f. Macro-evaluation of collections;
- g. Micro-evaluation of collections for the preservation/conservation or thinning of collections;
- h. The selection of electronic resources tends to be a group activity rather than an individual activity;
- i. Evaluation System.

Goals and objectives of the institution are of primary importance in identifying priorities of collections development. Therefore, library's objective is to contribute to maximize the organization's profits. It is noteworthy that the collections development is a continuous process that requires more attention from decision makers. Therefore, when designing the collections development policy should demonstrate the important factors that must be maintained.

- a. Organization philosophy.
- b. Organization nature.
- c. High standards of contents installed.
- d. Relevance of content.
- e. Cooperation and networking.
- f. Access x possession.
- g. Relationship with other units and information services.
- h. Availability of budget and resources.
- i. Societies.
- j. Policy review<sup>13</sup>.

## 7. Functions Of Collection Development

Collection development has a cluster of functions which together shape the holding of the library.

Fig-3 clearly depicts that collection development is a dynamic, ongoing cycle repeating the functions one after another every year and involving both the library and the selecting staff. The last function of collection evaluation takes us back to the first function "Users analysis" and determining their needs<sup>14</sup>.

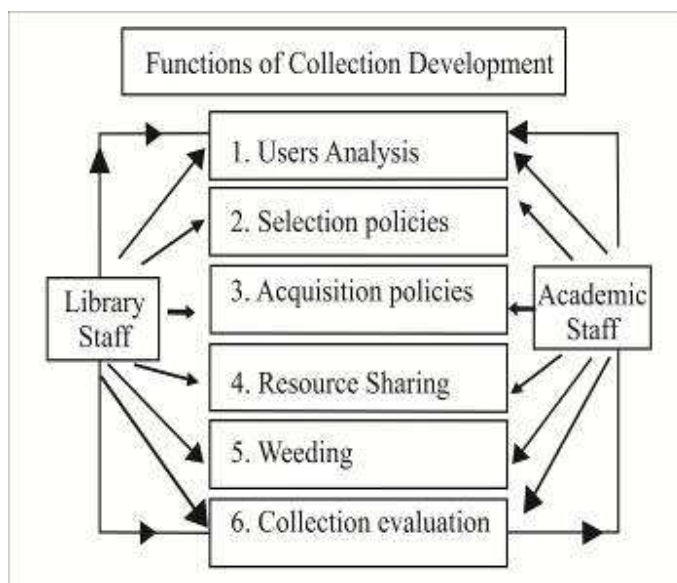


Fig-3

### 8. Need For A Collection Development Policy

There is an immediate need for libraries to adopt collection development policy bearing in mind their peculiar problems with regard to increasing lack of space, limited budgets and inadequate staff. A collection development policy statement becomes an indispensable tool because it enables the book selectors to work with greater consistency towards defined goals. It can also enable them to use limited funds more wisely resulting in stronger collection. Due to ever increasing inflation and decreasing purchasing power of the libraries, it has become necessary for the libraries to develop techniques to ensure that limited collections are developed to meet the pressing need of their users. Moreover, the worth of a library collection varies with its extent, utility and uniqueness<sup>15</sup>. Collection Development Policy is a prior statement of specific long term collecting goals<sup>16</sup>.

So, in the age of resource crunch and information explosion it is not practically possible for any library to satisfy all the information needed by its users. The spiraling cost of publications and budgeting limitations puts forth a challenge to the libraries for serving their users. Therefore, an intelligent librarian needs a collection development policy prepared by a group consisting of the librarian, the faculty members and the users.

### 9. Factors Affecting Collection Development

The factors which would immensely help the librarian to be more alert to build up a user responsible collection are:

- a. The institution;
- b. The user community;
- c. The present collection;
- d. Human and financial resources;
- e. Purposes and objectives of the library;
- f. Duplication;
- g. Information availability;
- h. Financial support;
- i. Buying power;
- j. para-professional and non-professional work<sup>17</sup>.

At present, with limited funds the unlimited demands are to be met and this is the crux of the problem posed before the library to go for a qualitatively comprehensive collection.

The facts giving rise to increased demands are:-

1. Awareness about the documents is increasing;
2. Need for improved bibliographical sources, abstracting and indexing services;
3. Availability of database and its easy searches.

These factors have a direct impact on the acquisition programme of the library. Thus, of all the responsibilities of a librarian, collection development is the most important and it has to be seen that the most needed reading materials are added to the library to meet the current and foreseeable needs of the users.

### **10. Problems In Collection Development**

The problem of collection development has to be examined in the context of 'existing collection and its utilization'. The existing collection should be developed in such a way that it can satisfy "laws of library science"<sup>18</sup>. The collection of the library should satisfy, not only the present needs but also the future needs of the organization and further it should also help the users to keep themselves abreast of the new developments in their own fields of specialization.

Among the various functions performed in a library, the most important function is the development of collection of information materials, which is need-based, relevant both in terms of quality and quantity, user-oriented, and is the most difficult and challenging job.

The other problems which are associated with the collection development are: lack of community analysis and use studies, lack of collection development policies, problems in selection of information materials, lack of weeding, storage, preservation and evaluation programmes need for development of knowledge, skill and attitudes<sup>19</sup>.

The major forces which create serious impediment in successful implementation of collection development programme are:

1. Unavailability of materials
2. Policy of funds
3. Changes in user needs.

Besides, the other problems are:

1. Increase in volumes of periodicals that come out from the ever growing number of publishers.
2. Relentless rise in prices of periodicals,
3. Fluctuations in the exchange rates of foreign currencies.
4. Unfair trade practice that are followed by some of the book sellers, distributors and publishers,
5. The restriction on import, especially of non-book materials"<sup>20</sup>.

Hence, in order to develop or perfect balanced need-based, user-oriented and user centered collection, the librarian should take special care to have a preliminary survey of library materials before a decision is taken as to what type of reading materials are to be acquired, especially in view of the rising cost of documents, devaluation of currencies etcetera.

### **11. Shrimati Hansa Mehta Library**

Smt. Hansa Mehta Library (SHML), the University Library of The Maharaja Sayajirao University of Baroda, was established in 1<sup>st</sup> May 1950. The teaching programme covered at Graduate and Postgraduate levels under various faculties such as Science, Arts, Commerce, Management, Engineering, Pharmacy, Medicine, Homeopathy, Home Science, Law and Education includes Postgraduate Degree Courses, Postgraduate Diploma Courses, Diploma Courses, and Advanced Certificate Courses. Undergraduate Courses are taught in the colleges or institutes affiliated to the University. At the time of establishment of the M.S. University of Baroda, a collection of 25,000 books belonging to the two state Libraries, the Huzur Political Office and

Secretarial Library, were handed over to the University Library. Thus, the University Library was established with this core collection, which finally emerged as an academic library. Dr. Rajendra Prasad, the President of India, had laid the Foundation stone of Smt. Hansa Mehta Library of the Maharaja Sayajirao University of Baroda on 16<sup>th</sup> November 1954.

There were several colleges in Baroda - Baroda College (for Arts), Science Institute, Commerce Colleges, Engineering, and Teacher's Training College etcetera. These colleges had libraries of their own. These libraries continued to remain as Faculty Libraries and were administered independently. Thus, the University Library System was established on 01-05-1950, which was housed in the central block of old Residency office Building.

## **12. University Library System (ULs)**

Considering the unitary structure of this University, the first University Librarian Late Dr. C. P. Shukla propounded the existing structure of the University Library System (ULS). He was a pioneer in introducing the concept of Integrated Library System way back in early 1950s in the University by putting constituent chain of libraries under the umbrella of University Library (Central Library). In the year 1955, the University authorities laid down a comprehensive policy for the library services; it was decided that in order to achieve efficiency and uniformity, all the libraries under the University have to work under the guidance of the University Librarian, that resulted in the implementation of a common scheme of classification (Library of Congress Classification) and cataloguing and developed a Union Catalogue which facilitated to locate reading material across the University. Accordingly, it was also decided that the libraries of the faculties of Arts, Science, Commerce, Education and Psychology and Intermediate College should be merged with the University Library.

ULS caters to the academic and research needs of teachers and postgraduate and undergraduate students of all the 13 constituent faculties comprising of 85 teaching departments and 5 institutes. Smt. Hansa Mehta Library system consists of central library and 14 faculty libraries.

Out of the 14 constituent libraries under the University Library System, 8 libraries offer library operations through a smart card using bar code technology and are fully automated. Circulation Section is one of the prominent sections, which facilitates the users to borrow books for their home reading on the basis of their category of patron privilege.

The existing building of the Smt. Hansa Mehta Library (University Library) was designed with great foresight and a high level of structural marvels. The library is housed in a modular structure building having different sections. The total built up area of the Library is 80,025 sq. ft. The readers can enter from both the sides of the building and pass through the circulation counter to get into the Library's Reading Room and stacks where the books are housed.

The first floor of the building is the prime functional area. To have proximity and coordination among various sections, the service areas viz. Circulation Section, Reading Room with curricular collection, Reference Section and Journal Section are all on the Northern part of the building. Administrative wing and behind the curtain sections viz. Acquisition, Technical Processing Unit and Computer Console are housed on the southern part of the building.

The ground floor is used for books, bound journal collections and photocopying and cloakroom facilities for the readers. The mezzanine floor accommodates about 500 readers, books and in-house binding unit.

It has more than 22,000 active members, which accommodates at a time 1,500 readers and is having a large reading room of 10,600 sq. ft. which can accommodate 1,100 students at a time and is open to readers from 8.00 am to 10.00 pm i.e. 14 hours a day throughout the year except on National holidays. It covers the north Side of the building, in order to have a continuous natural light throughout the year.

The books of the library are stacked on two floors in the Stack Rooms. These Stack Rooms have the same dimensions as the Reading Room with an additional sitting capacity of 500 plus readers.

## **13. Library Collections**

The total library (SHML) holdings exceed 7, 88,984 books in English, Hindi, Gujarati, Marathi and Sanskrit, Urdu and several foreign languages, 74,413 bound volumes of periodical, 127 National Journals, 182 International Journals, 5,500 E-Journals, 12,000 Dissertations/Theses, 2,300 CDs of books, 23 Video Cassettes, 32 old photos in digital form, 117 Maps and 37 books in digital form.

**Present Composition and Holdings of the University Library System of the University**

| <b>SR. NO.</b> | <b>NAME OF THE LIBRARY</b>                                              | <b>HOLDINGS</b>                   |
|----------------|-------------------------------------------------------------------------|-----------------------------------|
| 1.             | Smt. Hansa Mehta Library                                                | 4,56,033                          |
| 2.             | Sir Sayajirao Memorial Trust (SSMT) Library                             | 4,56,033 Combine with H M Library |
| 3.             | Prof. T. K. Gajjar Library, Faculty of Technology & Engineering.        | 1,12,670                          |
| 4.             | Polytechnic Library, Polytechnic College                                | 41,170                            |
| 5.             | Faculty of Fine Arts Library.                                           | 11,195                            |
| 6.             | Faculty of Management Studies Library.                                  | 5,514                             |
| 7.             | M K Amin Arts & Science College and College of Commerce, Padra Library. | 14,750                            |
| 8.             | Faculty of Performing Arts Library.                                     | 13,077                            |
| 9.             | Faculty of Social Work Library                                          | 13,499                            |
| 10.            | Center for Advance Studies in Education (C. A. S. E.) Library           | 18,959                            |
| 11.            | Oriental Institute Library                                              | 49,347                            |
| 12.            | Water Resources Engineering & Management Institute's (WREMI) Library    | 1,983                             |
| 13.            | Baroda Sanskrit Mahavidyalaya Library                                   | 5,244                             |
| 14.            | Department of Biochemistry Library (Faculty of Science)                 | 789                               |
| 15.            | Faculty of Law Library                                                  | 7,305                             |

- **Special collection**

The library has some special collections

- **Baroda (state) collection**

Baroda (State) Collection of Smt. Hansa Mehta Library is a unique historic collection of Administrative, Legal, Educational and other documents and publications of the Baroda State of Pre-Independence Era. The collection is rich in books on History, Economics, Education, Law and Public Administration etcetera.

Special publications like the Maharaja's visit to District and to Foreign countries and visit of foreign dignitaries invited by the Maharaja, all administrative developments of the State, Laws and Acts passed by the Baroda Government, Inquiry Committee Reports, Government Orders, facilities provided by the Baroda Government for industries, rules of Business of the Council of the State, public lectures of eminent people, Rituals to be followed in the Temples, King's Silver Jubilee Celebrations, Judicial system in Baroda State, documents of the Archaeology Department of Baroda State etcetera are preserved under this collection. This collection is of prime importance for the study and research of the history and the functioning of various States of Pre-Independence period, especially pertaining to the Baroda State of Gaekwads. It contains some of the rare administrative documents of the British Era. The available books are in print form of early 19th century to the 1950's.

- **Rare books collection**

Rare books include books dated back to the sixteenth century. Approximately 3,500 books are preserved in this precious collection, which comprises of some noteworthy titles, which are out of print.

- **Prof. Balvantrai Kalyanrai Thakore (B.K.T.) collection**

It is a unique collection of 3,985 titles of Prof. Balwantrai Thakore, an eminent literary figure in Gujarati literature. This collection includes variety of literary forms such as Bhasha Shastra, Old ejoyanati, Kavya, Natak-Natika, Novels, Lekh-nibandh, Criticism, Vivechan, Praveshak, Charcha-Patra, Avlokan, Nivedan, and letters etcetera by Prof. B. K. Thakore.

The Library has a rich collection of more than one lakh bound journals, out which some belonging to the nineteenth century are available till date. A few of these are listed below.

|    |                                                                                        |
|----|----------------------------------------------------------------------------------------|
| 1. | Journal of Royal Asiatic Society, Volume 1; 1834 onwards                               |
| 2. | Annals of the American Academy of Political and Social Science, Volume 1; 1890 onwards |
| 3. | Economic Journal, Volume 4; 1894 onwards                                               |
| 4. | Geographical Journal, Volume 1; 1893 onwards                                           |
| 5. | Proceedings of the Aristotelian Society, Volume 1; 1890 onwards                        |

Some noteworthy Indexing and Abstracting Journals are also being subscribed as listed below.

|                                                |                     |
|------------------------------------------------|---------------------|
| Biological Abstracts                           | – 1942 to till date |
| Current Contents: Life Sciences                | – 1963 to till date |
| Dissertation Abstracts International Section A | – 1973 to till date |

|                                           |                     |
|-------------------------------------------|---------------------|
| Chemical Abstracts                        | – 1912 to till date |
| International Political Science Abstracts | – 1952 to till date |
| Nutrition Abstracts and Reviews Section A | – 1976 to till date |
| Nutrition Abstracts and Reviews Section B | – 1976 to till date |
| Physics Abstracts                         | – 1910 to till date |
| Psychological Abstracts                   | – 1946 to till date |
| Physical Reviews A                        | – 1970 to till date |
| Physical Reviews B                        | – 1970 to till date |
| Physical Reviews C                        | – 1970 to till date |
| Physical Reviews D                        | – 1970 to till date |
| Sociological Abstracts                    | -1970 to till date  |

#### 14. Electronic Resources

Information and communications technology has a major impact on materials for research. It is changing the shape both of primary resources like texts, images and data and secondary resources like indexing, abstracts etcetera. Now web based electronic resources have become most popular tools for academic research. It is because e-resources are an up-to-date source of information and they can be accessed from any computer, which is connected to the campus network and the Internet. Besides these e-resources support searching capabilities, timely access and other unique features like links to related items, reference linking etcetera.

**E-Books Total = 869**

**E-journals free subscribed by ugc-infonet consortium total = 6,087**

| UGC-Infonet Consortium        |                  |                |
|-------------------------------|------------------|----------------|
| Publisher Name                | No : Of Journals | Coverage       |
| American Chemical Society     | 31               | Vol. 1 onwards |
| American Institute of Physics | 19               | 1997 - onwards |

|                                                              |                                       |                |
|--------------------------------------------------------------|---------------------------------------|----------------|
| American Physical Society                                    | 8                                     | 1997 - onwards |
| Annual Reviews                                               | 31                                    | Last 10 Years  |
| Cambridge University Press                                   | 189                                   | 1997 - onwards |
| Economic and Political Weekly                                | 1                                     | Current        |
| Elsevier Science - Science Direct                            | 1000 + (10<br>Subject<br>Collections) | 1995 - onwards |
| Emerald                                                      | 29                                    | 2001 - onwards |
| Euclid Project                                               | 18                                    | 2002 - onwards |
| Institute of Physics                                         | 36                                    | Vol. 1 onwards |
| JCCC - 8000 Plus Instant Access                              | 8000+                                 |                |
| JSTOR - Archival Access                                      | 582                                   | Vol. 1 onwards |
| Nature                                                       | 1                                     | 1997 - onwards |
| Oxford University Press                                      | 169                                   | 1997 - onwards |
| Portland Press                                               | 4                                     | 1996 - onwards |
| Project Muse                                                 | 293                                   | 1999 - onwards |
| Royal Society of Chemistry                                   | 23                                    | 1997 - onwards |
| SIAM Journals (Society for Industrial & Applied Mathematics) | 13                                    | 1996 - Current |
| Springer link                                                | 1200                                  | 1997 - onwards |
| Taylor and Francis                                           | 1100                                  | 1998 - onwards |
| Wiley Online Library                                         | 908                                   | 1997 - onwards |

**CD-ROM Data Base**

| Sr. No. | Electronic Databases                        |
|---------|---------------------------------------------|
| 1       | Taxmann's Tax & Corporate Website           |
| 2       | Capitaline Plus Website                     |
| 3       | EBSCO Database Website                      |
| 4       | Prowess Data Base UP to June 09-May 10      |
| 5       | Indian Standards Complete set in Networking |

**Electronic Resources Subscribed To In Smt. Hansa Mehta Library: (Full Text):**

**(a) Business Source Premier (Full text online database of EBSCO):** This database provides comprehensive full text coverage of more than 7,400 regional business publications. Regional Business News incorporates coverage of 75 business journals, newspapers and newswires from all metropolitan and rural areas within the United States. This database is updated on a daily basis.

**(b) Academic Search Premier (Full text online database of EBSCO):** The world's largest academic multi-disciplinary database, Academic Search Premier, provides full text for more than 4,700 publications, including full text for more than 3,600 peer-reviewed journals. Its coverage spans virtually over every area of academic study and offers information dating as far back as 1975. This database is updated on a daily basis via EBSCO host.

**(c) Wilson Social Science Abstracts (1984-2000):** Produced by H. W. Wilson Company, it is a bibliographic database that cites articles from more than 420 English language periodicals published in US and elsewhere. The coverage includes a wide range of inter-disciplinary fields incorporating an array of Social Science journals.

**(d) EconLit:** The bibliographic database published by American Economic Association is the world's foremost source of references to literature in Economics. It is an expanded version of the Journal of Economic Literature (JEL) and is a reliable source of citations and abstracts to research in Economics, dated as far back as 1969. It indexes journal articles, books, dissertations, working papers, conference proceedings, collective volume articles and book reviews from 600 international economic journals. It indexes over 500 journals from subject areas like Accounting, Consumer Economics, Demography, Economic Theory, Labour, Marketing, Modeling, Monetary Policy and Planning.

**(e) ERIC (1966-1998):** ERIC database abstracts and indexes the U.S. literature in Education. The document and journal article literature includes research and technical reports, conference presentations, instructional and curriculum materials, project and programme descriptions, dissertations etcetera. Articles are drawn from over 775 major journals in the field. The subjects covered are Counseling, Curriculum, Education and Social Sciences. The data covered in the CD is from 1966 to 1998.

**(f) CABSAC (1973-1997):** Published by CAB International, UK, it is a bibliographic abstract database from and on South Asia from 1973 to 1998. It contains information on;

- Agricultural Engineering
- Animal Health & Veterinary Medicine
- Animal Husbandry
- Nutrition and Breeding
- Biotechnology & Genetics
- Crop production, protection and breeding

- Dairy Science and Technology
- Economics
- Sociology and Rural Development
- Forestry & Forest products
- Horticulture
- Soil Science & Fertilizer Technology

It also covers related topics like, Human Nutrition, Mycology, Entomology and Parasitology.

**(g) IBID (1993-1999): India Business Insight Database:** Published by Informatics (India) Pvt. Ltd. Bangalore, it provides extensive coverage of 38,000 plus Companies & 10,000 plus Products. It gives comprehensive insight into 44 Sectors of Indian industry including Advertising and Market research; Agriculture; Horticulture and Forestry; Automobile and Railway Equipment; Banking, Financial & Insurance Services; Chemical Industry; Consumer Goods; Defense & Aerospace; Drugs and Pharmaceuticals; Health Care, Electrical Industry; Electronic Industry; Energy; Power Generation and Transmission; Engineering Industry; Ferrous Metals; Food, Beverages, Dairy, Confectionery and Tobacco; Gems and Jewellery; Watches; Hotel, Restaurants & Catering; Computer Industry; Telecommunication Industry, Leather and Allied Products, Live Stock, Fish and Animal related ; Mining , Minerals and Metallurgy; Oil and Natural Gas; Rubber Industry; Non-Ferrous Metals; Oils and Fats, Glass and Packaging Industry; Paints and Surface Coatings; Cinematographic Equipment; Optical Instruments and Photography; Pollution Control including Waste Management; Polymers and Plastics; Printing and Publishing; Paper Industry; Soaps, Detergents and Cosmetics; Sugar Industry; Textile Industry; Mail and Transportation Services etcetera.

**(h) PROWESS (1994-2004):** Prowess is the most reliable and empowered corporate database developed by Centre for Monitoring Indian Economy (CMIE), Mumbai. It contains a highly normalized database built on a sound understanding of disclosures in India on over 8,000 companies. The database provides financial statements, ratio analysis, funds flows, product profiles, returns and risks on the stock markets etcetera.

The database is complemented with powerful analytical software tools to enable extensive querying and research. With Prowess, information access and research is effortless. The rich analytical reports based on a carefully normalized database in Prowess enables to sharpen understanding of a company and quicken the decision making process. Application areas include credit evaluation, security analysis, industry analysis, benchmarking, and evaluation of competition, feasibility studies, consulting, journalism and research.

**( I ) Capitaline Plus:** Capitaline Plus database, provides financial and other information on more than 10,632 companies, of which 4,321 are unlisted. Fact sheets are powerful aggregation screens wherein one can view scoreboards of companies classified under different catalogs like, Industry, House, State, Country, Product, Stock Exchange and Index etc.

#### 15. E-Resources@Ugc-Infonet Digital Library Consortium

The UGC-Infonet Digital Library Consortium subscribes to the resources for its member institutions. Shrimati Hansa Mehta Library is also one of the members of UGC-Infonet Digital Consortium. All electronic resources subscribed are available from the publisher's Web site.

The UGC-Infonet Digital Library Consortium was formally launched in December, 2003 by Honorable Dr. A. P. J. Abdul Kalam, the then President of India, soon after providing the Internet connectivity to the universities in the year 2003 under the UGC-Infonet program. The Consortium proved to be a recipe to university libraries which have been discontinued subscription of scholarly journals because of "Serials Crisis". The term "Serials Crisis" refers to exponential and continuing increase in subscription cost of scholarly journals. The crisis is a result of the rise in cost

of journals much faster than the rate of inflation, increase in number of journals and the paucity of funds available to the libraries.

The Consortium provides current as well as archival access to more than 7,000+ core and peer-reviewed journals and 10 bibliographic databases from 26 publishers and aggregators in different disciplines. The programme has been implemented in phased manner. In the first phase, that began in 2004, access to e-resources were provided to 50 universities which had Internet connectivity under the UGC-Infonet Connectivity Programme of the UGC. In the second phase, 50 more universities were added to the Programme in the year 2005. So far 160 Universities out of the 181 universities that come under the purview of UGC have been provided differential access to subscribed e-resources. These e-resources cover almost all subject disciplines including Arts, Humanities, Social Sciences, Physical Sciences, Chemical Sciences, Life Sciences, Computer Sciences, Mathematics and Statistics etcetera. The Programme is wholly funded by the UGC and executed by the INFLIBNET (Information and Library Network) Centre, Ahmadabad ([www.ugc.com](http://www.ugc.com)).

## 16. Role Of Libraries And Librarians

In this changing scenario, libraries and librarians will continue to play an important role in handling conventional and electronic resources. Unless this is recognized and acted upon, other professionals will use up our roles and functions. A similar line of thinking can be seen in Alberico's<sup>21</sup> comment that, "if we don't become involved at all levels, there is a very real possibility that resources will shift to other segments of the economy that can handle and deliver the electronic services that academic and post - industrial organisations will need to survive".

Atkinson<sup>22</sup> however, believes that the role of the library in an electronic environment would be to:

- a) To identify resources that are likely to be of greatest interest locally and downloading these to a local database - a kind of deferred CD operation (locating information sources as they are needed rather than to predict the needs in advance).
- b) To become a publisher and disseminator of information by uploading rather than downloading. Holding a similar view, Alberico comments that, "libraries may become publishers by using the network to build customised multimedia documents for clients or by providing the technology/training and facilities to allow clients to build their own composite documents". In other words, the library is being viewed as a creator and disseminator of information and also has such value-added responsibilities on user education<sup>23</sup>.

On the role of librarians, Choudhry<sup>24</sup> comments that, "Librarians will have to initiate the transition to an access-based model of service based upon electronic networks that will provide bibliographic, numeric and full-text information to scholars and researchers. They will have to create an environment where access to collective scholars and researchers. They will have to create an environment where access to collective scholarly resources supersedes the historic quest for the great comprehensive collections".

In addition, librarians will have to involve themselves in the access process and also in negotiating with publishers and vendors about site licenses and methods of royalty and copyright payments. Further, they have to be prospectors selecting and acquiring materials in the complex network environment.

## 17 Conclusion

It is often suggested that some or all of these functions of collection development become redundant in an era when increasing amounts of information are available directly to users via the Internet. This argument is contradicted by an often-heard complaint that the Internet is completely chaotic, and therefore that people waste much time in fruitless searching for the precise information that they need. The skills of a librarian are, in fact, just as relevant to the

electronic milieu as they were to that of print. The concept of ownership of items, however, has become more fluid. Collection development now consists in deciding which items to provide straightforward access to for your users. Librarians are currently playing a pivotal role in this process.

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## Chapter 25

# An Empirical approach for Modeling the Distance Learning Library Services in Kerala

Gopakumar V  
University Librarian, Goa University, India  
[librarian@unigoa.ac.in](mailto:librarian@unigoa.ac.in)

A. K. Baradol  
Professor, Dept. of Library and Information Science, Mangalore University, India  
[akbaradol@gmail.com](mailto:akbaradol@gmail.com)

**Abstract.** *Library and information services are indispensable support services for distance learners and an integrated approach with a specific plan is proposed to have a collaborative distant library and information services by utilizing the facilities of the large number of public, college and university libraries in the state of Kerala. Authors foresee that the framework and working plan for exploiting the potentials and institutionalizing the scattered services under a consortium is essential in Kerala to serve the distance learners.*

**Keywords:** Library Distance Services, Distance learning

### 1. Introduction

Distance Learning has become one of the major channels for imparting higher education in India as the nation cannot create the infrastructure required for providing higher education to all aspirants through formal means. Many universities in India have a huge number of distance learning programs to enhance access to higher education. The universities in Kerala have also started distance learning courses long back. When we look at distance learning courses, the students who take up the courses are equal in all respects to those who study at the campuses. They also need all support services for their learning process.

Library and information services are indispensable support services for distance learners. As already mentioned, a large number of post-secondary students are pursuing distance courses in the four universities in Kerala. But the university libraries are not providing any services worth notable for distance learners. They are a group of students who need more library support than the regular campus students.

An integrated approach with a specific plan could provide the distance learners with library and information services by utilizing the facilities of the large number of public libraries and college libraries in the state.

### 2. Need for a service model

Even though there had been serious discussions at professional platforms globally on the need for distance learning library services, the concept has lacked a clear outline and mechanism by which it could be made an operational reality in Kerala. The lack of a practical frame work for distance learning library services is rooted in many facts. The indifferent attitude of the distance educators and librarians in the state is a major factor behind it.

The individual university libraries in Kerala have their own infrastructure, which can be extended to the distance learners too. Yet another huge potential that can be used for distance learners is available to the college and public libraries in the state. A framework for exploiting these potentials and institutionalizing the scattered services as a

comprehensive whole is essential in Kerala to serve the distance learners. Hence a working model for providing library and information services for distance learners in Kerala is presented here.

The library and information services for distance learners can be carried out at three levels. They are host university based services, consortia based services and web based services.

The services available at the host university library (Library of the University that provides the course) are intended for distance learners who are able to reach the library and avail them. The consortia based services are intended for those who cannot go to the host university libraries. Web based services are intended for all distance learners, whether they are residing near to the host university library or anywhere on the globe.

### 3. Host university library based services

The host university library should be the hub of all distance learning library services. A separate exclusive section in the university library will be assigned with the responsibility of the delivery of various distance learning library services. This section namely the Distance Learning Library Services Section (DLLS Section) will have the following functions:

- It controls the entire distance learning library services of a university library.
- Controls the consortia based services and web based services.
- Maintains a help desk in the university library for reference services for distance learners.
- Maintains the digital library and institutional repository for distance learners.
- Manages the consortia arrangements with other libraries.
- Provides document delivery and inter-library loan for distance learners.
- Provides library instruction and information literacy programs for distance learners.
- Manages marketing of distance learning library and information services.

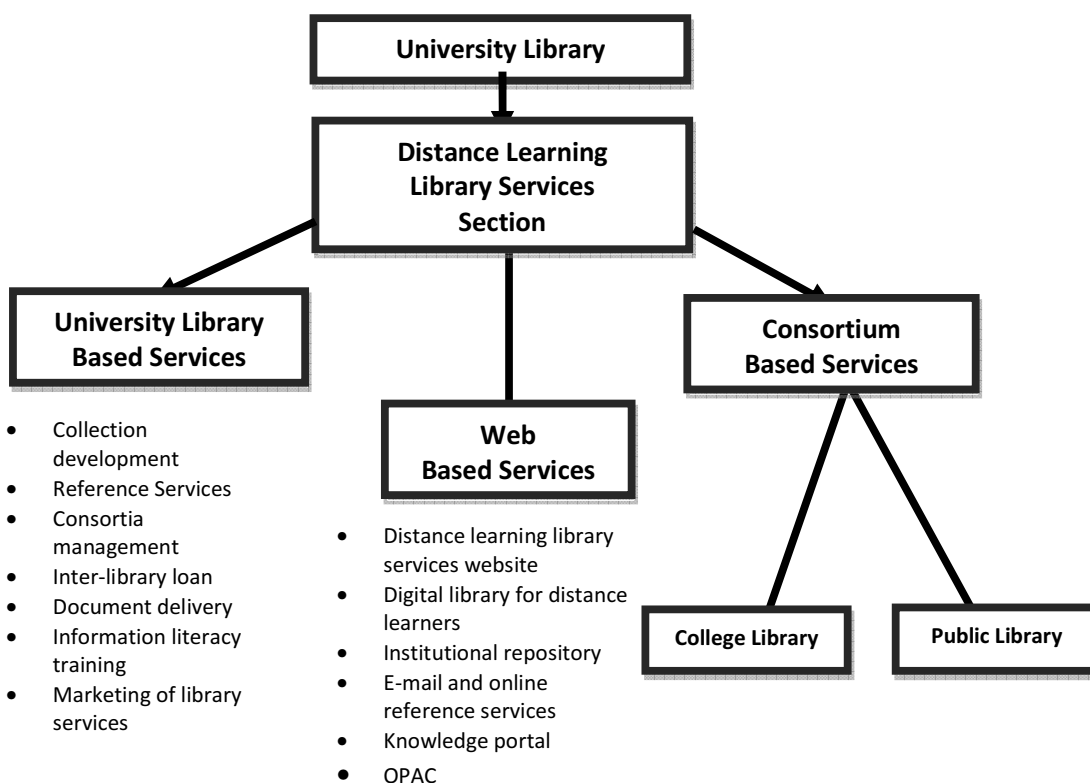


Figure 1. Model of distance learning library services in Kerala

The DLLS Section will be the master center of all distance learning library and information services of a university. This section will manage the collection development policy for distance learning library services. It will select the books; decide on the number of copies of a book to be purchased and the provision of books and other information sources for the members in the consortia of libraries. The DLLS Section will also provide document delivery and inter-library loan for distance learners.

The management of the consortium arrangements with other libraries will be another important function of the DLLS Section. DLLS section will also provide reference services to the distance learners, who contact either directly or through e-mail or telephone.

All the above functions will be carried out by the DLLS Section in consultation with the faculty of the distance learning unit of the university. It will arrange periodical meetings with them to design the strategies for distance learning library services.

The DLLS Section of the university library will design printed guides and software modules for library instruction and information literacy programs. The professionals in charge of the DLLS Section will meet the distance learners during their contact class sessions and make them aware of the distance learning library services and facilities.

#### **4. Web based services**

The DLLS Section will also provide service for distance learners over the ubiquitous network of computers, the Internet. The web based services include:

- Maintaining of a website for distance learning library services
- Maintaining of a knowledge portal for distance learners
- Maintaining of a digital library for distance learners
- Maintaining of an Institutional Repository for distance learning library services
- Provision of access to e-journals and bibliographic databases
- Provision of information literacy tutorial

A website for distance learning library services providing links to all web based services of the university library for distance learners will be maintained by the DLLS Section. A link to this page should be available in the home page of the library.

The links to the digital Repository of e-learning modules, e-journals and bibliographic databases, will be available in this web page. A hyperlink named 'Ask a Librarian' will lead to the creation of an e-mail message that can be sent to the DLLS Section. The web page will also provide Information Literacy tutorial and pages containing Frequently Asked Questions (FAQs). It would be desirable to restrict the services on this web page using user name and authenticated password.

##### **4.1 Digital library**

An organized collection of digital documents useful for the distance learners will be maintained in an online locus in the web by the DLLS Section of the university library. The documents which are exempted from copy right restrictions will be made available in this digital library. These documents will be indexed on the name of authors as well as keywords. The services can be restricted with distance learners using authenticated password.

##### **4.2 Digital Repository**

A repository of digital documents can be created using free software like the e-prints or DSpace, in which the faculty members and librarians can deposit documents that are useful for the distance learners. The documents can be classified based on the courses. The faculty members of the colleges and the experts in various fields may be encouraged to deposit documents useful for distance learners subject to moderator approval. The DLLS Section can also deposit documents which they trace out in response to reference queries so that it would be useful in future services.



Figure 2. Working of the Digital Repository

#### 4.3 Access to e-journals and bibliographic databases

The universities in Kerala have access to the UGC Infonet e-journal consortium. This facility could be extended to the specified terminals in the library extension centers in consultation with the consortia managers. The colleges which have this facility should be urged to provide it for distance learners.

#### 4.4 Collection of question papers

The question papers of previous examinations were found to be very useful for distance learners. The library can digitize these question papers and provide the collection through the web page. The collection should be categorized under the course and then by year.

#### 4.5 Knowledge portal

A portal is a gateway to various related web sites. The university library should identify useful and informative web sites related to the courses. All those links could be provided in the knowledge portal. Subscribed online reference sites like the Encyclopedia Britannica or Oxford dictionary also could be added in this page. This will be an exhaustive source of information for the distance learners.

#### 4.6 Information literacy tutorial

A distance learner, novice to the latest technology would find it difficult to retrieve useful documents from digital collections. Hence training should be given to them at the beginning of the course itself to use the library as well as the web resources. An interactive tutorial could be provided in the web pages created for distance learners.

#### 4.7 OPAC

The Online Public Access Catalogue (OPAC) of the library would be a very useful tool for the distance learners. The students could find out books useful for them through this catalogue. Later they can request for document delivery at the DLLS Section, if they need it.

#### 4.8 E-mail reference services

The library should maintain an e-mail account with the intention to receive reference queries from the distance learners. An e-mail message can be created for this account by clicking on the 'Ask a librarian' hyperlink in the DLLS home page. The reference desk in the DLLS Section will respond to these queries either by themselves or by forwarding the queries to the subject faculty / experts. The responses will be sent to the e-mail account of the students without delay. Each distance learner must be provided with a unique identification for providing e-mail reference services.

The Reference questions and the answers also can be collected and made into a database. They can be indexed and later from this reservoir of reference questions a web page containing "Frequently Asked Reference Queries (FARQs)" can be created and maintained. The web is a medium which has superseded the constraints of space and time. Hence it can be effectively used for serving distance learners. An innovative and proactive approach is necessary for designing library and information services for distance learners.

## 5. Consortium based services

The potential available with the four university libraries, 186 college libraries and the 63 Taluk Reference libraries could be easily brought in to help the distance learners in Kerala, if a consortium of all these libraries are created and made functional. The structure and functioning of the consortium is discussed in detail below.

### 5.1 Consortium of university libraries

The four universities viz. the University of Kerala, Mahatma Gandhi University, the University of Calicut and the Kannur University, based on mutual agreements, should allow all distance learners to use their university libraries. They may be allowed lending and reference facilities in the university libraries. The university libraries should provide consortium identity cards to the distance learners and allow them to use the university library of their preference. This helps the students to make use of the university library in their proximity. The example of 'UK Library Plus' consortium could be adopted for this.

## 6. Library extension centers

The university libraries should start separate library extension centers in all the fourteen districts of Kerala. It was found that the concentration of students of a particular university is more in the same and neighboring districts where the university is situated. No extension centers are required in the district where the university and its library are situated. Hence the extension centers are required only in ten districts. The following pattern can be followed for starting extension centers.

| University                | District       |
|---------------------------|----------------|
| University of Kerala      | Kollam         |
|                           | Alappuzha      |
|                           | Pathanamthitta |
| Mahatma Gandhi University | Eranakulam     |
|                           | Idukki         |
|                           | Thrissur       |
| University of Calicut     | Wynad          |
|                           | Malappuram     |
|                           | Palakkad       |
| Kannur University         | Kasaragod      |

The library of the University of Kerala already has three library extension centers in the neighboring districts. Other university libraries have to establish their library extension centers. Kannur University library could manage only a single extension center as the university library is only in its developing stages. The facilities required in the extension center are the following.

- Collection of books to support the courses
- Reading room facility
- Internet facility
- Photocopying facility
- Collection of question papers
- Collection of reserve materials
- Training to use the library

The extension centers should be managed by cordial and helpful staff and their timings should suit the needs of the distance learners. The extension center could also work as a career guidance bureau for the universities. The university responsible for maintaining the extension center should provide the required personnel resources and finances for the extension center. Most important aspect of an extension center is that it will provide service to any distance learner from any university in Kerala. The students registered for distance courses in any of the four universities in Kerala, visiting with proper identification and authentication should be eligible to avail services. This should be agreed upon among the universities on establishing the extension centers. Universities should provide funds and resources for the development of all extension centers. But special care should be given to extension centers directly under them.

### 7. College libraries and public libraries

Each university library study center should identify three public libraries (Taluk Reference Libraries) and three college libraries within the district where they are situated. These public libraries and college libraries should be encouraged to provide library and information services to distance learners. They should be provided with resources in the form of funds and information sources. All facilities available in the college and public libraries should be made available to the distance learners too. The college libraries may be allowed to collect fee for value added services. Distance learners should carry identification records from the university while visiting these libraries.

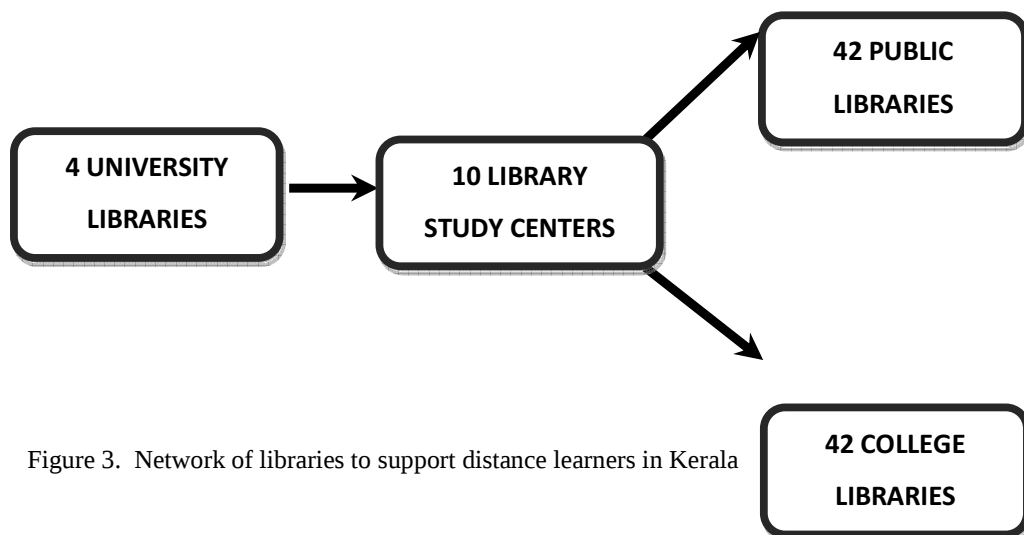


Figure 3. Network of libraries to support distance learners in Kerala

The consortium consisting of the four university libraries, ten library study centers and the 84 public and college libraries would make a huge network of libraries useful for distance learners. Web based services will be complementary to the consortium of libraries.

The students should be aware of the availability and potential of the distance learning library services. Hence marketing and orientation services are essential. The DLLS Section should take initiatives to bring out printed guide books. These guides should be provided along with the study materials. The URLs of the web pages providing

information services to the distance learners should be printed on all communications to the students. Librarians in charge of the DLLS Section should provide orientation classes in the initial stages of the courses.

## 8. Conclusion

All these would ensure a systematic provision of library and information services to a bunch of post secondary students in Kerala, who are otherwise devoid of such facilities. But proactive and innovative librarianship is the fundamental ingredient in distance learning library services.

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## Chapter 26

### Crafting Student Centric libraries in B-Schools: A case study of Jaipuria Institute of Management, Noida (India)

Suresh K Chauhan

Librarian, Jaipuria Institute of Management, Noida, India  
[sureshbabal@yahoo.com](mailto:sureshbabal@yahoo.com)

Anup Kumar Singh

Director, Jaipuria Institute of Management, Noida, India

Preeti Mahajan

Department of Library & Information Science, Panjab University  
 Chandigarh, India

**Abstract.** Academic institutions who are engaged in professional education, especially B-Schools (Business Schools) have been facing a great challenge in terms of placement and attracting good students. In India, in the last couple of years it was noted that hundreds of B-schools enforced to close their shutter downed because of very low admissions. Even good B-schools have been struggling to fill the full allotted quota of seats. This situation has worked as a wake-up call to many B-Schools and they started preparing themselves to cope with the alarming situation in one or other way. In this changing environment, the Jaipuria Institute of Management, who is pioneering management institute in India, formed various teams to evaluate academics (teaching and learning), support sections and student life in all its four campuses. The one of the suggestions of evaluation team is that libraries need to be more pro-active to connect students with library services and resources. Since library provides up to date information to its users, it is being expected that students may learn various things which they may not able to learn in the classrooms because of tight teaching schedules and enhance their employability in the present business needs. Library on Noida campus of the institute taken up the challenge and worked systematically and meticulously for achieving desired goals. Now the library has been getting a good number of users every day and usage of all resources has also gone up extensively.

#### 1. Introduction

All Across the world, B-Schools (Business and Management Institutions) have shown a tremendous growth which started almost a couple of centuries back with the establishment of a first management institute in 1819 under the name of 'Ecole Superieure de Commerce' in Paris, France. The initial success of this institute and importance of a separate management education had given momentum for establishing renowned institutions such as the School of Commerce (Belgium), Wharton School (Pennsylvania) and Harvard business School (Harvard) and many others across the world. The history of management education in India can be traced back when a Commerce School of Pichhiappa in Chennai was established by the British government. The Sydenham College was the first graduate level B-School established in Mumbai during 1913. Shri Ram College of Commerce founded in 1920 in Delhi. Just after Independence, in the very beginning, the government also encouraged establishment of private funded institutes that paved the way to Xavier's Labour Relations Institute (XLRI) as one of the first privately funded institutes founded in 1949 at Jamshedpur.

The mushrooming of B-Schools was started in the second half of twentieth century with establishment of Indian Institute of Management at Calcutta (1961), Ahmedabad (1962) and, Bangalore (1971) etc. In the year 1981 the number of B-Schools was gone to 118, although keeping proper planning and coordinated development in technical (Management and Engineering) education in view, the All India Council for Technical Education (AICTE) was set up in 1945. But with the growth of institutions and to maintain standard of education, AICTE was accorded with

statutory status by an act of Parliament, Government of India in 1987. For beginners, the AICTE has been responsible for planning, formulation and maintenance of norms and standards, monitoring and evaluation of education and funding of technical and management education in the country. By the year 1991 the total number of B-Schools had gone up to 322. The next decade was not seen much growth only 100 B-Schools were established in the whole decade, one of the main reasons was the world had gone through a dire economic slump which economically affected all businesses including management education. Immediately after the recession was over, a steep rise was seen in the emergence of many new B-Schools and by the end of 2010-11, with an exceptional rate of growth the number of B-Schools go up to 3844. Although from 2007 onwards the whole world has been witnessing and coping with another economic recession. Hence, for the last few years management education all across the world is facing a terrible situation. In India, in 2010 and 2011 more than 225 management institutions had closed their shutters and many more are on the threshold of dying. One amongst the biggest reasons was found that many institutions were unable to produce good managers who could really ensure employability during multidimensional changes in all businesses and industries. They just focused on providing academic certificates to students instead of sharpening them by enhancing their management skills as per present economic dimensions. Many of the B-Schools taken this as a wake up call and geared up to produce quality products (managers) instead of quantity. Jaipuria Institute of Management is one amongst top B-Schools in North India embarked upon the overall development of students and not just to compete at national level but at International level too. Apart from quality teaching a major focus is being given on practical exposures, communication skills, extracurricular activities, interact with prominent leaders, sharpening managerial skills and inculcating social values and ethics as well.

## **2. Jaipuria Institute of Management**

The Jaipuria Group has been a long heritage of providing educational excellence to the society of India which started with the establishment of Seth Anandram Jaipuria College in Calcutta in 1945. Mainly Jaipuria Group has been known as a Tycoon in Textile industries but soon they also realized to build an educated and cultured society and started it from primary level by establishing a primary school in Lucknow in 1992 under the aegis of its charitable trust called 'Integral Education Society'. They also realized that good managers can take Indian industry's way forward and also contribute a lot for the betterment of Indian economy in particular. In the year 1995, Integral Education Society established its first B-School campus under Jaipuria Institute of Management at Lucknow, the second campus was established in 2004 at Noida, third at Jaipur in 2006 and Indore campus come into existence in 2010. All campuses were beautifully constructed and magnificently developed. With an ever growing chain of B-Schools, Jaipuria Group has been established by providing a standard quality education that also aims to provide a successful and ambitious management career to our young generation. The Noida campus of the Institute has been facing challenges from all sides by being in NCR region, producing a great challenge from other renowned institutions. The National Capital Region (NCR) is one of the largest metropolitan areas of the world. It is known as a hub of academic institutions. The region has seen most remarkable growth in management education by accommodating about 200 B-Schools. The growth of B-Schools brings a great competition among all institutes and also the ongoing economic recession place a great challenge to all B-schools for their survival. Presently, students have many options for obtaining management education. The Jaipuria Institute of Management reviewed the present situation and geared up for revamping each and every ingredient of teaching, learning process. The institute conducted a well framed survey of all its students (at all campuses) and stakeholders to find out the weak areas which may be strengthened soon. After analyzing the survey, lack of student Centricity was observed across the campuses. Apart from taking immediate measures to improve teaching pedagogies, course structure and outlines, infrastructure, canteen, mess and other facilities, libraries were also given much attention. A serious concern was shown for developing student centric libraries throughout the campuses.

## **3. Library of Jaipuria Institute of Management at Noida**

Historically, the library was established in 2004 as a hub for the library and information services in the Institute. It serves as a creative and innovative player in supporting the teaching, learning, scholarship and research activities of the Institute. The library building spread over two floors and is an exceptional example of modular construction. The library is entirely devoted to the academic needs of the students and faculty. It offers a wide range of management, business and economic subject areas through its fast growing core collection of over 12500. It is a hybrid library accommodating vast range of print and electronic resources of information. It has extended on and off campus library services to its users. Time to time, to enhance its services library conducts user surveys and interviews. Though, in the survey conducted by the authority, the library of Jaipuria Institute of Management at Noida campus was well appreciated with respect to its services. The library chalked out a plan by keeping student centricity as an aim, to convert good library to an active library. The following areas were taken up as challenge to establish student centric approach in the library.

1. Students in library committee
2. Collection development
3. Footfalls in the library
4. Library ambience
5. Extra co-curricular activities
6. Other value added services

### **3.1. Students in Library Committee**

The institute has an active library committee consists of Librarian and faculty members but there was no representative of students who could share their views on regular basis. Importance of students were realized in the very first meeting (beginning of 2012) and students were also brought in the library scheme of planning, so that students' perspective could be taken up before implementation and execution of any new library activity or service. One representative from each course has been nominated by the Programme Directors as member of the library committee. After few brainstorming meetings a logo was also formed to give a unique identity to the library and marketing campaign by students to highlight library services and activities brought users closer to the library services.

To develop a pro-active library system on the campus, the librarian was also nominated for attending Faculty Council meetings as an observer or a member. By this the librarian come to know about various ongoing or upcoming academic issues or subject areas, which helps in proper planning to develop collection in needed areas. It is helping students to abreast with new development in their respective fields.

### **3.2. Collection Development**

Collection is the main strength of any library and users feel attached to the library when they frequently get the books which they wanted to read. In an internal library survey conducted during 2010 about 54 per cent of the students were not satisfied with the library collection. They asked for more varieties of contents in reading. Keeping a serious concern, the library team comes up with an interesting mechanism of procuring books as per the need of students. They asked for recommending titles of books which they want to read and they were also requested to comment on why they require recommended book or books in the library.

Apart from these general recommendations from students, every month at three day book display on an asked subject area has been started. This monthly book display received overwhelmingly by the students. An Annual Book Fair during the annual function of students in the campus is also being organized every year. The books recommended by students in the exhibitions or displays are being sent to the concerned subject area faculty for the confirming worth of the book in the library collection and to avoid procurement of any book containing ill or cheap information.

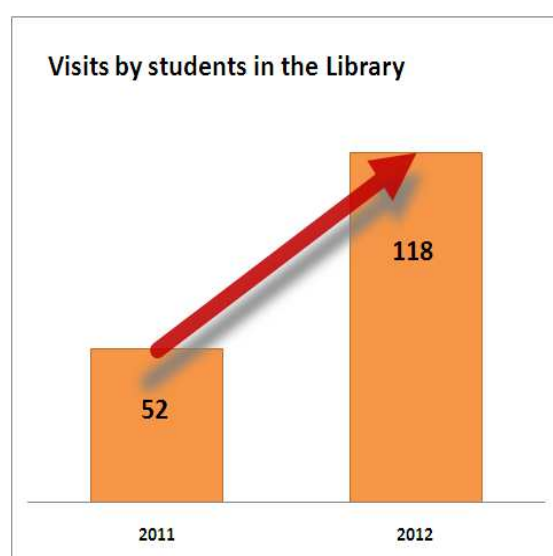
The library team had made a list of 50 management experts of the world, then compiled a list of their classic publications and finally made them available in the library.

In the year 2012, from total procured books for the library, 37 percent was suggested by students. This year in another internal survey about 15 percent students were not satisfied with the library collection. It is being expected that this percentage of unsatisfied students would reach to 2 and 3 per cent by mid of 2013.

### 3.3. Footfalls in the library

Today, libraries (big or small) across the world have been coping with low footfalls of readers. The library of Jaipuria Institute of Management had come up with various initiatives for improving footfalls in the library. Some of the initiatives taken up for improving footfalls in the libraries are listed below:

**Figure 1**

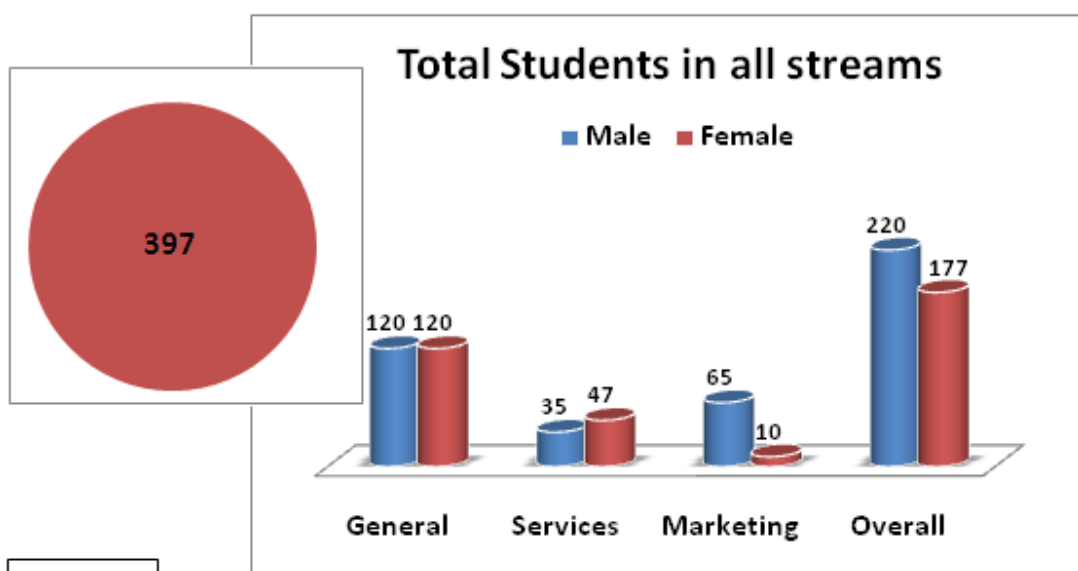


- Students are being treated as guests in the library.
- More reading space was allotted (in this process whole ground floor was concerted as reading hall).
- Students were allowed to have academic discussions in the library.
- Library staff is responsive on each and every query of the student.
- Frequent and decent students are being awarded with 'Special Library User' awards.
- Initiated informative activities and games to offer other ways of learning.

After initiating above listed services and activities, a sea change has been observed on footfalls in the library. A more depicted in the Figure 1, in which per day library visits have gone tremendously up than the last year. In the year 2011 the average number of students' visits per day was 52 which reached to 118 visits per day in the year 2012.

To work in the more systematic manner library has installed an electronic gadget (for attendance) in the library so that students' In/Out times can be recorded. After evaluating IN and OUT statistics of student visits in the library, analysis brought few more challenges to library staff. The overall analysis of visits report is given below:

The campus has 397 students learning in different academic streams. Overall, there are 240 students in Post Graduate Diploma in Management (PGDM) General, 82 in PGDM – Services specialization and 75 in PGDM – Marketing specialization stream. The Figure 2 shows gender-wise distribution of students in the campus.



**Figure 2**

### 3.3.1. Students who never stepped in the Library

From the statistics, it was found that 21.6 per cent of our students never stepped in the library during last two months. Female students are more reluctant to visit the library, out of total strength of female students 26 per cent have never stepped in. The percentage of male library visitors, who never stepped in, is 16.8 which is quite low from the average percentage (21.6%). The library staff has been interacting with these students and trying to find out the reasons for their not visiting the library.

### 3.3.2. Non library visitors

Library team statistically thought of checking the non library visitors so that proper measures can be taken up on time. For finding non library visitors, the group who never stepped in the library and users who visited the library twice or thrice during last two months was also clubbed. It was reflected that 37.5 per cent of our students are rarely visiting the library. After analyzing the data, few observations were also noted that around 60 per cent students are non library visitors, only 40 per cent students are frequently visiting the library. It was also noted that 72 per cent students of PGDM- Service, 70 per cent of PGDM – Marketing and 51 per cent of PGDM – General are non library users. Gender-wise distribution of non-library visitors was also evaluated and found that 74 per cent of the non-library visitors are females.

### 3.3.3. Frequent Library Visitors

From total library users, 22 per cent of the students are frequent visitors, who have been visiting library almost every day and others are moderate ones. This is again imposing a great challenge to library staff and administration to make 'moderate library visitors' as 'frequent library users' and 'non-library visitors' to 'moderate library visitors'.

## 3.4. Library ambience

The library team worked on some parameters and installed various flower pots in the library. The original flower plants implanted to provide a natural look to the library. The walls of the library are covered with few thoughtful and well framed art designs bought from the National Art Gallery of India. The reading space was also enhanced with comfortable chairs and tables. Now, around 130 students can read in the library at one time. Whole ground floor has been given to group academic discussions, pre read and general reading and an area, accommodating 30 seats, is allocated at first floor of the library for serious reading and research purpose.

### **3.5. Extra co-curricular activities**

Library started arranging various extracurricular activities, especially keeping library resources as base for the students. The following events have been arranged on regular basis.

**Collage making competition:** The Library has organized a competition on Collage making. The main objectives of arranging this competition was student centricity. It provided students a creative way to express their artistic feelings. It was also to enhance the thought process of students as well as in strengthen team work within a group. The event is being highly appreciated by all students. The collages of First and Second Prize winners have been framed and placed in the campus.

**Mind Games:** To assess memory and concentration level of the students, library organizes an interesting and fun oriented game namely 'Mind Games'. The library uses books as a basic prop for this game. Mind games provided an opportunity for students to explore new horizons of management through brain storming on spot quizzes.

**Treasure Hunt:** To assess participants' familiarity towards the library resources (documents) and departments an event called 'treasure hunt' is arranged. It is being arranged in the library with props such as books, journals, magazines and newspapers etc. The main objective of the game is to test library skills of the participants for locating specific documents in a fun and entertaining manner.

### **3.6. Other value added services**

Library has recently launched various value added services to keep students up to date with the latest happenings around the world in their respective areas and also about new additions in the library collection.

**New arrival list:** Circulating new arrivals list to faculty as well as students (Monthly basis). Library informs concerned student immediately on arrival of his/her and all others recommended documents in the library.

**Book reviews:** Circulating book reviews, compiled from various newspapers and magazines, to library users.

**Book displays:** Displaying books for 5-7 days on various topics which have been lying unused on the library stacks.

**Company profiles:** Preparing company profiles whenever requested by student or faculty members and circulating the same to all students.

**Information Searching:** Helping students and faculty in their academic and research pursuits by searching online information from available resources.

**News updates:** On regular basis library circulates latest happenings in the areas of management and business to all students every day.

**Documentation Service:** On regular basis library team compiles bibliographies of various resources available in our library and circulating the same to our all users.

**Training and Awareness Programmes:** Library subscribes to few electronic resources. In the beginning of every session an orientation programme is being conducted for new students. On demand library orientation is also being given to users. The product-wise tutorials for all subscribed e-resources were created and time to time being circulated among students. The trainers of e-resources have also been called to provide useful tips and hands on practice to students as well as faculty members.

**Digital Library and Institutional Repository:** Library maintaining a Digital Library which comprises collections of case studies, research articles and company profiles by using Greenstone Digital Library Software. It is also maintaining its website and blog.

**Special Library User Awards:** To encourage students who are using library on frequent basis a 'Special Library User Award' is constituted. Any student, who is achieving set criteria with respect to following parameters, will be awarded as 'Special Library User'. The evaluation is being done on every three months and students fulfilling minimum criterion points may be consider for final awards and two students with top points are being awarded with

- Code of conduct in the library
- Number of visits in the library
- Number of duration spent in the library
- Usage of library resources
- Academic consideration (academic performance)

The 'Special Library User' is being offered following privileges:

- Status of faculty member in the library
- The awardees may borrow as many as books being given to a faculty member.
- No overdue fine will be charged.
- Awardees may get one gift hamper and a certificate.

#### 4. Conclusion

Library staff needs to establish a trust among its users for creating a student centric library. The Post Graduate students are not kids, the library staff is treating them as growing professional and support their on campus as well as off campus learning. Since perception about all libraries are changing and it is the responsibility of library staff to sense signal of change and modify the services accordingly. Technology is playing an important role hence all efforts are also being made to give state-of-the-art library to users. The library team has been extending information support in more personal manner which is well acknowledged by the users. The Jaipuria library at Noida campus is determinant to provide one of the best libraries of the region especially to motivate students by developing reading habits for lifelong learning. From new session, library is planning to extend its services to campus alumni as well. Now library team is working on counting 'Return On Investment' (ROI) so that weak areas and shortcomings may be found and proper measures cab be taken well on time.

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## Chapter 27

# Building specialized academic Library & Information services in SPM Library, Pandit Deendayal Petroleum University

Sureshkumar B. O.  
Library and Information Officer, Pandit Deendayal Petroleum University  
Gandhinagar-382007, India  
[suresh.kumar@spm.pdpu.ac.in](mailto:suresh.kumar@spm.pdpu.ac.in)

**Abstract.** Special academic libraries are supposed to support the special information needs of the specialized faculty, researchers and students through specialized and focused library and information services. Obtaining, organising and providing access to the selected and very relevant resources with currency and authority will be the focus of specialized skilled staff of these centers. Library specialization is very common in India, especially in major disciplines like medicine, law, technology, management and languages. But this is new to the areas like energy management, petroleum management, and renewable energy focused libraries. Starting from staffing, identifying core information resources, managing the collection, finance and marketing the resources requires specialized skills and policies in place from the foundation of such organizations. This paper describes the story of establishing a specialized academic library & information services in Pandit Deendayal Petroleum University, a brand new University in India.

**Keywords:** Special Library, Energy & Petrochemical Library, Special Services, Special Collections

## 1. Introduction

Fletcher et al. (2009) reinforced that it is universally essential for special librarians to know the particular needs of the users and align library services with the organisational goals. They have to aggressively market services to be proactive. According to the guidelines from the Australian Library and Information Association (2010) special library staff use information resources and technology to facilitate effective and efficient client access to information that support the goals and business of the organisation. Special libraries provide value adding services such as;

- Building a dynamic collection of information resources based on a deep understanding of clients' information needs
- Training and assisting clients to effectively access information and use relevant technology
- Gathering evidence to support decision making
- Current awareness of emerging technologies and best practice in information and knowledge management
- Competitive intelligence and market research for business development.

It is important to analyse the efforts and investment in supporting services like library services, to gauge the ROI of any new research based academic institutions.

## 2. About the Organisation

Pandit Deendayal Petroleum University (PDPU) has been promoted by Gujarat State Petroleum Corporation (GSPC) to create a world class University in energy education and research with special focus on the oil and gas sector. The university has further expanded its programs to address the need for trained human resource in the domains of engineering, management and humanities. It intends to broaden the opportunities for students and professionals to develop core subject knowledge which are duly complemented by leadership training interventions, thereby helping

the students to make a mark in the global arena. This objective is being further addressed through a number of specialized and well-planned undergraduate, post-graduate and doctoral programs as well as intensive research projects.

**School of Petroleum Management (SPM)** has been set up under the Pandit Deendayal Petroleum University (PDPU) as a centre of excellence in industry learning to develop human resources to cater to the petroleum and allied energy sectors, improve knowledge base of policy makers and technologists and provide a competitive edge to leaders to compete in global arena. It has been promoted with the initiative of Gujarat State Petroleum Corporation Ltd. (GSPC) a Gujarat government undertaking, which is a leader in the energy sector.

Energy and energy infrastructure are critical to any economy for the development and sustainability. India has recognised this fact and has embarked upon a comprehensive strategy to address the concerns of energy security of India. The need for a resource center was anticipated to keep pace with the fast developing and competitive energy industry, to plan for the future and to continuously build requisite intellectual capital and human resource skills.

#### **4. Library & Information Centre at SPM, PDPU:**

The Library & Information Centre at SPM aims to facilitate production & dissemination of knowledge, information, insights & intellectual contribution in all areas of Energy & Infrastructure Management. LIC is on its way to becoming an outstanding learning resource centre for the students, faculty, and researchers of PDPU Community. The centre has utilised Information Technology extensively to ensure that resources are accessible from anywhere at any time. Services such as OPAC for checking online availability and reserving online, remote access to e-resources and databases through library web page make the LIC very user friendly.

The library has been automated using Alice for Windows (AfW) – an international user- friendly library package. The software facilitates automated circulation (issue-return) of books and speedy access to bibliographic, location and availability information of the books in the library. The catalogue is available on the Internet (online catalogue), which is updated and used heavily by the users.

#### **5. Development of collections and services**

CILIP(2007) recognised the role and importance of the physical library as an information access point has been redefined/agreed with the organisation as print becomes superseded by provision of e-resources for many topics; digital resources (journals, databases, books and other content materials).

| <b>PRINT</b>     | <b>NON PRINT</b>  |
|------------------|-------------------|
| Books – 10,180   | E-Journal – 3,300 |
| Periodicals - 94 | CDs - 980         |
| Newspapers- 17   | Databases – 07 *  |
| Reports – 535    | Photo Albums - 32 |

LIC is providing the following services to help our academic community to enrich their teaching, research and study more efficiently.

- **Regular orientation:** These sessions are compulsory for all new users, conducted by our library team to introduce your user to the library's wealth of resources and to strengthen their academic activities. Sessions cover both print and electronic resources. The library orientations are taught in a computer-classroom environment, providing students with hands-on experience.
- **Reference / Information Services:** A variety of Reference and Information Services on Energy & Petrochemical subject area are provided by our library team. Library staff at the Reference Desk will assist students in the use of the Library's Online Catalogue, remote catalogues, database usage training, indexes and other reference sources whether in print or electronic format.

The librarians also give answers to specific questions, provide guidance in research work and conduct library orientation tours and subject specific library instruction sessions

- **Current Awareness Services**  
It is vital for researchers and academics to keep up-to-date with the most recently published information and developments. A selection of current-awareness services is outlined below.
  - News Items on Energy & Petrochemical area (both in electronic & hard copies) circulating among our users.
  - Circulating daily news letter (on line) published by Infraline, one petro & petro watch among our user community.
  - Table of Contents (TOC) alerts: Table of Contents alerts allow you to be automatically notified when the new issue of a journal and new titles are added.
  - Giving updated data published by Ministry of Petroleum (Govt. of India), EIA, IEA & OPAC among our users.
- **Training on Information Search / Online Access**  
Special training sessions are arranging for our user to update our recourses, mainly databases and other online services. Executives from different databases used to provide updates of their product periodically to our users.

We also provide

- Reading Facility & Issue / Return
- Inter-Library Loan

## 6. Some Special Features

As a special library, we provide a client focused library and information service. Our library team tries to obtain, organise and provide access to all the available recourses available in Energy, Infrastructure and Petrochemical area includes current and authoritative information sources.

There is separation section for Reports and Statistical data on Energy & petrochemical which includes

- Govt. of India Reports and data
- Govt. Act & Rules
- TERI Reports
- OPEC bulletins and latest reports
- EIA & IEA reports and data
- Data monitor reports (from EBSCO)
- CRISIL and CMIE data

Our library staff uses information resources and technology to facilitate effective and efficient client access to information that supports the goals and business of the Institute. Our library team provides value adding services such as:

- Building a dynamic collection of information resources based on a deep understanding of clients' information needs
- Training and assisting clients to effectively access information and use relevant technology
- Gathering evidence to support teaching & research
- Current awareness of emerging technologies and best practice in information and knowledge management

## 7. Conclusion

In this paper, I have tried to highlight the user services and special collection at our SPM Library at PDPU. As a special academic library at PDPU we tried to focus on 'Energy & Petrochemical' subject area and we tried to serve our user at the best, with our available resource and staff. We have developed our library to support the mission of Institute and also our parental organization PDPU with our special collections and services.

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## Chapter 28

# Information Management and Electronic Library Services in TERI University and International Libraries worldwide

Bharati Paliwal  
University Librarian, TERI University  
New Delhi, India  
[bharatp@teri.res.in](mailto:bharatp@teri.res.in)

**Abstract.** *University Library is integral to the University's mission by- positioning the Library's information services in an expanding digital world to meet the changing needs and develop roles to foster a culture of collaboration, flexibility and innovation. Technology continues to change services - virtual reality, discovery tools, open content, open source and new social networking tools are some of the most important technological changes affecting university libraries world wide. The exciting developments are Online library management services and discovery tools, which provide a single interface to multiple resources using a consolidated resource that promises faster and better search results.*

*Developed countries' libraries visits in US, Canada, UK, Europe, China, UAE have helped to conduct a broad-based audit of the Library's facilities and practices to ensure compliance with the high standards. In almost all libraries globally, more and more repositories are emerging. The initiatives are in progress to make e-resources widely available and accessible to broad scholar communities. As digital collections mature, long-term planning for their preservation is essential. Academic libraries will increasingly focus on distinctive and unique collections in service to regional and national scholarly audiences. Many of these collections, particularly those that include unique content or institution-specific materials such as university theses, records and gray literature, are digitized. Higher education universities are facing challenges due to rise of online instruction programs. Shifts in the higher education have an impact on libraries in terms of expectations for development of collections, delivery of collections and services for Online learning environment. Some academic libraries have taken an active role in changing the scholarly communication environment by creating or expanding services. University libraries are providing "The Open Course Library," which makes books freely. Though TERI University Library's information resources remain a developing mix of print and electronic materials, within the next four-to-five years approximately 70% of the Library's resources will be electronic.*

**Keywords:** Information Management, Electronic Library Services, University Libraries, International Libraries, International Linkages

### 1. Introduction

**TERI University** is serving society as a seat of advanced learning and promotes learning through teaching, creating and sharing knowledge. The University commits itself to academic excellence in an environment which encourages personal and intellectual growth. It provides world-class training in Energy Studies, Biosciences, Environmental Studies, Public Policy. The academic programmes provide students a holistic perspective of the subject at hand and have a wide approach to encourage interdisciplinary learning. It establishes and participates in collaborative activities with other educational institutions in and outside the country. It also organizes conferences and seminars on subjects of theoretical or practical relevance to the courses of study. Apart from doctoral research, TERI University provides opportunities for M.Sc. degree programmes in various fields and subjects like Environmental Studies, Natural Resources Management, Environmental & Resource Economics, Water Resources Management, Geoinformatics,

Climate Science & Policy and Plant Biotechnology. Also on offer are M.B.A. programmes in Infrastructure and in Business Sustainability and an M.Tech. programme in Renewable Energy. The University offers an M.A. programme in Public Policy & Sustainable Development and has recently, launched an M.A (Sustainable Development Practice) programme, the TERI University being one of the ten institutions chosen world- wide by the MacArthur Foundation, to run this programme.

Faculty members act as guides to students, engaging them in expanding the boundaries of inquiry through minor projects, summer internships, and a semester-long major project. Guest lectures by experts in various fields are organised throughout the semesters in order to give a wider perspective to the students. The University encourages exchange of ideas, cultural understanding and a wide range of knowledge that would result from international perspectives. To achieve this, the TERI University has academic collaborations with several select foreign universities, which provide for joint curriculum development and exchange of faculty and students. Top performers in the master's programmes get an opportunity to do their major projects at Yale University, USA, or at Freie University of Berlin, which are entirely funded through collaborative tie-ups. The UNESCO has launched the Chair on Climate Science and Policy to TERI University. The Chair provides TERI University an opportunity to establish a leading programme in climate science studies, training, and research catering to needs not only in India, but also globally.

The University uses modern pedagogical tools for teaching which are richly supplemented by field visits, live industry projects and hands-on applications. The University provides the very best in equipment and instruments, including state-of-the art computer hardware and software, well-equipped laboratories, video-conferencing facilities and **South Asia's most comprehensive library on energy and environment.**

## **2. The TERI University library**

The library supports the university's academic and research programmes by meeting the information requirements of students, Ph.D. scholars, researchers, faculty, scientists, and institutions in India and across the world. The library's services are offered electronically in an IT and wi-fi enabled campus. The gateway to information for users:

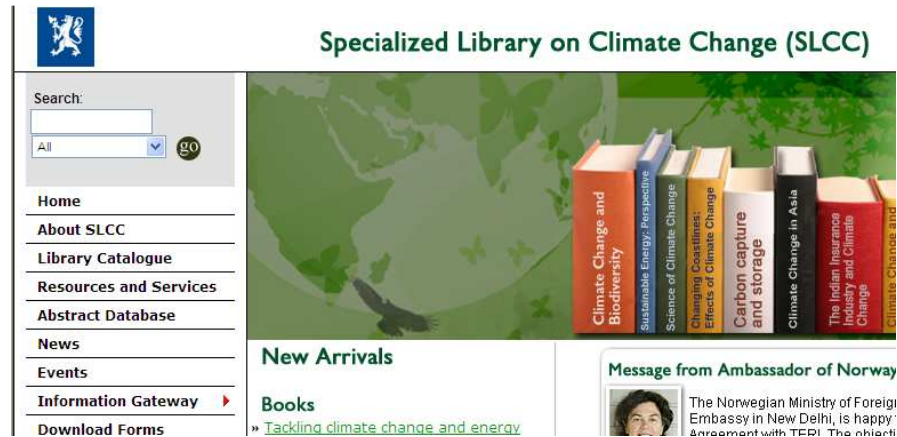
**TERI University Library** exemplifies modern methods for creating, applying and utilizing digital information. It contributes to students, faculty and society at large by being a repository of raw information capital in areas related to the university's research and teaching. The library has the capacity, infrastructure and promotes management of digital resources, distance online teaching and learning, virtual referencing, user centric digital services and fostering an environment conducive to research, teaching and learning.

**Digital resources** are centrally organized and available to students, researchers, and faculty via single-window access desktops. It supports generation and use of information for updating knowledge regardless of form or format. The Library is equipped with the latest tools and techniques to collect, store, retrieve and disseminate information. User terminals in the library permit access to the library resources and services. The library uses bar-code technology that enables automated circulation and management of resources.



**The web interface** provides flexible access to several electronic books, journals, databases, TERI University Ph.D. theses, photographs, newspaper clippings and multimedia resources. It serves as a one-stop shop where users find links to digital services and resources all in one place. It is also a tool for integrating both printed and electronic resources.

Many electronic services such as electronic alerts and selective dissemination of information are provided



A few value added services of the library for the faculty and students include-

- Subject/Syllabus/Course based customized information
- Upcoming events and opportunities offered by foreign universities
- Access to holdings of national and international university libraries
- Websites and portals of relevance
- Tracking information for latest news, scholarships, placements, call for papers announcements
- Alerts of forthcoming conferences and recent additions
- Bulletin of electronic news and content alert

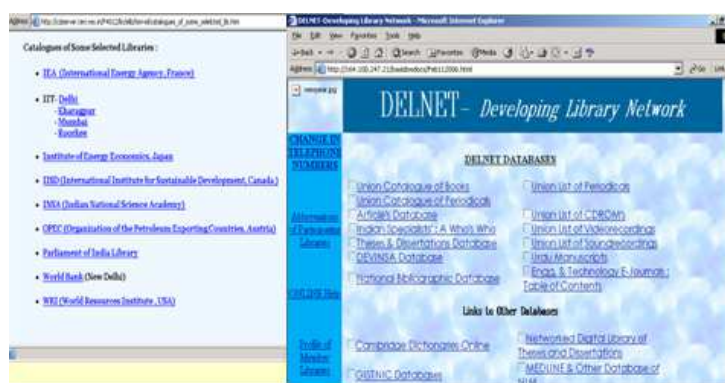


The library provides a wide array of resources on subjects of relevance from the world's leading academic databases.

- Access to online catalogues of publishers to inform new releases
- Online databases and archives of academic journals/monographs
- New arrivals, forthcoming events and alert services to attract large number of users.



The library conducts Information exchange programmes with overseas universities; Linkages for resource sharing with university libraries; Subject specific user education sessions; Orientation programmes.



TERI University provides distance learning and e-learning. The digital glass notebook is used for live interaction, High Definition (HD) plasma screens are used for clear picture view. The e-content for university education at the postgraduate level in environmental science courses such as environmental pollution and control, water and wastewater treatment, air quality management, integrated impact assessment, and environmental economics. This project addresses the key objective of the Ministry of Human Resource Development's (MHRD) National Mission by providing accessible, high quality course material at the postgraduate level in all subjects at affordable costs, with technology-enabled access that will not be limited by geographic constraints.

The library uses the web-enabled digital information system as a communication tool for providing the updated information, links to e-resources and news about special programs. Organizes talks of subject specific expert foreign Universities' faculty members which are beneficial to students and faculty. Create awareness and promote library through personal interactions, notice boards, book fairs, exhibitions, subject specific collection promotion events.

TERI University Library responds to the evolving expectations of the 21<sup>st</sup> century scholar. The Library is working to set a high and consistent standard for service delivery and pursue collection development strategy that strengthens holdings. With explosion of mobile devices, it delivers the services much more quickly and less expensively. We are building a repository of digitized books and journals and harvest the major digital repositories around the world. The university library is able to assist the students and faculty online and has also build a large network of librarians globally We are managing increasingly diverse collections, working to provide access to collections across the Web, managing ever growing electronic collections, manage licenses for electronic materials as well as manage purchasing for multiple formats. The University in-house data and services are economically integrated into the user services. The students and faculty have increased accessibility of collections.

### 3. International Linkages with Libraries Worldwide

The University has established excellent partnerships and collaborative arrangements with a number of institutions overseas, ranging from Yale University in the US, Deakin University in Australia and Universiti Tenaga Nasional (UNITEN) in Malaysia. A particular unique strength of the TERI University also comes from its association with TERI as a research institute of distinction, because this provides fertile opportunities for faculty from the University to work on a diverse range of meaningful research projects and for the students to gain valuable experience working on these. The new direction for the TERI University Library is the product of deliberate processes, collaborations, by deep analysis and widespread visits and consultation with following libraries and their professionals overseas:

**United States of America:** New York Public Library, Mid-Manhattan Library, New York, University of California Library, Los Angeles Public Library, Syracuse University Library, San Francisco Public Library, Las Vegas-Clark County Library North Las Vegas, Nevada, Alaska State Library, Juneau Public Library, Buffalo Public Library.

**Canada:** University of Toronto Library, Canada, Toronto Public Library, Canada, Buffalo Public Library, Vancouver Public Library, Greater Victoria Public Library, Victoria, British Columbia, Canada

**Europe:** Swiss National Library, Berne, Switzerland, The Austrian National Library, Vienna, Public Library Vienna, Austria, National Library of Serbia, Belgrade.

**China-** Libraries in Beijing- National Library of China, Tsinghua University Library, Beijing University Library, Beijing Capital Library, the National Science and Technology Library, Peking University and Libraries in Shanghai-Shanghai Jiao Tong University, Shanghai Library, Fudan University.

**UAE -** Abu Dhabi National Library, Abu Dhabi University Library, Zayed Central Library, University of Dubai Library, Fujairah Women's College Library, Sharjah Library, University of Sharjah Library.

National Library, **Singapore**, **Malaysia** National Library, Kuala Lumpur, National Library of **Thailand**, Bangkok, The North Star library, Pattaya, **Nepal** National Library, The National Library of **Bhutan**, Thimphu.

Each library visit included a tour of the library facility and a meeting with the director and/or senior library professional to hear from them on library matters. Met and discussed the issues affecting academic libraries and higher education with Directors, Heads and Deans of University libraries. The leaders in academic librarianship felt that Academic libraries provide value to the academic institution. They directly contribute to student and faculty and to university's effectiveness.

In almost all libraries globally, more and more repositories are emerging. The initiatives are in progress to make e-resources widely available and accessible to broad scholar communities. Many of these collections, particularly those that include unique content or institution-specific materials such as university theses, are digitized.

User-Driven Acquisition of e-books, licensing agreements with e-book vendors enable libraries to purchase books that are in high demand. New publishing models are being explored for journals, scholarly monographs, textbooks, and digital materials. Developments relevant to journals include open access to content. Campus libraries with cafés and 24/7 access to the facilities and resources, are popular with students and faculty. Convenient access to resources, whether human, print, or electronic; scholarly communication, university library information literacy instructions, distance education services; university library collaborations: multi-university collaborations and university library associations are imported. Developed countries' university libraries visits and discussions have afforded me a new opportunity to discuss plans and progress towards the goals.

**TERI University Library** collection growth is driven by students and faculty members' demands. User preferences for access to text books and reference materials, limited physical space, and the inability to financially sustain collections have led TU library to customize student-faculty driven acquisitions, print-on-demand options and resource sharing systems. The library recognizes the need to collect, preserve and provides access to digital databases and resources. These materials include university archives and the scholarly output of faculty and students. The visual data analysis tools are one of the emerging technologies most likely to enter mainstream use on campus within the next four-to-five years. Additional collection development trends include the effect of Google Books on library collections and a growth in shared collection development. As technological changes continue to impact not only the way TERI University Library is used but also the nature of collections, the library's impact on student learning outcomes, student engagement, student recruitment, grants, fellowships, scholarships, awards, calls for proposals, new funding opportunities and faculty research productivity.

Digital Resources - The PhD theses and project reports often remain an un-tapped and under-utilized asset. TERI University Library facilitates open access to its digital theses to the academic community worldwide.

TERI University Library has formed innovative partnerships globally that will result in a pooling of resources and broad integration of e-resource management, collaborative collection development and digital preservation. Collaborations will continue to help maximize the efficient use of resources. We are already making use of Google Docs, Wikis, and other tools that facilitate collaboration regardless of physical proximity.

Our Library continues to develop scholarly communication through proactive efforts to educate faculty and students. We provide user education on latest discovery tools, open content, multiple resources. The library provides access to a more resources than ever before. It is expected that the online trend will continue and accelerate into the future. The complementary nature of the physical and online services to support the teaching in TERI University Campus will continue. Though TERI University Library's information resources remain a developing mix of print and electronic materials, within the next four-to-five years approximately 70% of the Library's resources will be electronic. It is imperative to provide inviting learning spaces backed by a range of educational reference services, along with access to key information resources required for education and research programs, to meet the changing needs of our users.

**PART 5:**  
**(NEXT GENERATION) LIBRARIANS:**  
***REJUVENATED***

## Chapter 29

# Internet Research for the Real World: Incorporating Career Development into Legal Research Classes

**Bobbi Weaver**  
**Foreign & International Law Reference Librarian**  
**California Western School of Law**  
**San Diego, USA**  
[baw@cwsf.edu](mailto:baw@cwsf.edu)

**Abstract.** *As a dual-degree reference librarian at a law school, I teach classes dealing with legal research in addition to my regular reference responsibilities. Each fall, I teach a course in international legal research. I began teaching this course in 2001, and have generally included a lecture on job searching strategies for finding employment in international law. As the job market became more competitive, I began including this information in other research classes. When I teach Advanced Legal Research, my last lecture is on fun and useful things on the internet, which includes some review of job searching websites. Each term, I also provide a lecture on resources for practicing law in the neighboring state of Nevada. In addition to presenting legal research materials unique to Nevada, I also provide information on job search web sites, salary calculators, and relocation. While we do have an excellent career services department, the information provided in the classroom setting provides some extra help in a tight legal job market. In this chapter, I will describe some of the ways I have incorporated online career development resources into my class lectures.*

**Keywords:** Legal Research Materials, Internet Research, Career Development

### 1. Introduction

In addition to my duties as the Foreign and International Law Reference Librarian at California Western School of Law (CWSL), I also serve as an adjunct law professor for legal research courses. I primarily teach the courses, International Legal Research and Advanced Legal Research. Other dual-degree librarians at CWSL also teach Advanced Legal Research and some other specialized legal research courses. Generally, during the last lecture of the term, I have introduced the students to some career searching web sites that might be useful for their pursuit of legal careers.

In addition to my regular classes, the CWSL Library also offers optional sessions on preparing to practice in California and the neighboring states of Arizona and Nevada. I am generally responsible for covering Nevada, and I include some career searching sites specific to the state in my presentation each term.

In 2012, I assembled the resources I have discovered over the years and revised our research guide on career development resources. The guide has references to various online sources as well as some print directories that we have available in the library's collection.

### 2. Literature Review

Although most of this chapter will be based upon my personal teaching experience, there has been some research in the rise of technology's role in the career development process. In a 2007 article, Drs. Zalaquett and Osborn discussed their development of the Career Resources Web Page (<http://careerresource.coedu.usf.edu/>), a web site

designed to train career counseling students in the use of online resources. (Zalaquett & Osborn, 2007). One of the components of the web site, "Career Searches," provides links to various job searching web sites. (Zalaquett & Osborn, 2007, p. 164).

In 2001, over 10 years ago, the *Journal of Career Development* featured two articles regarding the impact of technology on the career development field. (Davidson, 2001; Miller & McDaniels, 2001) In one article, Davidson discussed the progression of the University of Missouri—Columbia Career Center's web site from its beginnings in 1995 to the time the article was published in 2001 (Davidson, 2001, p. 219). She noted that, in the beginning the Center's web site consisted on one page of basic information about the office and its services. (Davidson, 2001, p. 219). In 2001, the web site had increased to include over 2000 pages of information. (Davidson, 2001, p. 219).

In the same 2001 journal issue, Miller and McDaniels-- also from the University of Missouri—Columbia--wrote an article noting the increased use of computers in career development. (Miller & McDaniels, 2001). They remarked that the method of notifying students about open positions moved from posting paper announcements on a bulletin board in the Career Center to making them available online. (Miller & McDaniels, 2001, p. 203).

### 3. International Legal Research

In 2001, I began teaching a course on international legal research. Because the field is more specialized, I included a session on some career searching sites that might be interest to students seeking a career in international law. I continue to teach this class during each Fall term, and still include some information on job-searching for prospective international lawyers. During this lecture, I present general sources for international job hunting, which include both online and print sources. Figure 1 depicts the first page of the class handout that lists the general sources

**Intl. Legal Research**

### General Sources for International Job Hunting

**United Nations: Human Resources**  
<http://aiturl.com/imc8b>  
 --Open positions are organized by occupational categories. Vacancies can also be searched by keyword. Many of the jobs allow online applications.

**U.S. Department of State Careers**  
<http://www.careers.state.gov/>  
 --Web site provides information on careers with the U.S. Department of State

**USAID Careers**  
<http://www.usaid.gov/careers/>

**USA JOBS: Advanced & International Search**  
<http://jobsearch.usajobs.gov/advanced.aspx>

**SLA International Information Exchange: International Jobs**  
<http://www.sla.org/caucus/kiie/uniobs.htm>  
 --Portal to career pages for various international organizations.

**Idealist.org: Jobs**  
<http://aiturl.com/uoikei>  
 --Database of job and volunteer opportunities from throughout the world

### Books

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>At CWSL</b><br/> <a href="http://kim.cwsl.edu/">http://kim.cwsl.edu/</a><br/>             Nina Segal &amp; Eric Kocher, <i>International jobs: where they are, how to get them</i>, 6th ed. (2003)</p> <p><b>At SDPL</b><br/>             --Ronald Krannich, <i>The directory of websites for international jobs: the click and easy guide</i> (2002)<br/>             --Ronald Krannich, <i>The directory of websites for international jobs: the click and easy guide</i> (2002)</p> | <p>Ronald Krannich, <i>Best resumes and CVs for international jobs: your passport to the global job market</i> (2002)</p> <p>Heather Krasna, <i>Jobs that matter: find a stable, fulfilling career in public service</i> (2010)</p> <p>Daniel Lauber, <i>International job finder: where jobs are worldwide</i> (2002)</p> | <p><b>Books for Purchase</b></p> <p>Paul Allen, <i>Should I stay or should I go?: The truth about moving abroad and whether it's right for you</i> (2010)</p> <p>Blythe Camenson, <i>Opportunities in Overseas Careers</i> (2004)</p> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Figure 1

Like domestic law, there are also various specializations within the area of international law. The second part of my presentation includes information on job-searching resources specific to trade and commerce, human rights & labor, and the environment. Figure 2 depicts the second page of the class handout that lists specialized resources.

|                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Trade and Commerce</b>                          | <p><i>Directory of American firms operating in foreign countries</i>, 19th ed. (2007)<br/>         --Multi-volume set located in the Reference Collection<br/>         --Search <a href="http://kim.cwsl.edu">http://kim.cwsl.edu</a></p> <p>World Bank: Jobs<br/> <a href="http://alturl.com/duovg">http://alturl.com/duovg</a></p> <p>WTO: Job Vacancies<br/> <a href="http://alturl.com/78rox">http://alturl.com/78rox</a></p> | <p>WTO Internship Programme<br/> <a href="http://alturl.com/eu3iy">http://alturl.com/eu3iy</a></p> <p>IMF Recruitment<br/> <a href="http://alturl.com/im4yy">http://alturl.com/im4yy</a></p> <p>International Telecommunications Union: Employment Site<br/> <a href="http://www.itu.int/employment/">http://www.itu.int/employment/</a></p> |
| <b>International Human Rights &amp; Labor Jobs</b> | <p>Human Rights Watch: Employment<br/> <a href="http://alturl.com/it2vw">http://alturl.com/it2vw</a></p> <p>ILO: Current Vacancies<br/> <a href="http://alturl.com/u47zj">http://alturl.com/u47zj</a></p>                                                                                                                                                                                                                         | <p>Amnesty International: Jobs<br/> <a href="http://alturl.com/ce6qn">http://alturl.com/ce6qn</a></p> <p>OAS Employment<br/> <a href="http://alturl.com/vx9if">http://alturl.com/vx9if</a></p>                                                                                                                                               |
| <b>International Environmental Jobs</b>            | <p>Defenders of Wildlife: Jobs<br/> <a href="http://www.defenders.org/jobs">http://www.defenders.org/jobs</a></p> <p>Earthjustice: Job Opportunities<br/> <a href="http://alturl.com/n4vsz">http://alturl.com/n4vsz</a></p> <p>World Wildlife Fund<br/>         INTL: <a href="http://alturl.com/s8qix">http://alturl.com/s8qix</a><br/>         DC: <a href="http://alturl.com/kbpqr">http://alturl.com/kbpqr</a></p>            | <p>Greenpeace Int'l: Current Jobs<br/> <a href="http://alturl.com/jrow6">http://alturl.com/jrow6</a></p> <p><b>Law of the Sea</b></p> <p>Careers at IMO<br/> <a href="http://alturl.com/vi8vp">http://alturl.com/vi8vp</a></p> <p>ITLOS: Employment Opportunities<br/> <a href="http://alturl.com/dwhz2">http://alturl.com/dwhz2</a></p>     |

Figure 2

#### 4. Advanced Legal Research

As the legal job market grew tighter in recent years, I could sense the concern that many of my students had about finding a job upon graduation. Accordingly, I started including information about career searching sites in my final lecture for my Advance Legal Research classes as well. Since the students are not going to be tested on what I say during my final lecture for the term, I usually present some quirky web sites as a sort of comic relief while the students are preparing for final examinations. Since some of my students may also be graduating during that particular term, I also share some practical information about the various career searching sites available online as well as some of the print sources that are available at the library. Figure 3 depicts the career development section of my final class handout in Advanced Legal Research.

## Getting a Job

|                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Indeed<br/> <a href="http://www.indeed.com">http://www.indeed.com</a><br/>         —This mega job database seems to have a more extensive and current selection than its competitors.</p>                                             | <p>Imperial County—Human Resources<br/> <a href="http://www.co.imperial.ca.us/human-resources/HrNew/">http://www.co.imperial.ca.us/human-resources/HrNew/</a><br/>         Orange County Government Employment<br/> <a href="http://egov.ocgov.com/ocgov/Services/Employment">http://egov.ocgov.com/ocgov/Services/Employment</a></p> |
| <p>USA Jobs<br/> <a href="http://www.usajobs.gov">http://www.usajobs.gov</a><br/>         —Database of federal job opportunities. Allows searches by job title, location, and salary range.</p>                                          | <p>Los Angeles County Job Search<br/> <a href="http://alturl.com/u56xk">http://alturl.com/u56xk</a></p>                                                                                                                                                                                                                               |
| <p>California State Jobs<br/> <a href="http://jobs.ca.gov/OEC/index.aspx">http://jobs.ca.gov/OEC/index.aspx</a><br/>         —Database of jobs available with the State of California. Allows limitation by county and job category.</p> | <p>San Diego Daily Transcript—Classifieds<br/> <a href="http://www.sddt.com/Classifieds/">http://www.sddt.com/Classifieds/</a><br/>         Idealist.org [jobs with nonprofit organizations]<br/> <a href="http://www.idealists.org/">http://www.idealists.org/</a><br/>         —Can search by country, region, and job title.</p>   |
| <p>County of San Diego—Dept. of Human Resources<br/> <a href="http://www.sdcounv.ca.gov/hr/">http://www.sdcounv.ca.gov/hr/</a></p>                                                                                                       | <p>CWSL Research Guide: Career Development Resources<br/> <a href="http://libraryguides.cwsl.edu/CareerResources">http://libraryguides.cwsl.edu/CareerResources</a></p>                                                                                                                                                               |
| <p>City of San Diego—Current Jobs<br/> <a href="https://apps.sandiego.gov/pjaol/curriob/index.jsp">https://apps.sandiego.gov/pjaol/curriob/index.jsp</a></p>                                                                             |                                                                                                                                                                                                                                                                                                                                       |

Figure 3

### 5. Prepare to Practice--Nevada

In 2009, the California Western School of Law Library began offering optional “Prepare to Practice” sessions focusing on resources useful for practicing law in California as well as the neighboring states of Arizona and Nevada. Traditionally, I have been delegated the responsibility of presented the lecture on Nevada. Along with providing information on legal resources specific to practicing in Nevada, I also provide information about job searches in the state as well as salary calculators and relocation information. The outline of the presentation is updated each term, and is available at <http://libraryguides.cwsl.edu/nevada>.

### 6. Library Research Guide on Career Development Resources

In February 2012, I revised our Career Development research guide using the new LibGuides software (<http://springshare.com/libguides/>). This research guide is available online at <http://libraryguides.cwsl.edu/CareerResources>.

I divided the library research guide into 6 different sections or pages: “General”; “Legal Jobs”; “Government”; “Newspapers”; “Directories”; and “Books”. Below is a brief description of each page’s contents.

**General:** This page includes mostly links to many popular job web sites that are popular in the U.S., including *Monster*, *CareerBuilder*, *FlipDog*, *Indeed.com*, *Simply Hired* and *LinkUp*. This page also includes links to information on job fairs.

**Legal Jobs:** This page consists of links to jobs sites specifically related to the legal field. It is divided into sub-sections for local, nationwide, and international opportunities.

**Government:** Links to employment sites for federal government jobs and for the human resources departments of all 50 U.S. states as well as the District of Columbia are included on this page. There is also a section to employment sites from municipalities local to San Diego.

Newspapers: Links to the online sites for local newspapers and newspapers in California are included on this page. There is also a section with links to various newspaper portals.

Directories: At times, job-seekers may need to find contact information for a prospective employer. This page of the research guide has links to the catalog records for many of the print directories that we have available in our collection. There are sub-sections for general legal directories, legislative and regulatory directories, court directories, and academic directories.

Books: This final page includes links to the catalog records of books that provide vocational guidance, tips on resumé writing, interviewing, and career paths for graduates with a law degree. Most of the books are available in the CWSL collection, but there are some references to books in the local public library.

This software provides information on some usage statistics. Since its creation, 422 people have viewed all or part of this guide. The guide was published in February 2012.

Job announcements are only a component of career development. The guide also provides information on books for vocational guidance, and directories to help locate appropriate contacts for networking. Nonetheless, job announcements are still an important beginning point, and today most are available online. From my personal experience, only my first part-time job while in high school was obtained because I knew someone working at the establishment. All of my professional positions have originated from answering a newspaper advertisement, job board posting, or online job announcement.

## **7. Conclusion**

While the research guide has provided a reference point and a portal for various career resources for our students, the classroom lecture time provides an opportunity to show students how to best navigate job-searching sites for the optimum results. The competitiveness in the legal field, as in many other fields, has caused students to be concerned about their future employment prospects upon graduation. Career information literacy is just another type of information literacy. Librarians and information professionals are well-versed in various information tools and often teach others how to use them. It makes sense for us to share this knowledge and experience in the area of career-searching as well.

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## Chapter 30

# Open Access As Tool For A Fair Copyright Management For Scholarship

**Antonella De Robbio**

Coordinator of Law Libraries , Università degli Studi di Padova - University of Padua

Co-Founder and Chief Executive, E-LIS

[antonella.derobbio@unipd.it](mailto:antonella.derobbio@unipd.it)

[Special note from the author Antonella De Robbio: This article is a tribute to the memory of the Indian librarian **Mr. Venkatrao Lakshmanrao Kalyane**, who was the founding E-LIS repository editor for India (2004-2006), who passed away in 2010. He was Scientific Officer at SIRD unit of BARC, Mumbai and has published more than 100 publications in scientometrics in national and international journals.]

"Alas," said the mouse,  
 "the whole world is growing smaller every day.  
 At the beginning it was so big that I was afraid,  
 I kept running and running, and I was glad when  
 I saw walls far away to the right and left,  
 but these long walls have narrowed so quickly  
 that I am in the last chamber already,  
 and there in the corner stands the trap that  
 I must run into."  
 "You only need to change your direction,"  
 said the cat, and ate it up.

[*Franz Kafka. A Little Fable*<sup>37</sup>]

**Abstract.** Inside of the Academic World, librarians first understood that the copyright management system represented a critical mass. The main goal of Open Access is to remove all the economical, legal and technical barriers to scientific information, with benefits for everyone. So copyright represents the main obstacle, but it is manageable by making aware the authors don't grant all the rights to the publishers, through the implementation of copyright policy inside the Universities, but first of all is a duty for all the Governments to pass laws taking care of research and not of economical lobbies' interests. Authors should be aware of the importance to keep their rights preventing them to release copyright to publishers. It is fundamental that authors know how it is important to keep copyright for their own purposes and both the universities and the governments should create policies in order to protect and guarantee scientific copyright and the world of research. By managing of scientific copyright it is possible to reform the knowledge economy too.

### 1. Open Access and intellectual property

Talking about author's rights, we are led to think about all the situations in which those rights are violated, particularly in the digital contest: acts that are called "piracy". The common approach to the matter reflects a vision based on a consumer society rather than on a knowledge based society, a vision that doesn't respect the needs of scientific communication and the interests of authors.

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<sup>37</sup> Kleine Fabel, in the original German, is a short story (only one paragraph) written by Franz Kafka between 1917 and 1923 dedicate to Felice Bauer. It wasn't published in Kafka's lifetime, but only on 1931 in *Beim Bau der Chinesischen Mauer*.

The concept of intellectual property, traceable to the different normative systems (copyright, royalties or something different) should necessarily be extended beyond the boundaries of every single State and it should include, in its possible free uses or rights restrictions, all the connected entities, including the whole body of citizens. Nevertheless, one must keep in mind that often, despite the efforts of WIPO (World Intellectual Property Organization), the legislative system of many countries in the world about intellectual property does not have an organic and consistent legal structure, but it is made of different rules put together in normative bodies that are not harmonized in a global context. Bill Strong<sup>38</sup>, in the 1999 has used a brilliant metaphor in order to give a comparison between the normative international system which resembles the railroad system at its beginning, when a train could not pass the limit of one concession, because the next had tracks of a different caliber. To these differences must be added that almost all the national normative systems regulate intellectual property concerning “on paper” contents.

Scholarly communication is the process of dissemination of the outcomes coming from research in universities, private organizations or institutions or research centres. These results are presented in the form of intellectual outputs. Each barrier to the dissemination of scientific research is a barrier to the access to knowledge. There is a clash between the aim of research and the access to its outcomes in journals where you are allowed to information only through the payment of subscription fees. Nowadays 11 publishers hold and manage the 75% of the publishing market and the 90% of the published articles can be accessed only through the payment of fees. As far as copyright is concerned, authors have to gain awareness that they don't have to release copyright to the publisher because they could need it back again in case of publishing their works in an open access archive or using them for educational purpose. So, the issue of copyright is not an obstacle to open access, but authors should be aware of the importance to keep their rights preventing them to release copyright to publishers.

Open Access is an approach to carry back the right balance between different interests and to reaffirm the essential aim of the author's right: *“The first objective of author's right is not to remunerate the work of authors, but to promote the progress of science and useful arts. For this purpose, author's right grants rights to their original work, but encourages people to build freely, being inspired by ideas and information contained in a work. This result is not unfair or inappropriate. It is the way by which copyright helps to accelerate the progress of science and arts”*. This was Sandra Day O'Connor's, judge of U.S. Supreme Court Justice, thought on dissemination and elaboration of the work of other authors, referring to the “IP Clause” of the Constitution of the United States<sup>39</sup> which is based on an utilitarian philosophy and underlines the instrumental aspect of the protection of intellectual property, recognized by the industrial inventions (patents) and by other creative works (copyright).<sup>40</sup>

If, from one side, the system of intellectual property ensures publishers great profit margins, Universities and research centers, instead, are undergoing gradual reductions in their budget due to the decrease of funding and to the high rising of prices in the scientific literature. It is an inelastic market (the research can not do without the scientific literature and publishers who own the so-called “core journals” can impose them at any price) not controlled by the actual producers (authors) and characterized by the international mergers of great publishing companies.

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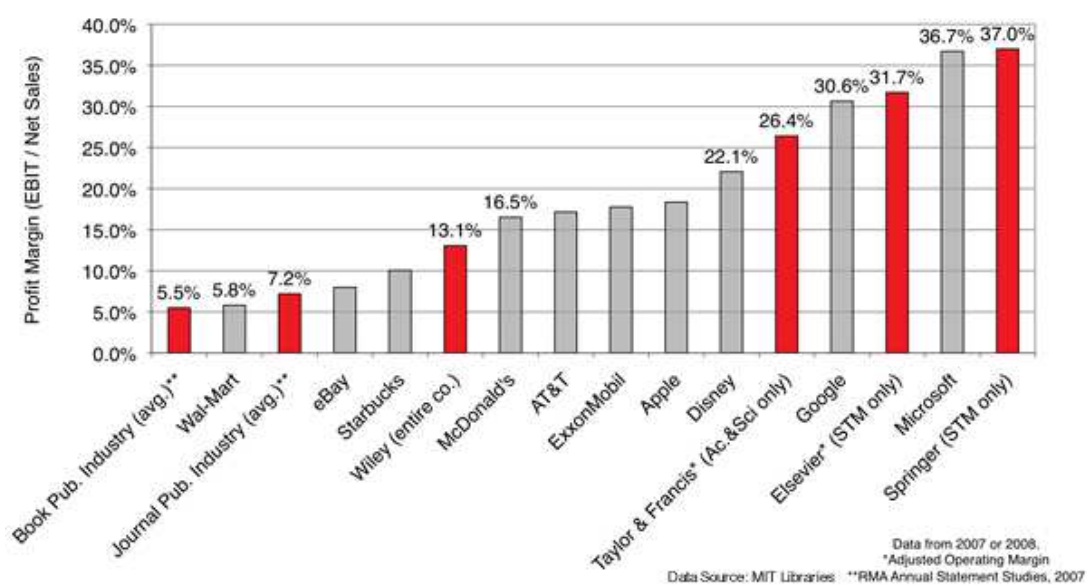
<sup>38</sup> Bill Strong, *Copyright in a time of change*. In <<The journal of electronic publishing>>, vol. 4, issue 3 (Mar. 1999), <<http://www.press.umich.edu/jep/04-03/strong.html>>.

<sup>39</sup> Clause 8 of the US Constitution (article I, section 8), known as *Copyright Clause*, *Copyright and Patent Clause* (or *Patent and Copyright Clause*), *Intellectual Property Clause* and *Progress Clause*, “*To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries*”, was written to protect both patents and copyright, in an economic logic with the aim of promoting the progress of knowledge with the recognition of an exclusive right limited in time.

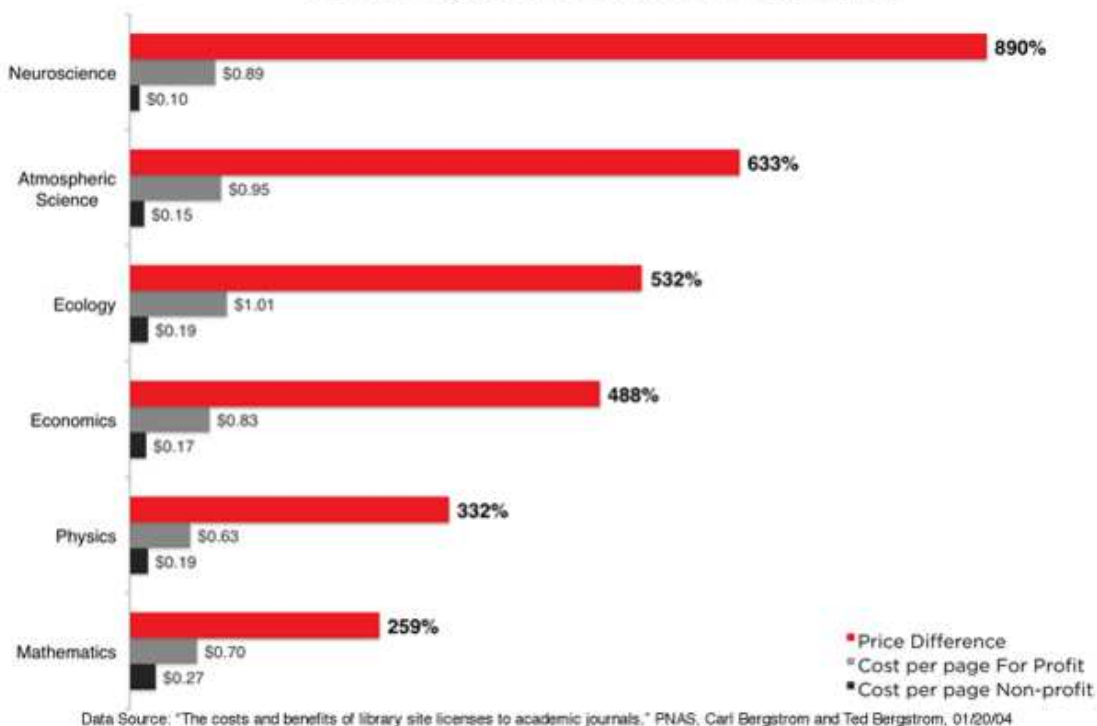
<sup>40</sup> Completely different is the IP clause of the European Charter of Fundamental Rights, art. 17 comma 2.

[http://www.europarl.europa.eu/charter/pdf/text\\_it.pdf](http://www.europarl.europa.eu/charter/pdf/text_it.pdf)

Profit Margins: Journal Publishers v. Other Companies



Cost Per Page: Non-Profit vs. For-Profit Journals



## 2010/2011 Profits for Commercial Publishers

|                  | <u>Profits</u> | <u>Revenues</u> | <u>Profit Margin</u> |
|------------------|----------------|-----------------|----------------------|
| • Elsevier       | \$1.2B         | \$2B            | 36%                  |
| • Wiley          | \$106M         | \$253M          | 42%                  |
| • Springer       | \$467M         | \$1.4B          | 34%                  |
| • <u>Informa</u> | \$74M          | \$230M          | 32%                  |
| • Apple          |                |                 | 24%                  |
| • Google         |                |                 | 27%                  |

*From LIBR 200: Smart Publishing in Education: Rights, Impact, Social Justice. Berkeley Library*

| <i>operating profit</i> | <i>company</i>    | <i>industry</i>             |
|-------------------------|-------------------|-----------------------------|
| 7%                      | <u>Woolworths</u> | supermarkets, pokies        |
| 12%                     | BMW               | automobiles                 |
| 23%                     | <u>Rio Tinto</u>  | mining                      |
| 35%                     | Apple             | premium computing           |
| <b>34%</b>              | <b>Springer</b>   | <b>scholarly publishing</b> |
| <b>36%</b>              | <b>Elsevier</b>   | <b>scholarly publishing</b> |
| <b>40%</b>              | <b>Wiley</b>      | <b>scholarly publishing</b> |

*The fees publishers charge to access research articles make scholarly publishing one of the most profitable industries around, while denying the public access to taxpayer-funded research. Numbers compiled by Alex Holcombe. Details here: <http://bit.ly/Wxo4VA>*

Open access solutions (IR self-archiving and open access publishing) are therefore a factor of balance in favour of scientific authors and users, restoring a suitable environment to the circulation of ideas and the preservation of knowledge as a common good.<sup>41</sup> Rights as a common good and common goods as a right.

<sup>41</sup> *Understanding knowledge as commons: from theory to practice*. Edited by C. HESS and E. OSTROM. Cambridge (Massachusetts), The MIT Press, 2006. Nobel Prize for Economy 2009, Elinor Ostrom teaches at Indiana University of Bloomington, USA; she is one of the greatest expert of

Over time, copyright has taken shape as a proprietary right on the work (intellectual property) which is born from the original producer (the author) and can be transferred wholly or partially by him with appropriate contracts. As a consequence, the property aspects related to the concept of ownership transferable to others, have always been the focus of the international debate over the moral rights, connected to the authorship of the work as a creative expression of the personality of the author. Moreover, in some jurisdictions of the English-speaking world it has never taken place a single category of moral rights linked to copyright: these issues are included in property field, so they can be sold.<sup>42</sup>

The gradual improvement of the private (self) control on the work has mainly favoured publishers and other intermediaries, leading to some unintended and unforeseen consequences for authors and users, particularly in the research world when occurs the following situation: public institutions finance much of the research; the research results are published for everyone to promote themselves. For this reason authors and / or funding agencies grant exploitation rights to publishers without remuneration and often also bearing the costs incurred from publishers. In addition, according to a recent British report, 66% of investments in scholarly communication are granted on public funds<sup>43</sup>.

Publishers sell their publications, or, to be more precise, grant licenses on them, usually very restrictive, at prices not proportioned with production costs less and less sustainable by the libraries, which are the main buyers. If authors and their institutions of reference have sold all the rights on their work to publishers, they have to pay to use it. When the work is out of the market, or when the publisher has no interest or possibility to make it accessible (although with a fee), the work and its author are deprived forever of the opportunity to be known, cited and used. This situation is more paradoxical in a technological context, like that of the Internet and World Wide Web, which is born to make easier communication and scientific research<sup>44</sup>, and where the fundamental rights of users and the social purpose of copyright have to be protected and guaranteed by law; this crucial task cannot be left to the discretion of the parties.

In 2006 a study on scientific journals commissioned by the Directorate General for Research of the European Commission has highlighted some of these situations, drawing some specific recommendations to the actors involved, including one addressed to public agencies that fund research, to provide results of scientific research in special archives accessible to everyone a short time after the publication, by agreement with the publishers, as a condition of profiting by public funds.<sup>45</sup> Afterwards, the European Union has come back several times speaking in favour of Open Access. But the adoption of a directive or other legal binding instrument for the Member States has never been reached. In the United States a law has been approved in biomedical field, at the end of a long and hard travel and with a fierce opposition from associations of publishers. This rule requires the submission to open access for the works financed by the National Institutes of Health.<sup>46</sup>

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consequences of relationships between mankind and environment. In particular, she has focused her interest on studying common resources and their management.

<sup>42</sup> In English-speaking countries, it is in force the juridical system known as *copyright*, while the author's right system, which includes inalienable moral rights, is proper to continental Europe, in particular for Italy, Germany and France. Nevertheless, even in an European context, and by consequence in Italy, it is common to use the word copyright referring to economic rights. See: *I diritti d'autore nell'era digitale. Copyright statunitense e diritto d'autore a confronto*. A cura di R. PASCUIZZI e R. CASO. Padova, CEDAM, 2002.

<sup>43</sup> RIN, Activities, costs and funding flows in scholarly communications <http://www.rin.ac.uk/costsfunding-flows>.

<sup>44</sup> For the origins of the Internet and of WWW, see: (*ex multis*), G. BLASI, *Internet: storia e futuro di un nuovo medium*. Milano, Guerini e Associati, 1999

<sup>45</sup> <[http://ec.europa.eu/research/science-society/pdf/scientific\\_publication\\_study\\_en.pdf](http://ec.europa.eu/research/science-society/pdf/scientific_publication_study_en.pdf)> [PDF 829 k]

<sup>46</sup> The law is inside the *Consolidated Appropriation Act 2008* (Division G, Title II, Section 218 of PL 110-161 ). See: *NIH Public Access Policy Details*, <http://publicaccess.nih.gov/policy.htm>. The works must be deposited in PubMed Central, the open archive of the National Library of Medicine, <http://www.ncbi.nlm.nih.gov/pmc/>.

In the debate over intellectual property system the economic analysis has a decisive role.<sup>47</sup> The author's right has been seen as a legal remedy to the failure of the market of knowledge, which is by its nature a public good, non-rival and non-exclusive:<sup>48</sup> the fruition of the work by one does not affect the fruition by others. In addition, no one can be excluded from knowledge. In this situation, which advantage can take the author from his work? The legal instrument of intellectual property should be used to provide a remuneration to authors, meant as an incentive for them to continue creating new original works, useful to the society. In other words, copyright is the price that society pays to the author or his successor in order to continue to have access to new ideas. However in practice this "incentive to create" turns out to be rather inconsistent for several reasons. First of all, because the authors gain a small portion of this fee. Second, because not every authors write for a charge; it happens that many famous authors obtain prestige and fame only after death. Scientific authors can write for different reasons, maybe related to career, but not always. Third, because the intellectual creation, whether or not scientific, needs a cultural and professional background that the author must build over time, at his own expenses, and that are rarely considered in the publication costs. Fourthly, because the remedy of intellectual property introduces artificially a monopoly on the work, which duration and intensity have created another type of market failure, setting access barriers.

## 2. Author's right as an European system

The legal sources of copyright are divided into three levels: the global level, that of treaties and international conventions; the European level (for our purposes), where we find nine directives and several studies, technical reports, and recommendations on intellectual property.

Transposition of European directives and the conformance established in international treaties, agreements and conventions in national laws could be difficult. Different regulations on intellectual property find at least a common denominator in the international action of WIPO (World Intellectual Property Organization).

It is necessary to emphasize that the actual legislation - oriented to Content providers guarantee - considers exceptions and limitations to copyright is affecting the fundamental right of rights holders to exploit their works and should only be introduced, if they are necessary in order to achieve a higher social objective. This vision is completely in conflict with research and academic interests.

As regards scientific and research community outputs, a distinction should be made between works that have been created and put in the market precisely for teaching and research purposes, and those that have a different commercial appeal.

Recently we have had the opportunity to comment on the Commission's Green Paper *Copyright in the Knowledge Economy*, which we view as an important contribution to the debate over the development of an EU strategy for IP management<sup>49</sup>. We fully agree with the Commission that a "wider dissemination of knowledge contributes to more inclusive and cohesive societies". In such direction all use for purposes which comply with fundamental rights and are

<sup>47</sup> For a critical review of economic theories on author's right see: G.B. RAMELLO, *Il diritto d'autore nella prospettiva Law and Economics*. "Economia della cultura", v. 13 (2003), n. 2, p. 207-217.

<sup>48</sup> On the knowledge as a public good see: J. E. STIGLITZ, *Knowledge as a Global Public Good*, in *Global Public Goods. International Cooperation in the 21st Century*. Edited by I. KAUL, I. GRUNBERG, M. A. STERN. New York, Oxford University Press, 1999. Stiglitz is a Nobel prize for Economy in 2001. See also: P.A. DAVID, *Tragedy of the public knowledge 'Commons': global science, intellectual property and the digital boomerang*. "MERIT Research Memoranda", n. 3, March 2001, <http://edocs.ub.unimaas.nl/loader/file.asp?id=208>.

<sup>49</sup> *Green Paper on copyright in the knowledge economy*

[http://ec.europa.eu/internal\\_market/copyright/copyright-info/copyright-info\\_en.htm#greenpaper](http://ec.europa.eu/internal_market/copyright/copyright-info/copyright-info_en.htm#greenpaper)

European Commission called for comments on its Green Paper on Copyright in the Knowledge Economy, asking whether the scientific and research community should enter into licensing schemes with publishers in order to increase access to works for teaching or research purposes. Examples of successful licensing schemes were queried, enabling online use of works for teaching or research purposes. The call for comments requested forms part of a consultation process.

socially relevant have to be allowed provided that their scope does not significantly prejudice the interests of the rightholders.

The Green Paper focuses on the role of copyright in fostering dissemination of knowledge for research, science and education. Copyright policy has increasingly emerged as a transversal issue, involving not only the internal market and cultural policies but also information society, competition and consumer interests. The Green Paper is an attempt to organise this debate and point to future challenges in fields that have not been a focal point up to now, e.g. scientific and scholarly publishing, and the role of libraries, researchers and the persons with a disability. On the other side the digital "dematerialisation" of content presents great opportunities for Europe, but also a number of challenges. First of all, obstacles still stand in the way of digital distribution of cultural products and services.

From the perspective of the Lisbon strategy, this holds particularly true with respect to educational or scientific uses, which express fundamental rights and are of high public interest. In many cases these uses do not encroach on the economic interests of rightholders at all. Quite on the contrary they contribute to economic and social growth.

At the national and international level, it is fundamental that authors know how it is important to keep copyright for their own purposes and both the universities and the governments should create policies in order to protect and guarantee scientific copyright and the world of research. To date this awareness is still missing. The transfer of rights can be carried out in subsequent phases through diversified contacts, over which the author doesn't have any control.

The owners of copyright are originally the authors. They acquire it when they produce their work. It is not always easy to identify the authors of a work, which often is the product of a teamwork, where each member is responsible for a specific segment. Authors may give up all or part of the property rights that form the intellectual property on the work. In fact, they often give away rights contractually to third parties (publishers or others). They can also authorize intermediaries or users to make only certain utilisation on which they have maintained the right to dispose. The difference between the cession of the right to use the work and the authorization to make any use on it, is that in the first case the holder is deprived of the right transferring it to a third party, in the second case the right remains to the owner.

Both the cession and the authorization may be in a contract or a unilateral act. In the first case (contract) provisions may be ordered at no charges or with a fee, in the second case (unilateral act) they are always free of charge (a cession made with an unilateral act seems like a renunciation). All these dispositions are often called licensing, although this term is appropriate only in case of authorisation, not in case of cession. Authorisation may be limited or unlimited and may allow the exclusive or non-exclusive exercise of the right. Authorisations that provide at the same time unlimited and exclusive exercise of an author's right can exclude all the other subjects including the settlor ("licensor", who grant a license / authorization to a "licensee" ) from the benefit of that right. These authorisations correspond in fact to forms of cession. In the next sections we'll discuss the licenses that regulate relations between all the parties involved in depositing works in the IR. The author and the public and/or universities and public, author and/or universities and publisher, author and university (or research institute).

The subject matter of author's right is any type of creative work, meant as the product of an intellectual work fixed and identified in a particular original and innovative idea, regarding to other informations or legacy data. The object of protections are not ideas, concepts or feelings but their organization and representation, the set of selected signs combined by the author to express them, whatever is the linguistic code (text, figure, etc.). The work protected by intellectual property (*corpus mysticum*) should not be confused with the framework used to convey it (*corpus mechanicus*): the buyer of a book obtains the ownership of it on the material support, but on the work he has a non-exclusive licence, because the property on the intellectual content remains to the author and/or to the publisher. Another matter regards the elements that make up the package work: layout, graphic composition, etc. These elements, referring to the editorial work and not the author, are protected because they are part of the image of the corporate brand ("brand").

Over time, the author's right has been structured in a variety of rights: the right to publish (or not to publish: inedited right); the right to reproduce, which is divided into different forms depending on the purpose of reproduction (purpose

of study, for illustration or educational aim, for library service or for private copying) and on the type (books, databases, musical scores, sound and video works) and format (analogue or digital) of the document and right of transcribe (from oral to written); right to perform, display and act in public; right to communicate to the public (related to the remote communications and telematics); right to distribute (to sell or circulate); right to reprocess (translate, parody, etc.); rental right; right to library loan; right of extraction and re-use (referring to the contents of a database); right to be cited as author and to claim to intellectual work; right to the integrity of the work.

For each one of these rights specific provisions are possible and every right has a specific protection. In our and other systems, however, moral rights are inalienable (non transferable) and inprescribable (not die out after a certain period of non-exercise or non-resale). Moral rights are, for example, the right to the unpublished, the right to integrity and to proper contextualization of the work, particularly the right to be recognized as the author.

### 3. Rights management and open archives

The first utilization that should always be allowed to users of the works deposited in an institutional repository is the whole reproduction in every support (download, print, archiving on one's PC or on other local memory) for personal use, of course, and in addition to utilizations always permitted by each country law. In other words, the work deposited in IR should always be fully and freely accessible to everyone without technological protection measures.<sup>50</sup> If the work is freely accessible on the web, but it does not have a specific license, the user can consult it, download it, print it etc. For everything else we apply the existing rules on copyright. For example, we can distribute and communicate to the public only abstracts or short pieces of the work, for illustrative or teaching aims, citing the source and excluding any purpose of profit. To explain or to expand utilizations granted to users, it's appropriate to enclose in the works deposited appropriate licenses, issued by the author and/or by the institution that manages the open archive. With these licenses, the author retains all utilization rights indicated, but share them with other users and he waives the sole right.

In the meantime, the author (or the institution that manages the archive) may allow the public to certain uses of the work. That can happen if he has effective legal rights on it and has not given exclusive rights to publishers. But if the work is derived from other work (for example, if it is a translation), you need the permission to dispose both of the main work and the derived one. The same applies to works including substantial parts of other works.

Another important aspect to considerate is related to intellectual property on the archive as a database created and managed by an institution using a certain software. The rights on the software and on the database have special protection according to the rules on copyright, since they are considered creative intellectual works or otherwise because of the economic investment on them. With regard to the software, the international scientific community has developed several tools to build and maintain open archives. These are all created with free software, released under licences inspired by the philosophy of copyleft discussed previously. Regarding to the rights on database, they are made available to the public without restriction. Nevertheless, it being understood that the rules set by licenses on individual works contained in the database remain valid, by the law is forbidden the extraction and the reemployment of all or of a "substantial part" of the database, or even of extraction of insubstantial parts when extraction and reuse are systematic. The protection also concerns the configuration of the database (indexes, precoordinate and postcoordinate lists etc.), graphic and images used in interfaces, especially metadata associated to the works. It's in the philosophy of open access that institutions IR holders allow metadata harvesting in their content by search engines, both specific to the OA world, such as those based on the OAI / PMH, such as not specific. Indexing metadata within search engines increases the availability of works, supporting the aim of open access. A problem arises when metadata created in the IR are embedded in commercial databases or distributed with fee, increasing the economic value of

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<sup>50</sup> It is not always the case: in some cases, the work is deposited with access restrictions, for a certain period ("embargo"), or unlimited. This second case takes place when IT is used as archive of all the products of the researches developed within the institution and on some of these products authors did not maintain the right of deposit in an open archive, having transferred all rights to publishers.

these databases. As IR owner, the institution can choose to define specific policies for the utilisation of metadata, for instance by denying any commercial use or making this kind of use under fee.

The results of RoMEO investigation have shown that academics wish to find their research in open access repositories. The development of an appropriate solution for the right concerning to metadata was feed with these results. The issues related to the collection of metadata from data providers within the service providers have been analyzed, under OAI protocol,<sup>51</sup> and some developments for solutions for the protection of metadata have been supposed. Every development activity took the emerging standards into account. These activities received informations from a continuous consultation with the community through conferences, discussion lists, and consultations with experts and members of scientific committees.

According to a following research sponsored by JISC, most of academic authors are glad to allow the utilisation of their research work much more liberal than copyright law or licenses for electronic journals with fee.<sup>52</sup> As users they make a use of the work less liberal than when they are in the role of authors. It is significant that the perception of the author about the reuse of their material is very different from reality. The authors are sure that the management and the grant of permission for the reuse of their material belongs to them (72%). In reality most of the time the author loses this control after the transfer to the publisher. 29% of the authors assert that they do not ask the publishers the permission to reuse their material, while 18% think they do not reuse the material because of the difficulty to ask the publisher for permissions or authorizations.

#### 4. Permission or right of deposit?

Usually, the author holds copyright on material that has not been submitted to review or to some form of peer-review for publication yet (preprint or pre-refereeing preprint). This material can be freely self-archived because the author owns the rights and this is so until he transfers it. The situation is different when a work has already had a scientific validation or it has been sent to an editorial committee for publication, or finally it has been realized on commission.<sup>53</sup> From the moment of submission of the work to the editorial board, the author must know the publisher copyright policies in order to be aware of them.<sup>54</sup> On these materials (refereed postprint), the author usually gives up some or all the rights of economic utilization through a contract proposed by the publisher. To maintain the possibility of self-archiving of the postprint in open repositories, the author will have to make sure that the contract doesn't prevent communicating to the public for not for profit purposes; or shall propose the modification making special mention of the storage in the IR. Some publishers can officially forbid self-archiving, but they may be available to negotiate, at the moment of drafting the contract. It should always be remembered that the authors are the most significant resources of a publisher and therefore publishers are usually sensitive to their demands.

When the publisher does not agree with the change proposed by the author for the purposes of self-archiving of postprint, the refereed final draft of the work cannot be self-archived. The author, however, can deposit a corrigenda file in an open archive, linked to previous versions of the preprint already deposited in the same archive, listing the

<sup>51</sup> <http://www.openarchives.org/>.

<sup>52</sup> *Towards good practices of copyright in Open Access journals: A study among authors of articles in Open Access journals*. Esther Hoom, University of Groningen, Faculty of Law Maurits van der Graaf, Pleiade Management & Consultancy, 2005-08-05, <http://www.lboro.ac.uk/departments/dis/disresearch/poc/pages/jou-report.html>.

<sup>53</sup> In the classic model of scientific publishing the work has got a commercial value only in its refereed version.

<sup>54</sup> For the Italian law the submission of a paper to an editorial committee to be validate for the publication is the same of giving to the publisher a licence to publish with its own rules. The rights return fully available to the author only one month after the publisher does not answer the submission (Law 633/1941, art. 39), or six months after the delivery if the accepted paper has not been published. The Italian law assures the publisher the exclusive o the first publication of an unpublished paper, but this exclusive is limited and cannot be prolonged endlessly. After the publication of the paper, the author keeps the right to re-use it except if different agreements have been made with the publisher (Law 633/1941, artt. 38 e 42). In any case, the duration of the exclusive established by publishing contracts cannot exceed twenty years, on pain of nullity of the contract (art. 122). By this rule, which forbids the complete transfer to the publisher of the publication right, are excluded some categories of works as encyclopaedias.

changes made in the preprint, so that the end user is able to recreate the postprint in its final version. Nevertheless, it should be considered that a publisher may refuse to publish a previously self-archived paper, or even presented at a conference or somehow publicized. Publishers who want to ensure that the work has not been previously released are a small part and do not exceed 25%. It is therefore advisable to self-archive before sending the contribution.

One solution, proposed by SPARC (Scholarly Publishing & Academic Resources Coalition) and by Science Commons (a project linked with Creative Commons CC, the culture of open access), is to ask the publisher to integrate the publishing contract with a special agreement add ("Addendum").<sup>55</sup> Other instruments are the JISC and the SURF Copyright toolbox<sup>56</sup> with the License to publish available in English, French, Spanish and Dutch. This license is hark back by various European projects<sup>57</sup>

## 5. License to publish and user licenses

A very useful framework to understand this issue is offered by the table How can I self-archive AND get my paper published, developed by the Project RoMEO (Rights on Metadata for Open Archiving),<sup>58</sup> born to investigate the rights issues that revolve around self-archiving of research works deposited in open archives of the United Kingdom, and implemented between 2002 and 2003. As part of this project, studies have been carried out on expectations and attitudes of authors and publishers.

Within the project RoMEO, among the studies cited above, editorial policies about self-archiving on the authors' side have been examined. This study has merged into the project that gave rise to the database SHERPA / ROMEO.

In particular, analysis was performed on contracts for the sale of intellectual property (CTA, the Copyright Transfer Agreement) to publishers of periodicals. This investigation has shown an increasing trend in the percentage of publishers in the database SHERPA<sup>59</sup> that formally allows forms of self-archiving. The results of the analysis of the Copyright Transfer Agreement (CTA) on periodicals show something to reflect on. In particular, some considerations are interesting: for more than 80% of the journals it is expected the cession of all the rights of utilisation which involves, among other things, the inability for the author to exercise the right of publication or translation (for example the chance to publish elsewhere, or even to translate their work into other languages, something very tricky in some cases and in some countries); the 60% of publishers are ready to publish works in the public domain, such as the United States government (this shows that publishers have no real need of the exclusive benefit of the publication); whereas the institutions where the authors work hold the copyright, often they get from the Copyright Transfer Agreement (CTA) a better treatment than individual authors.

To check which publishers have got self-archiving friendly policies, the best instrument is the database SHERPA/RoMEO.<sup>60</sup> At 24 January 2013, of 1193 publishers surveyed (of which 31 from India<sup>61</sup>) 68% permit self-archiving divided as shown in the chart below:

<sup>55</sup> <http://scholars.sciencecommons.org/>. A translation of the website *Addendum* is available on the University of Padova website: <http://paduaresearch.cab.unipd.it/docs/SPARC%20AUTHOR%20ADDENDUM%20traduzione.pdf> (Italian translation by Antonella DE ROBBIO).

<sup>56</sup> <http://copyrighttoolbox.surf.nl/copyrighttoolbox/authors/licence/>.

<sup>57</sup> *License to Publish : promoting Open Access and authors' rights in the Nordic social sciences and humanities*,

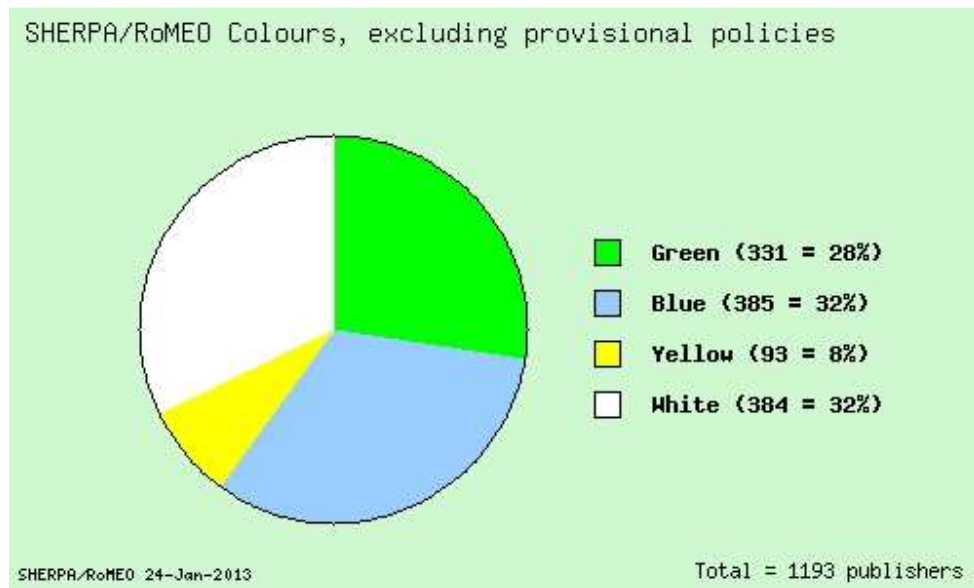
<http://www.nordbib.net/Projects/License-to-Publish.aspx>.

<sup>58</sup> <http://www.lboro.ac.uk/departments/lis/disresearch/romeo/>.

<sup>59</sup> <http://www.sherpa.ac.uk/romeo.php>.

<sup>60</sup> *Publisher copyright policies & self-archiving*, <http://www.sherpa.ac.uk/romeo>. The database, realized between 2002 and 2003 within the project RoMEO, is now managed and updated within the Project SHERPA.

<sup>61</sup> <http://www.sherpa.ac.uk/romeo/search.php?country=IN&la=en&fidnum=, &mode=simple&version=>



- Green: the author can deposit in an open archive both the preprint and the postprint (331 publishers, the 28%)
- Blue: the author may deposit in an open archive only postprint (385 publishers, the 32%)
- Yellow: the author may deposit in an open archive only the preprint (93 publishers representing 8%)
- White: deposit not formally supported (384 publishers, the 32%)

Most «green» publishers allows self-archiving in the author's personal website or that of his institution, not in a disciplinary deposit, probably because they consider greater the impact of disciplinary archives, rich in relevant materials for their respective scientific areas and coming from all over the world. For India only 3 on 31 publishers fall in white area.

Among publishers that allow self-archiving in IR, some do not put time or other limits, while most of them allow it only after a certain period from publication (called "embargo", ranging from 3 months to over 4 years), or admit self-archiving only after an expressed authorization or under the payment of a fee.

Finally, almost 400 publishers allow the use of the editorial version, and some of them even require it explicitly, as a good advertising for their image of innovative publishing. Without any specific authorization of the publisher, postprint will never be deposited as they appear in the editorial layout of publication, it will be never recovered PDF files or other versions from the publishing website for the purpose of storing in an archive, but it will have to be used the final version of postprint as drafted by its author. The use of editorial formats carries a violation, not related to copyright, but connected to the unfair competition (use of editing work, layout, restyling, where there has been an investment of the publisher). It is as well forbidden the imitation of the heading of a magazine, not only as a title, but also as a graphical approach, as this replication is a form of competition to the original source. There can be some exceptions to this rule when, for example, there is a special agreement between the managers of the magazine or the publishers and those of the open archive. Usually this happens a certain period after the publication of the dossier for all those magazines that are part of the band known as "delayed open access". Some arrangements can be stipulated, so after six, twelve or eighteen months (or another period of time agreed between the parties) the papers will be submitted - through more or less automatic practice - in an archive, usually a disciplinary archive. In these cases there will not be self-archiving and there will therefore be a process suitable to identify preprint versions of papers that come from these channels.

Some kind of licenses applied in the Open Access world have roots in the world of free software and in the model of copyleft.<sup>62</sup> Copyleft means one copy left, set free, that is: you don't need to pay any fee for its utilization. The idea of copyleft consists in granting the permission to copy, modify and distribute the software, and publish an improved version of it. Inspired by this philosophy, the most popular licenses for the management of the rights in open access works are those developed as a part of the Creative Commons initiative (hereafter: CC).<sup>63</sup> Promoted by international jurists, among them stands out the name of Lawrence Lessig, a professor first at Stanford and now at Harvard, CC was founded with the purpose of increasing the number of creative works which can be freely shared, distributed and, depending on the choice of their author, changeable. Through licenses and other instruments, CC allow authors to legally protect their works while they grant more freedom to users than those imposed by law or by the trade licensing. From a technical point of view, CC is based on a system that, with appropriate metadata, should allow to express the characteristics of the work and the authorized utilizations of it, so that this information is associated with the work and highlighted within the search engine on the web.

Different patterns of CC licenses have been realized so that the author can choose which one suits the best his intentions. The "minimum" license provides the possibility for the user to reproduce, and also to share with others, the work (for example, by an elearning platform or a social network), without modification and citing the source. The more "open" license provides the possibility for the user to make any use of the work, including a commercial one and reprocessing, with the condition that the source is cited ("attribution"). Every license is expressed in three languages: for the common user, for the lawyer and for the machine (to read the metadata in a standard format by the metaengines).

This is a project of international and multilingual aim. There is also an Italian version of the website.<sup>64</sup> The original version, created for the U.S. copyright rule, is now in its third release. Version 3.0 includes six types of licenses:<sup>65</sup>

Attribution Non-commercial No Derivatives (by-nc-nd)  
 Attribution Non-commercial Share Alike (by-nc-sa)  
 Attribution Non-commercial (by-nc)  
 Attribution No Derivatives (by-nd)  
 Attribution Share Alike (by-sa)  
 Attribution (by)

The License to publish of JISC<sup>66</sup> and SURF<sup>67</sup> requires that: the copyright remains to the author and should not be sold permanently; the author guarantees the publisher only those rights necessary for publication (reproduction, communication, distribution, etc.), in the form of a license to publish (authorization to exercise of rights and not their cession); the license becomes effective immediately after the paper has been accepted for publication; the author deposits the article in the version of the publisher (version 3) in the archive of his institution; the deposit is done together with the paper's publication; there is the possibility of an embargo for a maximum period of six months.

## 6. Institutional policies on copyright

As stated by Policy Working Group inside DL.org project<sup>68</sup>, policy concept represents the set or sets of conditions, rules, terms and regulations governing interaction between the Digital Library and users, whether virtual or real.

<sup>62</sup> The most spread are those developed within the project GNU/GPL for the free software, <http://www.gnu.org//GPL>.

<sup>63</sup> Creative Commons, <http://www.creativecommons.org/>.

<sup>64</sup> <http://www.creativecommons.it/>. The first official Italian version of CC dates to 2004.

<sup>65</sup> <http://creativecommons.org/about/licenses/>.

<sup>66</sup> Joint Information Systems Committee, <http://www.jisc.ac.uk/>.

<sup>67</sup> Scholarly Publishing and Academic Resources Coalition, <http://www.arl.org/sparc/>.

<sup>68</sup> DL.org (Coordination Action on Digital Library Interoperability, Best Practices, and Modelling Foundations) is an EU FP7 Co-ordination Action co-funded by the "Cultural heritage and technology enhanced learning" Unit that will start in December 2008. It aims at creating a framework where key representatives from major initiatives and ongoing digital library and repository infrastructure related projects may collaborate, discuss experiences, exchange expertise, work on interoperability of their solutions, promote shared standards, and provide the research community with a

Examples of policies include acceptable user behaviour, digital rights management, privacy and confidentiality, charges to users, and collection delivery.

In general, it seems that it's too early to expect formally-encoded digital libraries policies in actual digital libraries. There is no standard policy language for the Web. So in such dimension (in this paper) we mean policy as something of very simple, but determinate action to give correct impact some decisions.

If we can affirm as a general rule that intellectual property is born in author's mind, there are nevertheless some cases in which the employer or the institution is the direct holder of the rights of utilization. These cases are ruled by laws, regulations adopted by institutions' governments, by working or professional collaboration contracts, and finally by specific agreements with authors.

In Europe, by law, under certain conditions, it is the employer who is entitled of the exclusive rights on the so-called "useful works", realized with resources and instruments owned by the institution while the authors are accomplishing their institutional activities: industrial inventions (ruled by patent laws), and, as of works under copyright, industrial design, software and databases. Beside this, the 1941 Italian law entitles for twenty years public institutions and non-profit private bodies all the rights of utilization on works published in their name, on their behalf and expenses; this period is reduced to two years in case of memoirs published by academies and cultural public bodies. These periods expired, the intellectual property goes back to authors.

As to the working contracts, these can have as object the realization of certain works and the relating transfer of rights of utilization to the employer (but this is the case in general of contracts entrusting occasional works), or they can refer to a specific copyright policy adopted by the institution with specific regulations are indicated where the cases in which the intellectual property is due to the employer. It is the case of American universities where the work-for-hire doctrine is in force.<sup>69</sup> In principle, the work-for-hire circumstance does not differ substantially from laws which assign the intellectual property to the employer.

As a matter of internal regulations, these can establish the cases in which the intellectual property is due to the institution (always to be considered exceptions to the rule by which the property is due to the author) and are the reference frame for all who are in terms with the institution.<sup>70</sup>

Finally, the author can voluntarily give up to the institution all or part of the rights on his work, for example when the same institution is the publisher, autonomously or in partnership with others.

Hitherto, we are still in the sphere of economic relations between the author and the institution, where the system of intellectual property is based upon principles of private law, not influenced by the specific social destination of academic and scientific institutions, which is to take care of progress and knowledge dissemination by means of research and education.

This purpose appears instead in those regulations where the institutions keep a permanent and non exclusive right of reproduction and communication to the public through the open access deposit in IR, in order to carry out its institutional mission of knowledge dissemination. Beside that, the keeping of the right to open access deposit allows the institution to be a guarantor of the transaction by which the results of research funded with public resources are

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deeper understanding of key issues and new directions. The Policy Working Group (WG), one of the six working groups co-ordinated by DL.org (*Content, User, Functionality, Policy, Quality, Architecture*)

<http://www.dlorg.eu/>

<sup>69</sup> See as an example the *Cornell University Copyright Policy*:

<http://www.dfa.cornell.edu/dfa/cms/treasurer/policyoffice/policies/volumes/governance/upload/Copyright.html>.

<sup>70</sup> As we shall see, the cases in which the institution keeps only some non exclusive rights of utilization are more frequent.

made public. Even if we stay within a strictly economic vision, we can say that open access promotes the defense of the market “as a check parameter of operators' behavior between them and towards consumers”.<sup>71</sup>

In Italy, the more frequent case of regulations which require a mandatory deposit is that regarding PhD thesis. With such regulations, the candidate knows in advance that he will discuss his thesis only if he will deposit it into the open archive. Always more universities and research institutes all over the world are adopting rules imposing the deposit of all research products carried out within the institution as a condition of accessing funds. As one can see, this kind of regulations does not fix a real obligation for the author, rather it settles a duty to which he must comply with if he wants to obtain some benefits (access fundings; be admitted to thesis discussion to complete a degree carried out using the institution's resources...). The author can be the sole judge of the decision over the deposit, providing by himself to the self-archiving, supplying it with a proper licence (CC or other), or the institution will ask him to provide a licence (whose recipient is the same institution and where relations with the author are set) and only after this authorization it will provide for the deposit. After the self-archiving or the deposit licence released by the institution, the author remains the holder of all rights on the work and will be able to sign any publication contract which do not exclude the right to deposit in IR. However, institutional regulations and publishers agreements with universities and research institutes can foresee the possibility of not respecting the deposit obligation (opt-out options), or to narrow the access to later given some specific motivations.

In the presence of institutional policies providing for a mandatory deposit in IR, the contractual position of the author towards commercial publishers is enhanced when he asks for keeping some right of reuse on his works, because he is not seen anymore as a holder of an isolated interest on the dissemination without barriers of his works, but he expresses the position of a whole academy or research institution, and of all the authors who work for them. It is desirable a division of institutional policies of this kind or, better, the achievement of the principle open access at a ruling level.

To educate to copyright also means to speak about a correct treatment and management of rights, it does not mean to make terrorism with information to stop piracy, which is limited to some market sectors well-defined. On the other hand, we need to stress how some movements based on the complete denial of respect of copyright and of its main philosophy results to be really hindered the achievement of a serious and rigorous approach to these matters.

It should be avoided a complete cession of economic rights to publishers. Recently, a growing number of authors have started to be interested in keeping copyright. The result is the trend of preferring Exclusive Licence Agreement (ELA) to Copyright Transfer Agreement (CTA).<sup>72</sup> But a lot of attention should be placed on Exclusive Licence Agreement, which can be as restrictive as Copyright Transfer Agreement. It is advisable to stipulate licences in a written form, as a contract. In this way, the parts identify contractual conditions, avoiding following misunderstandings on the terms of agreement.

The publishing mediation within the circuits of knowledge production and diffusion stays fundamental (above all its functions of qualitative validation), but it is important to ensure a good balance between the interests of the scientific community (the access must be the most wide as possible) and those of traditional publishers (the economic reward), avoiding to identify reproductions and exchanges with a scientific and educational aim, which are the core of the research, with piracy phenomena which are connected to forms of undercover commerce. The problems we are facing today are those connected to the sustainability of a commercial and juridical model which has encouraged concentration, sharp rise of prices, loss of information and has slowed down the development of the knowledge

<sup>71</sup> L. AMMANNATI, *Diritto e mercato: una rilettura delle loro attuali relazioni alla luce della nozione di 'transaction' di Commons*. “Siena memos and papers on law and economics. Quaderni SIMPLE”. SIMPLE 1/2003. [http://www.unisi.it/lawandeconomics/simple/001\\_Ammannati.pdf](http://www.unisi.it/lawandeconomics/simple/001_Ammannati.pdf).

<sup>72</sup> As we saw earlier (note 26), the Italian law considers invalid any exclusive and unlimited cession of the right of publication. This nullity concerns the contracts for works published in Italy, while for Italian works published abroad the laws of that country are applicable (territorial principle of protection, valid for intellectual property and for any form of property of nonmaterial goods in terms of international private law; principle of assimilation, valid in terms of art. 5 Berna Convention).

market by hindering access to all potential actors. We are talking about a market which bears on the essential needs of the whole society and for this reason this market, more than other else, cannot accept exclusions.

## Chapter 31

# Online Connecting Librarians<sup>73</sup>

**Kitty Berteling**  
**Informatiespecialist - Bibliotheek Fraijlemaborg Hogeschool van Amsterdam**  
**Netherlands**  
[k.berteling@hva.nl](mailto:k.berteling@hva.nl)

**Abstract.** *An interesting report about librarians' usage of their personal social media account for work-related messages, where the not only connected with their patrons, but also with colleagues in discussing developments within the field of libraries, librarianship and information science, sharing news and things that are happening in their library or organisation and responding to each other's posts. This way librarians keep each other up to date and informed and connected.*

**Keywords:** Knowledge sharing, Reference Services, Social Media

### 1. Introduction

Do you use your personal social media account for work-related messages? According to marketing expert William Toll the best answer to that question would be "Yes". He states that employees who use Twitter and Facebook for work related messages are the greatest asset to an organisation. "Your employees can tell your story much better than any marketing person could do".<sup>74</sup> But not everyone agrees with Tolls findings. Most employers are hesitant about using social media, because they cannot control what their employees are saying online and messages can go viral in an instant. So who is right? Should employers encourage or discourage their staff to talk about work online? This article shall try to give an answer to that question, based on a recent scientific research by Stichting Wetenschappelijk Onderzoek Commerciële Communicatie (SWOCC) on the one hand and our own experiences with social media in the library of the University of Applied Sciences in Amsterdam (Hogeschool van Amsterdam) on the other hand.

### 2. The SWOCC research

SWOCC is a Dutch institution that does research on brands and communication. They carried out extensive research into the online behaviour of employees of 8 different companies. They first sent the employees a survey and got a response from 375 people. Most of them were active on one particular social network: Twitter. The researchers also analysed 3700 tweets from the most active employees. They wanted the following questions answered:

- How many employees are active and how active are they?
- Why do the active users publish about work on social media?
- What do they tweet about?
- Do the companies have a social media policy?

The outcome of SWOCC's survey (Verhoeven, 2012) will be explained below.

#### 2.1 How many employees are active and how active are they?

Out of 375 respondents, 337 said they were active on social media. On average they had 300 contacts and / or followers and about 1 in 3 of their messages was work-related. Based on the response, the SWOCC researchers

<sup>73</sup> With contributions from Wilma van den Brink and Patricia Manrho

<sup>74</sup> See the interview with him on <http://www.youtube.com/watch?v=JDifcyxNa8>

divided the employees into two groups: consumers and producers. The majority of social media users were consumers. This means that they spent less than 5 hours a week on social media. They were mostly interested in reading (consuming) posts, blogs or tweets and less in writing or responding. A minority (16%) was very active on social media. This meant that they spent more than 5 hours a week on social media writing blogs and contributing to online discussions. They were highly educated and had a strong job commitment. They mostly used Twitter and produced a lot of content. They each had more than 1000 followers, so in a way they had an extensive professional network. This is why the researchers called them the producers.

## **2.2 Why do they publish about work on social media?**

The producers published about work on twitter for two reasons: to communicate and to share. For them it was a way to share (mostly) positive messages, to stay in touch with their work relations and manage their network. It was all about job commitment and job identification. “My work is part of my daily life and I write about my daily life”, “I am proud of what we do and it is an important part of ‘me’ ” and “The organisation is a part of who I am and what I represent” were statements that were giving on the question. So these committed employees or producers could be called the brand ambassadors or the employee ambassadors of an organisation.

## **2.3 What do they tweet about?**

The SWOCC research showed that brand ambassadors have a preference for Twitter. To find out what they tweet about their work, the SWOCC researchers analysed 3700 of their tweets. About a fifth of the tweets were work-related. The messages dealt mostly with the daily work (30%) and about professional content (28%). The tone of voice was generally in a neutral or positive way. Just 4% of the messages had a negative tone.

## **2.4 Does your employer have a social media policy?**

A way of finding out if employees were aware of the organisation having a social media policy was by asking them about it. 41 Per cent said “yes” to this question, 35 per cent claimed the company did not have a policy and 24 per cent did not know. A note should be placed to this result: employees of the same organisation gave different answers to this question. Some said they did have one, but their colleagues were sure they did not. This means that there is a lot of confusion regarding the possible existence of a social media policy at their organisations. The employees who responded that there was a policy felt positive towards it.

Why should an organisation have a social media policy? The SWOCC researchers were convinced that regulation creates awareness of the impact that brand ambassadors can have on the public (opinion) of an organisation. Employees did not always realise the impact they could have and that made a policy essential. They furthermore found that it also created awareness on how the organisation wants to position its brand. The ideal situation according to them was to involve the brand ambassadors with making a social media policy to create awareness of both positions. This way brand ambassadors would have enough freedom to post, tweet or blog about work and management would know that the position of their brand is safe.

## **3. Employee ambassador programme**

Beside the SWOCC research, there are more examples of brand ambassadors within organisations. PepsiCo management learned from an employee survey that 65% of the employees were regularly asked by family and friends about their employer and its products. More than half of the employees said they would like to have information about PepsiCo that they could share with their friends and family on Twitter, Facebook or other social media platforms. PepsiCo management concluded that 85% of the content in internal newsletters turned out to be useful for sharing. The results from the survey led to PepsiCo’s Employee Ambassador Program: a training program that taught the employees what they can and can’t share on social media. PepsiCo wanted to ensure employees could safely talk

about PepsiCo and its products. Newsletters posted on PepsiCo's intranet are now easily shared with the help of social sharing icons (Carr, 2012); (Brand ambassadors, 2012).

Another successful story is that of express transportation provider, FedEx. Despite a negative incident, (an online video in which a delivery man tossed a computer screen over the fence went viral) the company used social media with the help of employees to turn things for the better. FedEx enabled employee ambassadors to tell the company's story through video and social media. This strategy helped them to be in the top of the best companies to work for (Power list, 2012).

#### **4. Does a social media policy work?**

According to Dutch newspaper Het Financieele Dagblad (Heb ik wel, 2012) many companies are still worried that confidential information will become public. However this almost never happens: people use their common sense. The article also states that a code of conduct is hardly necessary as most of these are already written down in an employment contract. In spite of this low number of negative incidents, setting up a few guidelines is still beneficiary for an organisation. It will make things clear for everyone involved. But refrain from making it too strict or your brand ambassadors will walk away and use their social media platforms for personal use only. You will then have lost your engaged employee. Better yet, involve your brand ambassadors when making a social media policy. As the SWOCC research suggests it can create support for your policy and employees could be more willing to live by the guidelines. Therefore set up a few guidelines which do not invoke fear, but stimulate a desired behaviour.

#### **5. Appreciate your brand ambassadors!**

So should employers embrace the fact that their employees are tweeting and posting online about work? The answer is yes! The SWOCC research and the PepsiCo employee survey indicate that employees want to share information from and about their work. They are proud of what they do and want to share that with the rest of the world.

So, appreciate your brand ambassadors. They are committed to their work and the greatest asset an organisation could have. Involve them in creating policies and let them share experiences with colleagues. Encourage, train and give your employees a choice of platform to be a brand ambassador. In return the employer will have an engaged employee. A win-win situation.

#### **6. From research report to library practice**

What can librarians learn from this research? No libraries were included in the SWOCC research. So what are our experiences with social networking sites at the Library of the University of Applied Sciences in Amsterdam? Do we have employee ambassadors among our librarians? Let's start with why Twitter is so popular with the ambassadors.

Facebook and LinkedIn are popular social networking sites as well, but not to brand ambassadors according to the SWOCC research. The reason as to why lies in the different ways people connect on those social networking sites. LinkedIn is mainly used for business relations. Users connect to people they have met at conferences for instance. The networking site also clearly states that you should only connect to somebody that you know. The same goes for Facebook. Because this network centres on a personal environment with personal photos and updates, users connect to others they know well, or "friends" as they are called on the website. In contrast to these sites, Twitter does not centre around people that users know personally. People make a connection on Twitter on the basis of mutual interests. It could be a librarian from another country, a publisher but equally a famous writer.

What about corporate accounts and connecting online? The library of the Hogeschool van Amsterdam (HvA) has its own Twitter account (@HVABibliotheek). It is set up to support students and teaching staff with their education and

research. One librarian manages the account and she noticed that our Twitter messages are read and retweeted, but that there was no actual communication with our followers. Hardly any question or comment comes our way. It is mainly one way of communication. So is Twitter a failed project for the HVA library? The librarian, who manages the library account, has made her own private Twitter account (including photo, name and profession) visible on the HVA Library account. This gave the “corporate” account a personality and made followers not only follow the library Twitter account, but also her private account. They started using the private one to get answers to their questions. What the library account did not succeed in doing, the personal account did: connecting with patrons. This showed us that the more personal an account is, the easier it is to connect with your patrons. A personal account can give an organisation a personality: “You cannot have a conversation with a brick wall”. And thus a brand ambassador is born!

HvA librarians, who use their personal account for work-related messages, do not only use it to connect with their patrons. They also use their personal account to connect with their library colleagues: discussing developments within the field of libraries, librarianship and information science, sharing news and things that are happening in their library or organisation and responding to each other’s posts. This way librarians keep each other up to date and informed. They also talk about their daily work, showing others what task or project they are working on. In other words, it could give outsiders a real and genuine inside look into a library (or any other organisation) and therefore possibly create a positive attitude towards the organisation. People like to share and communicate and librarians are certainly no different!

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## Chapter 32

# Let Your Library Go Live On The Internet: How To Use New Technology And New Channels To Widen And Share Traditional Library Work To Engage New Users

Mats Nordström  
Malmö Public Library, Sweden  
[mats.nordstrom@malmo.se](mailto:mats.nordstrom@malmo.se)

Nanna Ekman  
Malmö Public Library, Sweden  
[naana.ekman@malmo.se](mailto:naana.ekman@malmo.se)

Suzanne Ahrling  
Malmö Public Library, Sweden  
[suzanne.ahrling@malmo.se](mailto:suzanne.ahrling@malmo.se)

**Abstract.** *In 2011 the public library in Malmö, Sweden started broadcasting events at the library live over the Internet. By using this method we are able to breach the physical premises and reach a wider audience. We outline the equipment needed and discuss some of our experiences of this project.*

**Keywords:** Live Broadcasting, Streaming Technology, User Behaviour

## 1. Introduction

Sweden has a long tradition of publicly funded public libraries. In the library law it states that each municipality must offer free library-services for all citizens. Anybody can become a library member without cost and the services are also offered free of charge.

Malmö is the third largest city in Sweden with about 300,000 inhabitants. In 2008 the public library in Malmö adopted a strategy with a strong focus on digital inclusion<sup>75</sup>. As a result of this emphasis on technology and digital communication the team called Digital Content and Dialogue was created. Early on this team was given the mandate to shape the library's digital communication with the users.

The digital infrastructure is evolving rapidly in Sweden and has brought new habits and expectations from the library users. To remain relevant in the ever changing digital Eco system it is important to break free from our previous physical restrictions. Today the users expect the library to be available anywhere, anytime, any way and on any screen. An important mission for the library is to be accessible to all citizens and the key is to be available in the places where people spend their time. The main focus for the digital interaction is to meet and interact with others on the platforms they already use and are familiar with, for this we mainly use free web-based tools.

## 2. The International Writers Stage and Live broadcasting

Another result of the new strategy was the creation of the International Writers Stage. This project focuses on the translated literature and international writers are invited to Malmö for a discussion with a moderator in the library. As

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<sup>75</sup> <http://www.malmo.se/bibliotek>

a public library in a city with a very diverse population when it comes to language and education background we wanted to put more focus on literature and the literary conversation. We also wanted to strengthen the role of literature in our society.

We have chosen not to have the programs in our lecture room in the basement but instead build a temporary stage among the bookshelves in the library's main hall. We wanted the audience to be close to the books, but also to create something extra. There is always music and snacks for the audience before the program starts and we want to give the public the feeling that they belong to a literary club. Also, the lecture room can hold 100 people while the temporary stage in the library can host up to 600 people

We arrange about ten to twelve author visits a year. Some of our guests are well known to the public but sometimes we also invite debutants. Most of the talks are held in English but with Nordic authors talks are in Scandinavian. This is a popular event and sometimes the house is full and we have to close the door to people. It is also a quite costly venture for the library.

The size of the events on the International Writers Stage is probably larger than most programs in public libraries. But apart from that, events with focus on books and reading are a basic and traditional role for Swedish libraries.

This large scale project presented us with a good opportunity to pull our resources and start experimenting with ways for giving easier access to the library. We wanted to take this traditional library work on to a new stage and widen our audience. The idea of making the programs on the International Writers Stage more accessible for a wider audience were in place from the outset in 2009. The first talks were recorded and published as podcasts on our website. We did this for about a year and it was highly appreciated by our users. In 2011 we took a step forward and started broadcasting the programs live over the Internet. By using live broadcasting we are able to breach the physical premises and reach a wider audience. On the Internet, we can reach far more people than the 600 visitors in the library. In this way we manage the resources spent on the program series in an efficient manner, increase the accessibility and enable reuse.

### 3. The long tail

The broadcasts we produce are archived on the web for those who don't have the time to come to the library or watch the live stream<sup>76</sup>. The films can also be used by students our reading groups that want to learn more about the author. But also for those who want to relive a favorite program.

All authors do not attract the same immediate audience as for example an international literary superstar as Paul Auster, but since the broadcasts remain in the archives they can be seen much later and find a new audience. An example of this is the Swiss first time-novelist Dorothee Elmiger who visited the international writer's stage in the autumn of 2011. Her book had just been published in Swedish and hadn't been reviewed in media yet. Only 9 people saw the live broadcast. Just a few weeks later she was the poster girl for the annual bookfair in Gothenburg and was interviewed in Television and newspapers. To date the broadcast have been viewed more than 200 times<sup>77</sup>.

We have found that social media can be a powerful tool to build awareness for the live productions and the broadcast archive. We mainly use Facebook<sup>78</sup> and Twitter<sup>79</sup> to spread the word and encourage our followers to share our content with their friends. During the events we also take photos that we share on Flickr<sup>80</sup>. Since we publish them with a creative commons license they are free for anybody to use.

<sup>76</sup> <http://bambuser.com/channel/malmobibblan>

<sup>77</sup> <http://bambuser.com/v/1919238>

<sup>78</sup> <http://www.facebook.com/malmostadsbibliotek>

<sup>79</sup> <https://twitter.com/malmobibblan>

<sup>80</sup> <http://www.flickr.com/photos/malmostadsbibliotek/>

This is a good example of the long tail effect where digital content is said to have a much longer shelf life and can constantly find new audiences. The ability to make our content available not only in space but also in time is very important to us.

#### **4. Equipment and production**

In theory it is possible to broadcast using only a free streaming app and a smart phone or a simple webcam. But for our purposes and for the user experience we aim towards, this solution doesn't quite meet our needs. In this section we will briefly outline the equipment and software needed for live productions at the public library in Malmö.

When we started researching what technology to use for our live productions one important aspect was that the tools we chose should be user friendly but still give us the power to produce high quality broadcasts. The broadcasting team started out as three librarians without any previous experience in film and television and our approach have always been to learn by doing. We began by setting up a core environment we feel confident in using and have since added new technology one piece at a time when the need have arisen.

One of the key factors to produce a successful broadcast is to have good audio quality. If you want to spend money on just one thing it's a good choice to spend it on a quality sound system and someone to manage it. Since the content is more about what our guests say than how they look good sound is more important than good visuals. For our live productions we tap the audio from the sound system used on the stage.

Our main video camera is a professional model that allows for a high quality picture even in less than ideal environments. As a secondary camera we use an ordinary consumer camera. Two video cameras make it possible to create a more professional broadcast, for example zoom and change the angle to provide a more enjoyable experience for viewers.

Since we use two cameras, editing software is also required. Wirecast is an affordable option for this purpose and makes it easy to produce broadcasts with good quality. You can work with several cameras and also add graphics that inform viewers about what is happening and who the sender is.

Access to a broadcast channel is necessary for live productions. For this purpose we use Bambuser. It was developed by a local Malmö company and was originally intended to let anyone broadcast live from their mobile phones. Today several major media companies use this service. At first we used their free version but have since upgraded to a pro-account that allows for more settings, is ad-free and includes a good statistics reporter.

Our channel on Bambuser is called Malmobibblan<sup>81</sup>. This is where all our broadcasts can be seen. It also serves as the archive for previous broadcasts.

We use a high-end laptop to handle the production and broadcasting. On a secondary computer we check the quality of our broadcast, chat with viewers and manage our activity in social media during the evening. To ensure good production quality it's vital to have access to a fast wired Internet-connection.

Using this setup we feel that we balance costs and quality in an effective manner. We invest in a few key pieces and use low cost services where we can.

#### **5. The future**

In closing, a few words about our plans for the future. In short it's all about sharing and letting our content run free. Libraries in smaller towns in Sweden create their own programs but they don't have the means to invite international authors. But since we broadcast on the Internet there is no real barrier and it's easy for us to share our events.

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<sup>81</sup> <http://bambuser.com/channel/malmobibblan>

To date we have made 21 broadcasts that in total have been viewed 8500 times. By reaching out we hope to attract even more viewers for our upcoming productions. We want to enhance the distribution and circulation of the live broadcasts and find ways to increase user-participation and give the viewers the possibility to influencing the content of the programs in real time.

So our next step is to invite the smaller libraries in our region to show our broadcasts live on big screens in front of a local audience. The libraries create their own events and offer something to eat and drink. The local audiences can take part in the event by asking questions to the author using chat. And of course we offer the local libraries our content free of charge.

We imagine the future as a literary the Met where the library in Malmö share our content to smaller cities. In this way we can widen the live audience and help lift the interest for reading and literature in larger circles.

## Chapter 33

# The Digital Records, Archival Theory and the Sound Archives of Radio Botswana

**Lekoko Kenosi**  
**University Archivist/Records Manager**  
**King Abdullah University of Science and Technology**  
**Jeddah, Saudi Arabia**  
[lekoko.kenosi@gmail.com](mailto:lekoko.kenosi@gmail.com)

*[Previously with University of Botswana and American University of Pittsburgh]*

**Abstract.** *This paper tries to study the key components of archival theory to the management of sound records at Radio Botswana, through survey, interviews and literature reviews. Organisation, digitisation, preservation and access aspects are looked at. Author suggests that archival institutions and libraries have to focus on their method of acquisition, where they come from (provenance or respect des fonds), comprehensive tools of access (arrangement and description) and continuous and consistence preservation in the digital environment to avoid technology obsolescence.*

**Keywords:** Digital Archiving, Sound Records, Radio Archives

### 1. Introduction

Even though the first record produced by humans is a sound we take sound so much for granted. In fact the perception that audiovisual records are only good for entertainment is still pervasive. However, that perception is fast disappearing as more archival centers recognize the need to preserve sound archives. In the last few years there has been a proliferation of professional bodies dedicated to the proper preservation of sound archives. Among them the International Federation of Library Associations and Institutions (IFLA), the Association of Moving Image Archivists (AMIA); the Association for Recorded Sound Collections (ARSC); the International Federation of Film Archives (FIAPF); the International Federation of Television Archives (FIAT/IFTA); Federation of Commercial Audiovisual Libraries International (FOCAL); the International Association of Sound and Audiovisual Archives (IASA); the South East Asia & Pacific Audiovisual Archives Association (SEAPAVAA) and the Co-coordinating Council of Audiovisual Archives Associations (CCAAA).

Sound or voice is one of the most powerful means of conveying facts and actions by both literate and illiterate communities. The use of sound to communicate is not just a monopoly of humans only. Domestic and wild animals also communicate their emotions, and maybe their facts and their acts through sound. In its annual commemoration of the “World Day for Audiovisual Heritage,” UNESCO (2013) has underscored the importance of sound archives by reminding us that the first moonwalk original recording that took place on 20 July 1969 cannot be located and is presumed lost. UNESCO (Ibid, 2013) also notes with extreme urgency, that

“audiovisual documents, such as films, radio and television programs, audio and video recordings, contain the primary records of the 20th and 21st centuries. Transcending language and cultural boundaries, appealing immediately to the eye and the ear, to the literate and illiterate, audiovisual documents have transformed society by becoming a permanent complement to the traditional written record. However, they are extremely vulnerable and it is estimated that we have no more than 10 to 15 years to transfer audiovisual records to digital to prevent their loss. Much of the world's audiovisual heritage has already been irrevocably lost through neglect, destruction, decay and the lack of resources, skills, and structures, thus impoverishing the memory of mankind. Much more will be lost

if stronger and concerted international action is not taken. It was in this context, that the General Conference in 2005 approved the commemoration of a World Day for Audiovisual Heritage as a mechanism to raise general awareness of the need for urgent measures to be taken and to acknowledge the importance of audiovisual documents as an integral part of national identity.”

In Africa in general, and in Sub-Saharan Africa in particular, song, dance, oral traditions, folklore, film, radio, television and the written record, are still the chief means of transmitting all forms of knowledge from one generation to the next. Despite this fact archival theory has not engaged sound records with the same vigor that it has done with the written and the electronic record. Using the sound of Radio Botswana as a case study this research attempted to investigate the application of key components of archival theory to the sound archives of Radio Botswana, drawing in the process strength from Heather Macneil (2007) who marshals archivists to re-examine archival theory as a way to challenge old truths. These **key components of archival theory** include;

- Acquisition
- Provenance, Respect des Fonds and Original order
- Arrangement and Description
- Access, Preservation and Digitization

These components are of course controversial. Archival theory, like all theories, has not developed without controversy. In fact, one has to add that any knowledge and information management theory that invites passive and monolithic responses condemns itself to extinction. The above components might sound like a monotonous script to postmodern scholars. In “Archives, Records and Power...” Terry Cook and Joan Schwartz (2002, p.171) are fatigued by what they call “a script that has been naturalized by the routine repetition of past practice” (Ibid, p.179). What Hugh Taylor has referred to as “archival fundamentalism or the reluctance to explore new areas of theoretical and practical growth,” (Ibid, p.179). Terry Cook warns that “a profession rooted in nineteenth-century positivism.... may now be adhering to concepts, and ..... Strategies and methodologies, that are no longer viable in a postmodern and computerized world.” (Ibid, p.179).

## **2. The Primary Objectives of the Study and Methodology**

The primary objectives of this study were to assess the application of key components of archival theory to the management of sound records at Radio Botswana 1 (RB1) sound archives. Data gathering methods of this study included face to face administered structured and unstructured interview questions, the researcher’s personal observations and literature review. The study was located in Gaborone, the capital city of Botswana at the Radio Botswana Music Archives. The study interviewed all the 3 the sound archivists who work for the Radio Botswana Music Archives and 7 other program officers. The research could only get a snapshot of the sound archives of Radio Botswana due to time constraints. A more in-depth graduate work is needed to do justice to the study. However, these limitations do not in any way prejudice the validity and findings of this study. In most African governments the media falls directly under the Office of the President. The Office of the President granted the research permit based on the topic. Consent was given based on voluntary participation.

## **3. Radio Botswana :A Historical Background**

According to Nomsa Setswe (2012) Radio Botswana 1 (RB1) started operating in 1965, as Radio Bechuanaland. The station operated as a state broadcaster until April 1992 when the Government setup a sister radio Radio Botswana 2 (RB2) as a commercial channel (Department of Information and Broadcasting (n.d.). The establishment occurred as a result of an inherited one-kilowatt medium transmitter from an out-going colonial government in Mafikeng. At its inception the core function of Radio Botswana was to communicate key livestock management related information among veterinary field staff. On 30th September 1966, Radio Bechuanaland was renamed Radio Botswana as state owned station, to broadcast nationally. After independence, Radio Botswana 1 acquired more transmitters and better

equipment that enabled more operational times. Radio Botswana 2 (RB2) on the other hand used a 100-km watt transmitter, whose coverage was based around Gaborone. Later on the station acquired FM 103 to enable its coverage across the country. The mandate of Radio Botswana 1 is to disseminate news and a wide range of research, recreational, cultural, religious, historical, evidential, fiscal/financial, informational and legal information within and outside the country. Radio Botswana 2 disseminates news bulletins and contemporary entertainment to the target ages of 15 to 45 years (Department of Information and Broadcasting (n.d.), p. 1).

Setswe (2012) goes on to say that Radio Botswana 1 established a music library in 1974 to manage the station's sound recordings. In 2012 Radio Botswana had 16 000 compact discs (CDs), 11 000 Long play and 7 000 short play vinyl phonographic records and an estimated figure of 8000 audio reel tapes. 1200 audio reel tapes have been transferred to the Botswana National Archives Services for archiving. A few of the audio reel tapes deposited to Botswana National Archives had been copied into CDs. Despite technological obsolescence, Radio Botswana Music Library is still playing long and short play vinyl records and reel tapes. The department is also subscribing to new technology called Radio Mann for scheduling for on-air broadcasting in live studios. From the very beginning of the station, the music archives acquired sound records through complimentary copies of long play and short play vinyl records from South Africa. Another type of acquisition, which is the current practice, is through purchasing from music companies, and receipt of deposited recordings from local artists and organizations. Through its countrywide outreach program Radio Botswana collects recordings from local artists many of whom have donated their songs to the station (Setswe, Ibid).

#### **4. Provenance/ Respect des fonds**

In archives the terms provenance, respect des fonds and original order form the nucleus of archival theory. Provenance refers to the agency creating the records. As the primary creator of sound records held by the archives Radio Botswana can claim the provenance of these records. However, in complex organizations, like Radio Botswana, with a lot of Directorates, locating the provenance of the organization can be complex. One does not know whether to start with Radio Botswana as the provenance or to call a directorate provenance. 30 years ago Michel Duchein (1983) recognized this problem when he wrote that

“the agencies which possess numerous personnel and multiple powers are, in general, divided into areas called divisions, directorates, branches, sub-branches, departments, and so on, each of which exercises a definite part of the powers of the agency. It is clear that the records created by these divisions constitute organic wholes. There is, therefore, every interest in taking these divisions as the basis of internal arrangement of the, fonds of the agency...” (Duchein, p.78).

This problem is bound to grow worse in the 21<sup>st</sup> century where multi-national chain store companies like Wal-Mart, Coca Cola, or Apple have become dominant. So, in short, archivists now need to address the question of where provenance begins and where it ends in huge complex organizations that have huge record producing departments under them. One cannot discuss respect des fonds without reference to provenance. Duchein says that the majority of definitions of respect des fonds rest upon provenance to the point where countries of Germanic language refer to it as *provenienzprinzip* or *principe de provenance*. Mario Fenyo, archivist of America, dismissed the concept of a fonds saying that no one knows what the fonds means, not even the French who invented it, Fenyo's conclusion, however, has not stopped subsequent archival scholars from recognizing the fonds as one of the most important discovery in archival science. In fact, Duchein goes as far as saying that

“with few exceptions, the principle of respect des, fonds .... is universally accepted as the basis of theoretical and practical archival science. Criticisms of the principle bear only.... on its applications and not on the principle itself. It is reasonable to think that it will never again be fundamentally questioned and that it constitutes a definitive fact of archival science,” (Ibid, p.66)

Heather Macneil (2007) has also celebrated this principle. In “Archival Theory and Practice: Between Two Paradigms,” Macneil says, “the cardinal principle on which the medical profession is built is above all do no harm..... Similarly, the cardinal principle on which the archival profession is built is respect des fonds. While its proper application is frequently undermined by a seemingly endless list of realities- inadequate resources, authority, education, training- the principle, in its own way, presents an equally worthy focus of archival inspiration.” (Ibid, 2007, p.541). Writing in *Enduring Paradigm, New Opportunities: The Value of the Archival Perspective in the Digital Environment*, Anne Gilliland (2000) states that “the principle of *respect des fonds* was first codified in 1839 in regulations issued by the French minister of public instruction. The principle stated that records should be grouped according to the nature of the institution that accumulated them. In 1881, the Prussian State Archives issued more precise regulations on arrangement that defined *Provenienzprinzip*, or the principle of provenance. The principle of provenance has two components: records of the same provenance should not be mixed with those of a different provenance, and the archivist should maintain the original order in which the records were created and kept. The latter is referred to as the principle of original order in English and *Registraturprinzip* in German,” (p.12).

Gilliland (2000) further explains that the French conception of *respect des fonds* did not include the same stricture to maintain original order largely because French archivists had been applying what was known as the principle of pertinence and rearranging records according to their subject content. In her view the benefits of *respect des fonds* are immense in the sense that this principle facilitates both physical and intellectual access to records made or received by an agency or its surrogates as an intellectual whole, regardless of their form, medium, or volume.

Research on the management of sound records at Radio Botswana found out that twenty years ago with limited archival education and training, without even knowing that they were doing the right thing, archivists of Radio Botswana sound archives practiced respect des fonds. They did this by grouping similar sound records together under the genres of Reggae, Rock and Roll, African music, etc, etc. This classification system led to the accumulation of records under this broad family names. All Bob Marley’s records were kept together under Reggae. All the albums of the Beatles were together under Rock and Roll and African musician’s music were archived under African jazz. This system made it easy to see similar records archived together. This classification of the analogue sound records of radio Botswana affirmed the principle of “archives as universitatis rerum,” the indivisible and interrelated nature of archives, articulated by Luciana Duranti (1996) in her article on “archival science.” Respondents of this research lauded this system, saying that they never had any problem retrieving any song or tape that they wanted to play.

The rules of provenance and original order observed above began to change when management decided to replace respect des fonds with chronological classification as the method of music classification. These graduates did not know that while closely related the treatment of books defer from records and that when it comes to records the key to retrieval lies not solely on the date but also on knowing the provenance of records. All music albums entering the archives were no longer classified according to genre and artist but rather according to the date that the album entered the archives. The new classification system led to huge problems relating to the retrieval and location of the songs when they were needed.

This move resulted in Radio Botswana music archives experiencing a situation similar to the days of Armand Camus and Pierre Daunou after the French revolution, when the duo decided to view records as discreet individual items similar to book and introduced chronological classification as the defining principle in the “arrangement and description” of records. It took the courage of Natalis de Wailly (1841) to reinstate the fonds as the most defining principle of archival science. In “Archival Science,” Duranti (1996) talks of the effects that these ideas had, especially in creating a real dichotomy between the theoretical and methodological concepts related to the nature, form, formation and management of archival documents.

The principle of original order is a subset of respect des fonds. Not only should records accumulate steadily under their families but the original order of their aggregation has to be respected as well. Looked at purely from a practical viewpoint, “original order” saved archivists from the laborious rearrangement of records according to the subject classification system. At the intellectual level, the principle of original order maintained the cohesion and objectivity

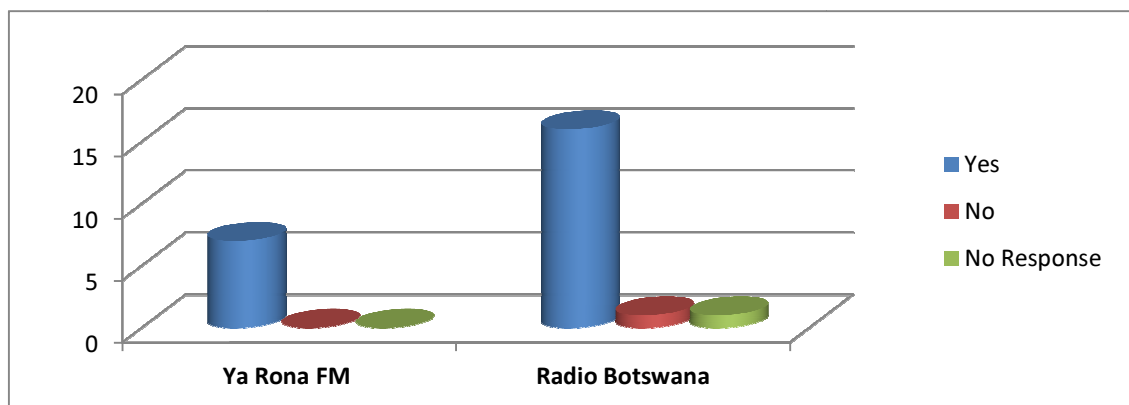
of the records by ensuring that nothing disturbs the natural accumulation of an agency's records as it carries out its daily business activities. Only by respecting the original order of records could one gain a perfect and proper evidence of how an institution conducted its affairs.

While this principle was found to be true for the analogue records of radio Botswana analog records it fell by the way side when it came to music that was archived digitally. Here, retrieval of any song posed no problem as long as the song's name or artist was known. This finding is in line with Heather Macneil's assertion that in "paper based systems, where records are physically ordered in labeled files, usually in accordance with a classification scheme, the physical and contextual aspects of the records are intimately connected; original order has tended, for that reason, to be associated with physical arrangement. That association is no longer valid for most electronic records" (2007, p, 526).

### 5. Arrangement and Description

The findings of this study showed that it was difficult to locate analogue records because of the system of chronological arrangement. There is a need to pay attention to the principle of respect des fonds. In the digital environment it did not matter whether records were arranged by the author or by the name of the creator because they would still be retrieved anywhere. A study by Setswe tried to find out if Radio Botswana staff was aware of any method used to arrange and describe their music archives. Their responses are presented in Figure I below

Figure 1: Awareness on Methods Used to Arrange and Describe Records for Access



Setswe's study had 13 respondents. 1 respondent said that he/she was not sure how Radio Botswana arranges its records. 2 said it does so chronologically. 1 said arrangement is by locality. 1 said by date. 2 said by allocating a unique number to CDs and LPs. 4 said according to artists name. 1 said by CDS/ISIS, while 1 respondent said they use manual labeling system. showed that 2 said that it is chronological. 1 said by locality, 1 said by date, 2 said by way of allocating access numbers or CDs and LPs, 4 said by the artist's name. 1 said by CDS/ISIS software and 1 said via a manual system. These responses also represented in Table 1 below. But they all go on to show how confused radio Botswana staff is about the method of arrangement adopted by their station. There is no consistency

Table 1 Methods Used to Arrange Radio Botswana Sound Archives. Adopted from Nomsa Setswe's Study (2012)

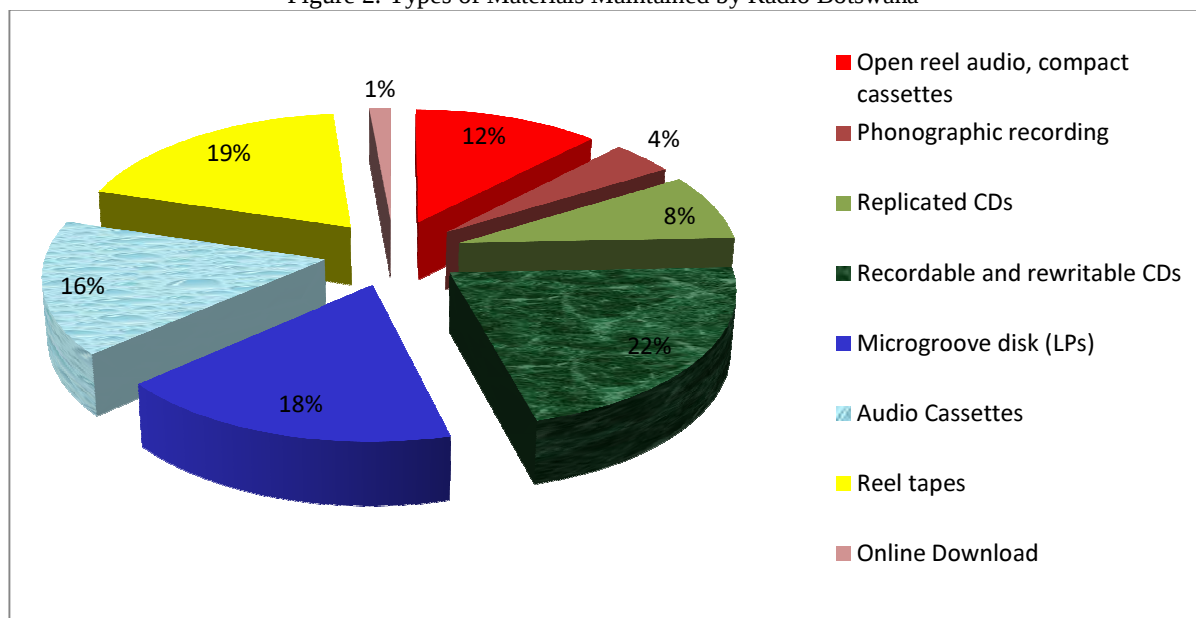
| Radio Botswana                                                          |                     |            |
|-------------------------------------------------------------------------|---------------------|------------|
| Methods                                                                 | N=13: No response=5 | Percentage |
| Not sure                                                                | 1                   | 8%         |
| Arranged by giving record number to records and artists chronologically | 2                   | 15%        |

|                                         |           |            |
|-----------------------------------------|-----------|------------|
| Arranged by locality                    | 1         | 8%         |
| Arranged according to Date              | 1         | 8%         |
| Allocate Access number for CD's and LPs | 2         | 15%        |
| Arranged according to artists name      | 4         | 30%        |
| Arranged on CDS/ISIS                    | 1         | 8%         |
| Arrange using manual labeling system    | 1         | 8%         |
| <b>Total</b>                            | <b>13</b> | <b>100</b> |

## 6. Digitization, Preservation and Access

Radio Botswana keeps both analog and digital music records (Ibid, 2012). The types of records that Radio Botswana maintains include open reel audio compact cassettes, long and short play vinyl phonographic records, audio reel tapes, compact discs (CD's), replicated CDs, recordable and rewritable CDs, audio cassettes, reel tapes and online downloads. 16 (22%) respondents indicated that Radio Botswana maintains recordable and rewritable CDs, followed by 14 (19%) respondents who indicated maintenance of reel tapes. 13 (18%) and 3 (4%) respondents further indicated microgroove disk/phonographic (LPs), while 12 (16%) respondents indicated audio cassettes. 6 (8%) of the respondents furthermore indicated replicated CDs. The least percentage of respondents, 1 (1%) indicated that Radio Botswana maintains online downloads. Figure 4.1 below shows the type of records held by Radio Botswana.

Figure 2: Types of Materials Maintained by Radio Botswana



Most archival repositories exist to provide access either to internal or external stakeholders and Radio Botswana sound archives is no different. This research found out that it is easier for the staff to provide access to sound in the digital form than in analogue form for the simple reason that searching for the record in the digital environment takes split seconds while doing the same for analogue records might take forever. However, when asked about the sound

quality and stability of the medium 2 out of 3 permanent archivists trusted the analogue records more. However, when asked whether they want to remain with analogue or digital records all the 3 archivists were eager to have their records digitized despite the fragility of the digital medium.

## 7. Conclusion

More detailed and sustained studies on Sound records and archival theory at graduate level are needed. However, preliminary findings of this study show that the basic tenets of archival theory are applicable to sound records in both analogue and digital formats. Regardless of whether records are sound or paper archival institutions still have to deal with their method of acquisition, where they come from (provenance or respect des fonds), comprehensive tools of access (arrangement and description) and continuous and consistence preservation in the digital environment to avoid technology obsolescence.

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## Chapter 34

# Open Access Electronic Publishing Model For Indian Academic Journals

Rajesh Chandrakar  
Library Scientist B, INFLIBNET Centre  
Ahmedabad, India  
[rajesh@inflibnet.ac.in](mailto:rajesh@inflibnet.ac.in); [rchandrakar@gmail.com](mailto:rchandrakar@gmail.com)

[Author's note: This proposal is prepared for establishing the INFLIBNET Centre as a gateway for open access electronic publishing of Indian academic journals on behalf of the UGC. ***This article is dedicated to Dr.TAV Murthy***, who as Director of the INFLIBNET Centre had allowed me to attend the National Workshop on Scientific Journal Publishing in India conducted by the NCSI, Bangalore in collaboration with Public Knowledge Project, University of British Columbia & Simon Fraser University, Canada during February 2006. Then after this idea was conceived as part of the outcome of that workshop and the presentation was made couple of times at ICDL 2006 and ICDL2010 pertaining to this idea and its implementation at the INFLIBNET Centre.]

**Abstract.** *The purpose of writing the article is to explain the current position of the open access of scholarly contents in India and accordingly to establish the INFLIBNET Centre as an aggregator for publishing the Indian academic journals based on the potential in terms of skilled manpower, infrastructure, expertise and availability of funds with backing of federal govt. The design approach of the study is purely on the potentiality of the INFLIBNET Centre as an aggregator for open access electronic publishing of Indian scholarly contents available in the academic sector especially under the umbrella of University Grants Commission. The scholarly contents are available mostly in the print format and do not provide instant access to the academic community of the Country. The problem of instant access is more concerned with the scholarly contents of Indian languages. Due to non-availability in the electronic format, non reaching quickly to the wider community, affecting the impact factor of the journals and the citation level of the articles including the timely recognition to the authors. It describes the current scenario of the Indian scholarly publishing, list out the major aggregators and institutions that publishes journals in electronic formats. The paper does not include the institutions publishing a journal or two. This study of the proposed model touches only the open access mode leaving behind the commercial implication of it. Once the proposed model is implemented by the INFLIBNET Centre, it is assumed that the India's scholarly content may get wider coverage and citation level of the articles may get increased. The researchers may also get credit on time. Overall, the impact factors of the journals would be increased and the duplication of work may be avoided. Most importantly, the research output will be available instantly to the academic community. Tthe paper brings major open access publishers especially aggregators of India in one place. It proposes to make INFLIBNET Centre as an aggregator based on its activities and services, currently, being rendered to the academic community of India.*

**Keywords:** Open Access, Scholarly Content, INFLIBNET, Electronic Publishing, India

## 1. Introduction

The Internet has changed the entire scenario of the library and produced different new names for it such as electronic, digital, virtual, library without walls etc. In the process, library resources have moved ahead from simply being bibliographic to e-documents, e-resources, e-books, e-journals etc. Since then, electronic copies of scholarly articles and contents have become user's demand on their desktop. Further, due to availability of the intellectual articles in the digital networked environment, the scenario of journal subscription has shifted from print to digital and individual to consortium mode into libraries. Additionally, availability of electronic journals on Internet takes less time and offers

24x7 hours and 365 days access to full-text of the articles without interruption. Consortium approach through gateway portal provides an excellent facility to the users for retrieving and browsing the right information at the right time with less effort. It offers one-stop shopping concept of bundle of journals in inexpensive way than the print subscription in addition making cross-linking of the articles that making citation of the articles visible. Some publishers do also offer free access of online version of journals with the print subscription.

With India being a multilingual and multicultural country, there are more than 3000 journals being published in various languages. As per the demand of the academic community, India is missing such organization that can offer facility and infrastructure to the universities as an aggregator. This article is prepared on the basis of the synopsis submitted to one of the Universities in India for carrying out doctoral research on the topic “Open access electronic publishing for Indian academic journals: a proposed model”.

## **2. Open Access: preferred definitions**

With the explosive growth of the Internet in recent years, electronic publishing has become more and more popular especially in the academic community. In this scenario where most libraries and institutions are involved in electronic publishing, digital libraries and institutional repositories, it is surely paradoxical to ask what electronic publishing is. But, it is necessary here to define electronic publishing for this proposal:

Wills (1995) of MCB University Press, UK, defines Electronic Publishing as “The exploitation of electronics in any and every cost-effective and cost-beneficial way that can facilitate the processes of publishing, where publishing for our purpose means: Conceiving, creating, capturing, transforming, disseminating, archiving, searching and retrieving academic and professional knowledge and information”. Electronic publishing is divided in two categories, i.e. close access and open access. The proposal concerns with the open access, therefore the literature search is provided on open access.

Open Access is purely literature especially a scholarly literature that is available free of charge on the Internet without copyright and licensing restrictions under GNU Public license. Open Access is categorized as Green and Gold open access, where Green refers to the self-archiving that allows an author to place a copy of the scholarly output in one or more open access repositories, whereas, Gold refers to the publishing of articles in an open access journals allowing free access of articles to the users. With respect to the various responses to the open access, the organizations have given various definitions of the open access. Accordingly, some of them are listed below:

According to the wikipedia.com (2009) Open Access means “immediate, free and unrestricted online access to digital scholarly material, primarily peer-reviewed research articles in scholarly journals” [1].

In short Public Library of Science (PLOS) (2005) says, “free availability and unrestricted use, distribute, copy, download, read or anyway you wish” [2].

Berlin declaration (2003) defines that “a comprehensive source of human knowledge and cultural heritage that has been approved by the scientific community” should be a part of open access [3].

Budapest initiative (2001) elaborate open access as “its free availability on the public internet, permitting any users to read, download, copy, distribute, print, search or link to the full-texts of these articles, crawl them for indexing, pass them as data to software or use them for any other lawful purpose, without financial legal or technical barriers other than those inseparable from gaining access to the internet itself” [4].

Peter Suber (June 2007), a famous Open Access supporter and a “guru” of open access says, “open access to scientific article means online access without charge to readers or libraries. Committing to open access means dispensing with

the financial, technical and legal barriers that are designed to limit access to scientific research articles to paying customers” [5].

### 3. Current Indian Scenario

A number of scholarly journals are being published from India covering wide spectrum of subjects, where many of these journals are peer reviewed and covered by premier indexing & abstracting periodicals. But, the coverage of these journals outside India is very limited due to absence of strong distribution channels and many of the journals are in the Indian languages. Sahu and Parmar (2006) write that Scientific publishing in India is also not in the top position in the list of the 25 publishing countries, although, India has got a unique position, almost middle in the ladder. As far as the online access of the scientific journals is concerned, it again falls down from the middle of the ladder to little lower to 18<sup>th</sup> position. But, interestingly India has fifth position in the list of open access journals and it is well ahead from the developed countries such as the Netherlands, Germany, and Australia. India is also front runner in the developing countries and in the south Asian region not only in the open access but also in the economic growth and overall scholarly publications. Among the non-high income countries, India's position is second and is next to the Brazil as far as open access is concerned. Lone and others (2008) reveals that the position of India in terms of number of journals in the Directory of Open Access Journals (DOAJ) is 7<sup>th</sup> with 105 open access journals from India till September 2008 and India's position is 10<sup>th</sup> in the world of Directory of Open Access Repositories (OpenDOAR) sharing with Sweden and Spain well ahead from China, Australia, and Japan with having 30 repositories. Bhat (2009) reveals that Medical Science leads in the open access journals and he also makes it clear that a small portion of research publications of Indian research is published in open access journals while stating that the majority of research being published in journals of Indian origin. It has also been explained that only standard and peer-reviewed open access journals are used by the Indian scientific community for dissemination of their research outputs.

Availability of journals in Indian languages and its visibility on web are two major hurdles for the Indian scholarly contents. However, some society and institutional journals started overcoming from these problems with the help of the aggregators and open sources software like OJS (Online Journals System of Public Knowledge Project based at Canada) [6]. The aggregators like Medknow Publication [7] and Indian Medlars Centre, NIC, New Delhi [8] [9] are serving in the area of medical sciences and biomedical journals, respectively. Informatics (India) Bangalore and IndianJournals.com [10] are commercial aggregators, helping to anyone who wishes to pay the expenses of making the journals online. However, the IndianJournals.com has also put few journals and newsletters on open access of some societies and institutions. The helping hand to the publishers by the aggregators seems to be for the English language journals only, although the technology like Unicode is available for the encoding of Indian languages (Chandrakar, 2002). The print journals due to non availability in electronic mode, in spite of being reputed and well known journals in nature, it faces visibility problem as reaches late to the end users making the content absolute in this technology era, where the contents are available to the users on minute to minute basis. The journals published in the Indian languages are worst affected journals, whose access is very limited; for some of the journals, the circulation realm is limited to the particular state where the language is being spoken. The affected journals could be more than hundred in numbers. The technology like Google translator can help making it visible to the wider number of end users in case the journals are available in electronic format. The Google translator is a tool for translating one language text into other language. Currently, the translation facility is available for the 51 global languages including Hindi and Arabic languages [15].

NISCAIR (National Institute of Science Communication and Information Resources), New Delhi is also one of the organizations sponsored by the CSIR, New Delhi, is a merger of NISCOM (National Institute of Science Communication) and INSDOC (Indian National Scientific Documentation Centre), with mission to become the prime custodian of all information resources on current and traditional knowledge systems in India [12] has put full-text of 17 odd journals of miscellaneous subjects / disciplines [13]. Apart from that the organization has also made available NISCAIR Online Periodical Repository for voluntary submission of the scholarly articles for the academic users under the Green access policy.[14]

Around one hundred and ninety research journals of India (see table below) are available on open access. The list in the table does not include the one or two journals being published by institutes on open access mode. For instance, Indian Statistical Institute, Kolkata publishes Sankhya and Kerala Agriculture University publishes Journal of Tropical Agriculture in open access mode. The authors exclude these from the study assuming them not as an aggregator for journal publishing. Some of the Publishers of these journals do publish in both formats: print and online and provide dual-mode access of the contents. Some of the journals have browsing facilities without user registration (MedKnow Publications and others), whereas some insist on free user registration (Indianjournals.com). Very few publishers in India started only on digital mode. Following organizations initiated open access of the journals in India:

| Name of the Publisher                  | URL Address of the Journals                                                                                                                                                         | No. of Journals hosted                                   | Subject Coverage of the Journals                                                           |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|--------------------------------------------------------------------------------------------|
| Indian National Science Academy (INSA) | <a href="http://www.insa.ac.in">http://www.insa.ac.in</a>                                                                                                                           | 3                                                        | Science & Technology<br>(Two journals and one INSA proceedings)                            |
| Indian Academy of Sciences (IAS)       | <a href="http://www.ias.ac.in/pubs/journals">http://www.ias.ac.in/pubs/journals</a>                                                                                                 | 11                                                       | Science & Technology                                                                       |
| Indian Medlars Centre, NIC, New Delhi  | <a href="http://medind.nic.in">http://medind.nic.in</a>                                                                                                                             | 40                                                       | Biomedical Sciences                                                                        |
| NISCAIR, New Delhi                     | <a href="http://www.niscair.res.in/sciencecommunication/ResearchJournals/rejour/rejour1.htm">http://www.niscair.res.in/sciencecommunication/ResearchJournals/rejour/rejour1.htm</a> | 17                                                       | Miscellaneous Subject                                                                      |
| MedKnow Publications                   | <a href="http://www.medknow.com">http://www.medknow.com</a>                                                                                                                         | 88                                                       | Medical Science                                                                            |
| Indian Journals dot com                | <a href="http://www.indianjournals.com">http://www.indianjournals.com</a>                                                                                                           | 7 Journals<br>1 Bulletin<br>2 Newsletter<br>1 Book Title | Miscellaneous Subject                                                                      |
| Kamla-Raj Enterprises                  | <a href="http://www.krepublishers.com">http://www.krepublishers.com</a>                                                                                                             | 20                                                       | Miscellaneous Subject, where some of the journals are scheduled to be published from 2010. |

Table: List of the Indian scholarly content on open access mode

But, none of the above publishers and aggregators follows the state-of-the-art features of the electronic publishing such as assigning of DOI (Digital Object Identifier), Cross Reference linking, COUNTER and SHUSHI for usage statistics, etc.

Another way of making scholarly contents on open access is setting up of Institutional Repository (IR). Most of the libraries have established IR either on intranet access mode or on open access mode. Compare to the publishing of journals in electronic format universities / institutions have gone far ahead in establishing IRs in their libraries. The number of open source software such as Greenstone Digital Library, DSpace, and Eprints are being used for the same. Indian Institute of Science, Indian Institute of Technologies, Business / Management Schools, R&D labs and Central Universities are ahead in establishing this. Some of the IRs established on DSpace software and available on Internet IPs has implemented digital identifier called handle for full-text content. The INFLIBNET Centre is one of them providing each digital object a handle hosted on the DSpace server [11]. NISCAIR and DRTC, Bangalore's IR also provides handle to the digital content.

#### **4. INFLIBNET Centre**

The INFLIBNET Centre is a National Centre established by University Grants Commission (UGC) under the Ministry of Human Resource Development (MHRD), Government of India, for promoting library automation, resource sharing, cooperative development among the academic libraries and other R&D libraries in India. The Centre is directed towards modernization of libraries and information centres and aims at establishing a mechanism for information transfer and access to scholarship, learning and academic pursuits. It is basically a co-operative endeavor in resource development, sharing and its utilization at national level. In this regard, it has constituted a national network of universities and consortium called "UGC-Infonet" and "E-journal Consortium", respectively [11]. Some other initiatives taken by INFLIBNET are (INFLIBNET, 2008) (INFLIBNET, 2007):

- Providing funds for ICT infrastructure and environment to the universities.
- Developing various union databases of the library resources including the expert profiles of this country
- Conducting various training programmes for library practitioners
- Making available library housekeeping software SOUL on minimum cost
- Created various user forums for discussing various technical problems
- Working as an Information Pool for the users of this country

#### **5. Reason for choosing the INFLIBNET Centre**

As described above, the main reason behind choosing the INFLIBNET Centre for this proposed model would be:

4. It is an IT based National Network having state-of-the-art technology and infrastructure working under umbrella of UGC
5. The INFLIBNET is a nodal agency of UGC providing linking facility to the universities under UGC-Infonet network
6. On behalf of UGC, it is providing access to bundle of electronic journals to universities and R & D institutions across the country under UGC-Infonet Digital Library Consortium
7. INFLIBNET Centre has expertise in open source and open access; therefore, it would be very easy for them to implement it on practice.

#### **6. Objectives**

The main objective behind the proposed model would be, to setup:

1. A gateway of Indian academic scholarly journals;
2. A facilitator for those Universities and Institutions, who are publishing journals in print format;
3. A cooperative endeavor in the area of electronic publishing by taking help of various subject experts of the country;
4. An multilingual electronic publisher of various Indian journals; and
5. OpenURL concept and framework for Indian Universities and R&D Institutions.

### **Objective 1**

To fulfill the first objective, it is proposed to establish OJS server dedicating for online hosting of the scholarly journals. The universities interested in hosting their journals on this proposed server, need an agreement with the INFLIBNET Centre. As per the proposal the print publication of the journal would be the responsibility of the university concerned.

This has already been initiated and has been launched officially on 27<sup>th</sup> January 2010. The dedicated server of the purpose is accessible from the <http://www.inflibnet.ac.in/ojs>. The Journal of Literature, Culture and Media Studies being published from the Nagaland Central University, Kohima is made available for open access.

### **Objective 2**

This objective is for those universities not following the OpenURL concept & framework for their scholarly journals. Positively, this objective will carry all the Universities and Institutions in one box under common global recognized standards for better interoperability of the Indian intellectual content. As per the proposal, the INFLIBNET should welcome universities for publishing their print journals in electronic format.

### **Objective 3**

Under this objective, the universities, who suppose to join hands with the INFLIBNET Centre will be encouraged for peer-reviewed of their scholarly content. For identifying the subject experts for the particular journal, the help from various expert databases available in the country such as INFLIBNET's expert database, UGC's Subject Expert list, IISc Bangalore's expert database, WHO's expert database, NISSAT's expert database etc. are expected.

### **Objective 4**

This objective is dedicated to journals being published in various Indian languages. Unicode based multilingual technology will be used for this activity as it is a proved technology for multilingual publishing.

### **Objective 5**

A study will be carried out for implementing OpenURL concept and framework for Indian Scholarly journals published by universities. As per the proposal, the INFLIBNET should become member of either CrossRef or IDF consortium as "Sponsoring Member" or "Registration Agency", respectively for covering the DOI and cross linking of intellectual content issues.

## **7. Scope and Limitation**

The scope of the proposed model covers all universities and R&D institutions of UGC setup spread across the country keeping in view the OJS (Online Journal System), an open source electronic publishing technology of Public Knowledge Project (PKP), Canada. The proposed model is limited only to the journals of the academic sector of the country covering only open access mode of the electronic publishing excluding the commercial part of the publishing irrespective of the interest of the university or institution.

## 8. Methodology

Questionnaire will be prepared and sent to the Indian universities and R&D Institutions publishing scholarly journals in print, but not in electronic format. Where the questionnaire will have all the options related with the set objectives for the Open Access Electronic Publishing of the Scholarly Journals. The researcher will ask for the opinion from the universities and institutions pertaining to the objectives of this model. Questionnaire may also cover the questions for the journals being published in electronic format but not following the standards of the electronic publishing for joining the hand under the model.

## 9. Conclusion

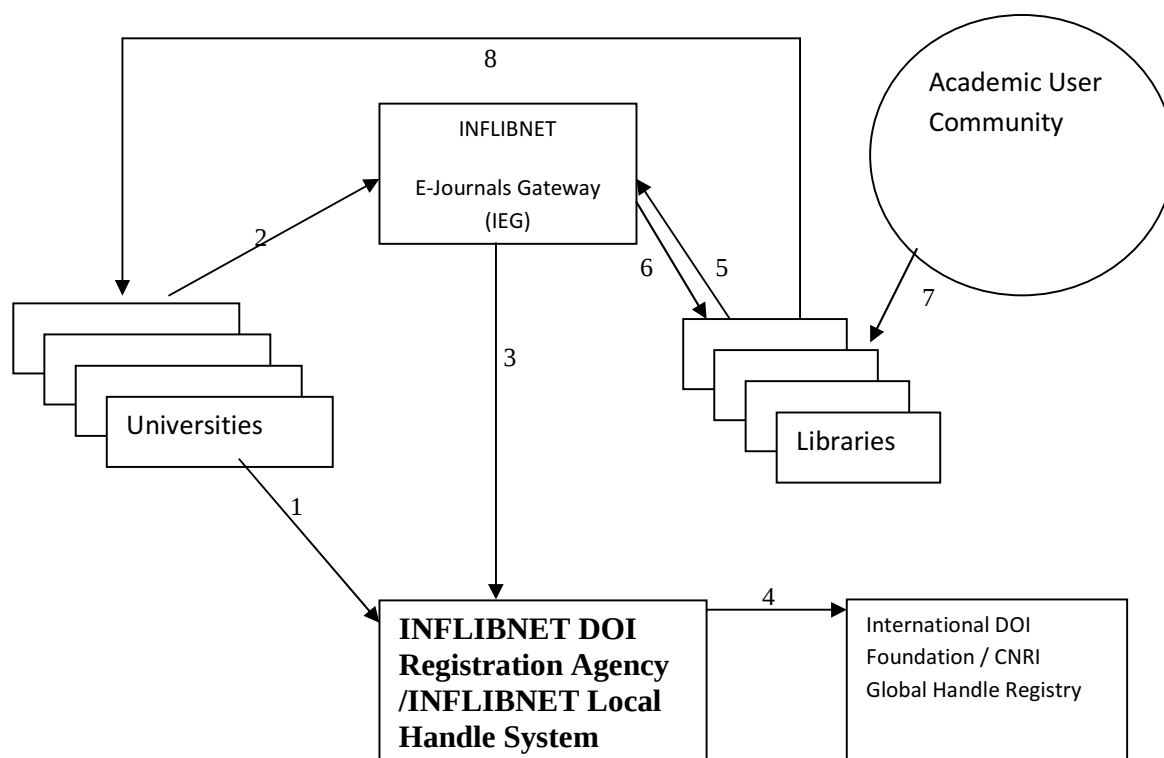
This proposal is based on current scenario of electronic publishing and the need of the academic community, where every user wants their desired information on their desktop. There are hundreds of journals being published by various universities and R&D labs. The universities and most of the R&D labs do not have the infrastructure to publish and host the journals online into electronic format; even in near future it would be difficult for them to do it due to lack of infrastructure, awareness and technological challenges. Although, some potential universities and R&D institutions are publishing their intellectual content online, but, it does not follow the global standards of electronic publishing like Peer-Review of articles, identifier to articles, OpenURL concept and framework of intellectual contents.

## 10. Appendix

### A Model for INFLIBNET DOI Registration Agency /INFLIBNET-CNRI Local Handle System

#### Description of Model 1:

1. It interprets that a university, who has online full text journals being published but could not implement the digital object identifiers (DOI) may contact INFLIBNET DOI Registration Agency (IDRA) /INFLIBNET Local Handle System (ILHS) for registration.
2. A university, who does not have expertise in publishing the journal online, will contact INFLIBNET E-Journals Gateway (IEG) for publication.
3. IEG will act as a nodal agency for universities and register them on their behalf. IEG will provide DOI numbers to the journal articles, as IEG will take responsibility for publishing journals on behalf of universities, where print publication would still be the universities job.
4. In case of IDRA, INFLIBNET will be the member of the International DOI Foundation (IDF), but in the case of ILHS, it should be the member of CNRI. In both the cases, IDRA and ILHS will act as a part of Global Handle System either of IDF or CNRI.
5. Different libraries will contact to the IDRA/ILHS for the subscription of different online journals, where IDRA/ILHS will act as a National E-Journals Gateway for the users to access the journal articles online on open access mode.
6. &7. Libraries will provide access to the academic user community through the IEG.
8. It represents access of the journals to the individual universities having print publication of it.



**Note:** IDRA/ILHS may keep multilingual issue of the journals in mind while publishing it in electronic format. Therefore, IDRA/ILHS may act as a Unicode based multilingual E-Journals Gateway for Indian languages journals.

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## Chapter 35

### Use of Online Document Management Systems (DMS) for Projects

ISHAPPA C. BANDI

Assistant Manager-Library & Documentation, TATA POWER COMPANY LTD

Mumbai, India

[icbandi@yahoo.co.in](mailto:icbandi@yahoo.co.in)

**Abstract.** *This article focuses on the projects Information Management System (IMS) and the online document management system (DMS) for the live projects. This article explains in depth about method of capturing the metadata and other detailed information about the sources in the live projects. The Information Management System for projects is one of the important activities and the success of some projects depends heavily on this system. Also it is evident from the explanation in this article that the role of documentation during and after the project life cycle.*

**Keywords:** DMS, IMS, Project Management, Aconex, Metadata, Attributes

#### 1. Introduction

The seemingly endless and ever increasing volume of information has circulated about a project. To the tracking of changes to a design as it passes from the designer, to the architect, to the Detailer, to the contractor and back again.

Technology hasn't eliminated paper. It has likely created even more. On average, an individual worker maintains 20,000 paper documents each year and spends 50 percent of his/her time managing those documents. Not only can potential mismanagement of information cost to the projects time and money, the ways in which we keep our projects and company's information secure yet accessible.

In recent years new developments in project information & document management have been enacted. The increase identity and intellectual property theft, has forced businesses to look more closely at their information management processes. Information Management System (IMS) is to capture, store and retrieve for its relevant expertise, industry knowledge and financial benefits.

The Indian power sector or the power industry in India comprises of the various governmental bodies looking after the power systems in India, power generation industry and technologies in India, power supplies, power industry report showing the analysis of the power scenario in India, the Indian power requirements and shortage, the various Indian power supply unit and the power infrastructure in India. The Power & Energy Infrastructure sector in India is poised for a major take-off. The APDRP (Accelerated Power Development & Reforms Programme 2002 - 2012) has seen an addition of around 22,000 MW during last five years. And during the next five years, a capacity addition of over 78,000 MW has to be set up by 2012. (A commitment of 15,600 MW capacity addition per annum).

Information Management System (IMS) is a system or process that provides the information necessary to manage the Project effectively. The importance of maintaining a consistent approach to the development, use and review of IMS system within the Projects is an ongoing process. The IMS system in Project must have a clearly defined framework of guidelines, policies, standards and procedures.

#### 2. Project Information Management System

Project information management is carefully planned and organized efforts to accomplish a specific one-time effort in constructing a thermal power plant. Project information management starts with the developing a project plan, which includes defining project goals and objectives, specifying tasks or how goals will be achieved, what resources are need, and associating budgets and timelines for completion.

The information Management Lifecycle can be defined in terms of the following steps:

- Definition of requirement for Document. This is sometimes called “deliverables” for information Management
- Document Creation
- Review and Approval by Information Management team
- Distribution of Document as an approved working copy
- Subsequent document revision
- Re-distribution of revised document to the original distribution matrix
- Disposal or archival of superseded information

### 3. Importance Of Information Management

Information Management is an important Project Management function. The implementation of good Information management practices will benefit the project in many ways:

- Improves the conduct of business in an orderly, efficient and accountable manner.
- Supports compliance with Quality Assurance standards.
- It protects the interests of the Company and the stakeholders in the project
- It significantly reduces the chance of cost blow-outs, caused by working with superseded documents.
- It promises tangible savings in time and resources thorough the use of a common system that is used by the entire project team with efficient search and retrieval functionality.

The adoption of a best practice system for the management of Information that enables full auditing of Information from creation to archival is an important project management function. A framework for good quality control by the Information Management team is the resulting objective.

It is also important to note that all of the above types of Information are likely to be revised and re-issued by the information management team.

The capabilities and benefits of the Information Management System can be identified as;

| <b>Capabilities</b>                                                                                       | <b>Benefits</b>                                                                                              |
|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Maintain a master Information document register of the latest revision of all project documents/drawings. | Increased productivity for Document Controllers compared with maintaining spreadsheets.                      |
| Generate transmittals and maintain and audit trail of who was sent what and when.                         | Increased productivity compared with typing transmittals and reduced plan printing costs via e-transmittals. |
| Manage revisions to information documents with an automatically maintained document history.              | Reduced risk by auto maintenance of an audit trail of all incoming and outgoing information sources          |

|                                                                                          |                                                                        |
|------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| Automatically identify who has not been sent the latest revision of Information sources. | Reduced re-work arising from working to out of date information.       |
| Ensure recipients are transmitted the latest revision of each information sources.       | Reduced disputes arising from incorrect issues of information sources. |
| Manage the document/drawing review process, Internal and External.                       | Shorter review cycles for document/drawing approvals.                  |
| Expedite the responses to document/drawing issues using QDMS Alerts.                     | Minimize design delays due to slow document reviews/approvals.         |

The size of projects varied from less than £5,000 up to hundreds of millions. Generally projects members have to use the same information management systems on all projects with some of the smaller projects using a scaled down version. The implementation of an information management system not to be based on the risk involved in the project. If anything, it was based on the size. The consistency of use of any particular system appeared to vary depending upon the project requirements and was often dependant upon the project team or the client.

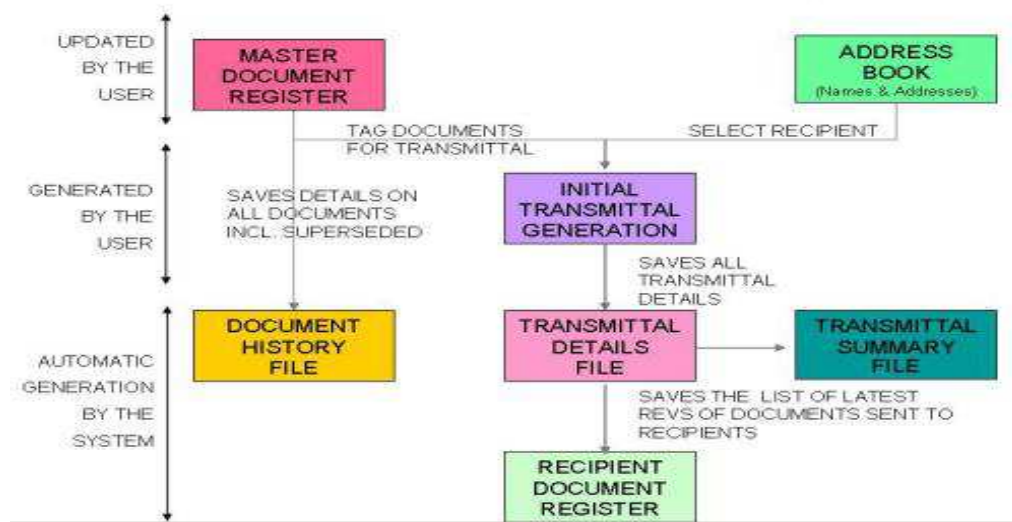
#### **4. Aconex: Tool For Information Management**

Aconex is an online application system, which is accessed by users via the Internet. Aconex provides a simple effective web-based system for organizations to collaborate and share information. Aconex provides a mean of transmitting, recording, managing, controlling and tracking this information during the complete life cycle of the project – through feasibility, design, construction and facilities management. The Aconex system assists the clients to increase efficiency, save administration time, reduce costs and mitigate risks.

Aconex provides a fully integrated document and information management tool including:

- An automated document register
- Fully tracked correspondence management
- Detailed reporting facilities
- Process and document approval workflows
- Approvals, preferences and other company administrative tools

## Databases – The Design



### 4.1 Features Of Aconex

The Aconex system provides efficiency gains and cost savings including:

- Reducing administration time
- Reducing the cost of document control and distribution
- Reducing time and costs involved with managing correspondence and tendering
- Increasing the Organization's ability to monitor project progress more efficiently
- Centralizing information management
- Eliminating communication errors
- Reducing the volume of document printing, couriers and faxes
- Improving the process of tracking and audit trails thus reporting the information on the project
- Eliminating multiple entry of data within and between companies
- Eliminating loss of information
- Minimizing commercial risk
- Alleviating disputes with a full audit trail of all documents, revisions, dates etc.

## 4.2 Disciplines List

These disciplines are relevant to Document Registration and Tracking. Please note that this is a mandatory field.

| Discipline Title                    | Acronym | Application / Use                                                       |
|-------------------------------------|---------|-------------------------------------------------------------------------|
| Civil                               | CV      | For documents relating to civil engineering                             |
| Electrical                          | EL      | For documents relating to electrical design and installation            |
| Environmental & Safety              | EN      | For documents relating to environment related issues                    |
| Mechanical                          | ME      | For documents relating to mechanical design and installation            |
| Instrumentation & Control           | IC      | For documents relating to instrumentation and control design            |
| Chemical                            | CH      | For documents relating to chemical engineering                          |
| Information Technology              | IT      | For documents relating to the IT division of MPC                        |
| Procurement & Contracts             | PC      | For documents relating to Procurement & Contracts                       |
| Finance                             | FN      | For documents relating to invoicing and approval/release of funds       |
| Administration, BD & MIS            | AD      | MIS, Project monitoring and all reporting system                        |
| Commissioning & Performance testing | CP      | All activities/purchase done during commissioning & performance testing |
| Marketing                           | MK      | For documents relating to marketing division of divisions of BHEL       |
| Others(Please specify)              |         |                                                                         |

## 4.3 Primary Attributes (Zoning)

The Following Project Attributes Are To Be Used For The Tagging Of Mail And Documents To Ensure Information Is Stored In An Ordered Fashion. This Will Ensure Easier Retrieval Of Information Quickly And Effectively In The Future.

| Zone/Location Description     | Acronym | Description                                                                                             |
|-------------------------------|---------|---------------------------------------------------------------------------------------------------------|
| Steam Generator & Auxiliaries | SGA     | All equipments, valves, piping, Electrical, I&C, ESP, and associated equipments                         |
| Steam Turbines & Auxiliaries  | STA     | Turbine, controls valves, Lube oil system, surface condenser and associated equipments                  |
| Generator & Auxiliaries       | GNA     | Generator, Exciter, connected auxiliaries                                                               |
| HP & LP Piping                | HLP     | Valves, controls and piping in HP&LP Bypass system, APRDS, Auxiliary steam system and piping plant wide |

| Zone/Location Description                         | Acronym | Description                                                                                         |
|---------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------|
| Fuel Oil, Coal Mills & Associated handling system | FHS     | Complete coal mills and coal mill handling system, Fuel oil system and connected auxiliaries.       |
| Ash Handling System                               | AHS     | ESP and other equipments in this system                                                             |
| Sea Water Cooling System                          | SCS     | CW Pumps, piping, valves, surface condenser and equipments                                          |
| Air & Flue Gas system                             | AGS     | Fans, ducting, damper in air and flue gas path                                                      |
| Feed Cycle & Condensate System                    | FCS     | Hp Heaters, LP Heaters. BFP, CEP, Condensate pumps, Gland steam condenser and piping                |
| ACW & Compressed Air system                       | ACS     | Pumps, piping and auxiliaries in this system                                                        |
| Electrical system                                 | ELS     | All AC & DC electrical panels, transformers up to 6.6kV, lighting, Emergency DG Set, UPS, Batteries |
| Switchyard                                        | SYD     | Step-up transformer, SST,UAT and 220KV switchyard                                                   |
| Miscellaneous                                     | MSC     | EOT cranes, Lifts, Tanks, Fire Fighting, Air conditioning and ventilation, Chemical dosing system   |
| BD Documents, Reports & Monitoring                | BRM     | Material status, BD documents, MIS & all other reports.                                             |
| FGD System                                        | FGD     | All equipments, piping and support structures in FGD system                                         |
| C & I (Common)                                    | CIC     | C&I common to a all the facilities                                                                  |
| Civil Infrastructure                              | CIN     | Common infrastructure in the plant                                                                  |
| D M Plant                                         | DMP     | All equipments related to Demineralisation plant                                                    |

#### 4.4 Project Documents

Documents will need to go through for Review & Approval, so it is important that they are Registered and Transmitted. Any attachment to a Transmittal, from the Controlled Documents Register, gets automatically registered on the recipients' document register by default and could be customized to meet the needs of the Organization.

#### 4.5 Document Types

These document disciplines are typically selected by each participating organization to suit their scope and needs of the project.

The document types given below relates to the Project user configuration.

| Document Types                  | Acronym | Application / Use                          |
|---------------------------------|---------|--------------------------------------------|
| Applications/Permits/Licences   | APL     | For documents seeking permits and licences |
| Arrangement and Layout Drawings | ALD     | For general layout drawings                |

| Document Types                                            | Acronym | Application / Use                                                                                      |
|-----------------------------------------------------------|---------|--------------------------------------------------------------------------------------------------------|
| Accident Reports                                          | ARE     | For all accident reports from the site                                                                 |
| Bills & Payments                                          | BNP     | For all bills and payments to be cleared by the finance section                                        |
| Correspondence/Approvals and others with Statutory Bodies | CST     | For documents related to the correspondence with statutory and regulatory bodies                       |
| Cable Schedule                                            | CSC     | For all type of Cable Schedules                                                                        |
| Cable Inter-Connection Schedule                           | CIC     | For all type of Cable interconnection points                                                           |
| Checklist                                                 | CHK     | For Inspection, commissioning etc                                                                      |
| Commissioning Instructions                                | CIN     | For documents on commissioning instructions                                                            |
| Commissioning Reports/Results                             | CRE     | For documents on commissioning reports/results                                                         |
| Completion Certificate                                    | COC     | Equipments and scope/part of scope completion certificate issued by vendor                             |
| Data Sheets                                               | DAT     | For documents related to equipment and unit calibration and plant wide plant and equipment data sheets |
| Handover                                                  | HDR     | For documents related to equipments and scope/part of scope handed over by vendor                      |
| Drawing (General Arrangement)                             | DWG     | For all type of GA drawings                                                                            |
| Drawing (PFD)                                             | PFD     | For all type of PFD drawings                                                                           |
| Drawing (P&ID)                                            | PID     | For all type of P&ID drawings                                                                          |
| Contract Documents                                        | CDC     | For all type of contract documents                                                                     |
| Punch List                                                | PUN     | For documents on Snag or Defect list during construction                                               |
| Environmental Impact/Management                           | EIM     | For documents relating to Environmental Impact and its mitigation                                      |
| Equipment Specification Sheets                            | ESS     | All equipments specifications                                                                          |
| HAZOP                                                     | HOP     | For Hazard and Operability analysis, report & procedures.                                              |
| HSE Plans                                                 | HSE     | For Health, Safety & Environment plans                                                                 |
| Inspection & Test Procedures                              | ITP     | For plant wide Inspection & Test Procedures                                                            |
| Inspection & Test Report                                  | ITR     | For plant wide Inspection & Test reports                                                               |
| Material/Equipments Status Report                         | MES     | For documents on material/equipments received from vendor                                              |
| Manuals                                                   | MAN     | All type of manuals                                                                                    |
| Organisation Charts                                       | ORG     | For Organisation charts of all participating organisations of the project                              |

| Document Types               | Acronym | Application / Use                                                                    |
|------------------------------|---------|--------------------------------------------------------------------------------------|
| Photographs, Images & Videos | PIV     | For all plant wide photos, videos and images                                         |
| Planning Report              | PLR     | For documents relating to planning in terms of disciplines and activities plant wide |
| Progress Report              | PRE     | For project progress report on daily, weekly, fortnightly and monthly basis          |
| Project Quality Plan         | PQP     | For all the quality plans for project                                                |
| Project Schedules            | PSC     | For project schedules up to level 3                                                  |
| Quality Control Report       | QCR     | For documents pertaining to quality during the construction stage                    |
| Risk Assessment              | RAS     | For documents relating to risk identification reports                                |
| Risk Management              | RMA     | For risk mitigation/ management                                                      |
| Safety Reports               | SRE     | For all safety related reports                                                       |

#### 4.7 Document Status

| Status                       | Use / Explanation                                                     |
|------------------------------|-----------------------------------------------------------------------|
| Approved                     | Document is approved as submitted                                     |
| Approved subject to comments | Documents approved with some comments                                 |
| As Built                     | As built documents                                                    |
| Cancelled                    | Documents that have been cancelled or are no longer relevant          |
| Draft                        | Draft documents                                                       |
| Final                        | Final documents                                                       |
| For co-ordination            | Coordination related documentation                                    |
| Issued for Approval          | Documents issued for approval                                         |
| Issued for Construction      | Documents approved to be used for construction                        |
| Issued for Information       | Documents issued for information. Must not be used for construction   |
| Issued for Tender            | Documents of various disciplines/packages which are issued for tender |
| Issued for Comments          | Documents sent to consultants for their advice                        |
| Preliminary                  | Documents in progress (Not for construction)                          |
| Rejected                     | Documents that have been reviewed and rejected                        |

#### 4.8 Document Formats

It is important to use agreed file formats for distribution between project members. The following file formats could be used for each document type.

| Document Type   | Use | Formats Required                         |
|-----------------|-----|------------------------------------------|
| Contracts       |     | PDF, ZIP                                 |
| Drawing         |     | PDF, DWG, TIFF, DGN, (PDS files),NWD,NWF |
| Meeting Minutes |     | DOC, PDF, XLS                            |
| Reports         |     | DOC, PDF, XLS                            |
| Schedule        |     | MPP,PDF, XER                             |
| Photographs     |     | JPEG, TIFF                               |

Typically the file format for all registered documents will be: **Adobe Acrobat PDF Format**. Other native or original formats can be utilised if a “Live” document needs to be exchanged. Files attached to **MAILS** will use the file format applicable as .jpg, .tif, .xls, .ppt etc.

#### 4.9 Document Numbering

All participants **MUST** follow a unique numbering system for the documents. This ensures easy retrieval at a later date. They must also utilise the “Naming Acronym” to ensure that primary searches/filters for documents can be done effectively.

No characters that are not permitted by Microsoft Operating System (MS DOS based) to be allowed in the file numbering or naming in hardcopy format. This reduces time taken in registering and superseding the documents on Aconex.

It is suggested that this be used by all team members. Rule for Native CADD Documentation, Aconex will not allow the same document number to occur twice within a project. So, to allow the exchange of both PDF and CADD data of the same file, the following document registration coding could be employed.

| Example of Computer file name  | Example of Registered Number on Aconex |
|--------------------------------|----------------------------------------|
| A001-ALI-DWG-0001-JP-CAD_B.dwg | A001-ALI-DWG-0001-JP-CAD      Rev B    |
| A001-ALI-DWG-0001-JP-PDF_B.pdf | A001-ALI-DWG-0001-JP-PDF      Rev B    |

#### 4.10 Project Mail (Correspondence)

Some Of The Unique Features Of Aconex Mail Are:

- Covers all correspondence exchanged via the Aconex service
- Project Mail is automatically tagged and numbered for easy retrieval
- Any attachments to project mail will be stored on the system but searchable via locating the project mail

All project related correspondence and mails are to be sent via the Aconex system. Certain project mails like planning of social activities or confirming the attendance at a meeting need not be on Aconex.

A snap shot of the ACONEX;

The screenshot shows the Aconex web interface. At the top, there's a navigation bar with 'Tasks', 'Documents', 'Mail', 'Directory', and 'Setup'. Below this, there's a 'Search - Document Register' section with a 'Document Activity' tab. The 'Document Register' tab is active, showing a form with various fields for document registration. Below the form, there's a table listing documents. The table has columns for File, Document No, Title, Revision, Status, Discipline, Created By, Date Modified, Revision Date, Type, Size, and Lock. Two documents are listed: 'KEY PLAN OF BOILER' and 'General Arrangement of Boiler Sectional Side Elevation'.

| File | Document No    | Title                                                  | Revision | Status            | Discipline | Created By               | Date Modified | Revision Date | Type    | Size     | Lock |
|------|----------------|--------------------------------------------------------|----------|-------------------|------------|--------------------------|---------------|---------------|---------|----------|------|
|      | 0-00-020-73382 | KEY PLAN OF BOILER                                     | R6       | For Co-ordination | Mechanical | Maharashtra Project Cell | 02/02/2008    |               | Drawing | 603.8 KB |      |
|      | 0-00-022-73380 | General Arrangement of Boiler Sectional Side Elevation | R3       | For Co-ordination | Mechanical | Maharashtra Project      | 04/04/2008    |               | Drawing | 938.1 KB |      |

## 5. Conclusion

The importance of the Project Information Management System is highest because a wrong drawing or any other document with absolute revision may cause the lot of damage to the project. Also the non availability of document with site engineer may leads to delay in project and it affects on the cost of the project. Communications are a critical deliverable of every successful project and a key project management soft skill.

The Power Generation project should be intended to exploit the environmentally friendly, renewable, hydroelectric energy. For the present day, the engineering focus is on conducting the pre feasibility studies and preparing the project Information System.

Project communications is one deliverable that one may be personally responsible for and it's one that has a large influence over your project's success or failure. It is important to know that what project information? to be

communicated to a stakeholder group and it is inextricably tied to the information that is available for the communication? After all, you can't communicate what you don't know. On the other hand, if the need for the information is real and gathering the information is feasible, one should make every effort to make it available. The choice of the information to be communicated cannot be made without considering the project's tools and techniques for gathering the information and vice versa.

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## **PART 6:**

### **LIBRARIANSHIP: *COUNTRY OVERVIEWS***

## Chapter 36

# Library Education In Mauritius: A Critical Appraisal

**Ibrahim Ramjaun**  
**Librarian, National Library of Mauritius**  
**President Association of Professional Librarians of Mauritius**  
**Part-time lecturer in librarianship**

### 1. Mauritius : an overview

Mauritius is an island state of volcanic origin, covering an area of 1865 square kilometers, located in the South West of the Indian ocean, 2000 kilometres off the eastern coast of Africa. Although known to Arab navigators around the 10<sup>th</sup> century, it was officially discovered in 1505 by the Portuguese. The Dutch landed in 1598 and occupied the island until 1712. French colonization lasted from 1715 to 1810. Thereafter, the British took over following the French capitulation and ruled until 1968 when Mauritius achieved independence. The country became a Republic within the British Commonwealth in 1992. The multi-ethnic population comprises nearly 1.3 million inhabitants of Indian, African, European and Chinese origins.

### 2. Brief History of Libraries in Mauritius

*«Les colons aimaient à lire et les boutiques des libraries étaient bien fournies ... »*

In the light of this statement made by Dr. Pierre Brunet (1770-1832), a medical officer, describing Isle de France (the former name of Mauritius) in the early nineteenth century, it is obvious that the love of books and reading was a characteristic of the white oligarchy (Bourde de La Rogerie, 1934). Bookshops were well stocked and there were some private libraries owned mostly by bibliophiles. In 1805, literary societies such as *La Société d'Emulation Intellectuelle* and *La Société Littéraire de l'Ile Maurice* already existed. In 1816, *La Librarie de Maurice*, a private subscription library (basically a public reading room) was set up by Baron and Souvigne - two rich traders. These were restricted to the elite class of the Mauritian society. In 1839, the *Bibliothèque Nationale*, a library which was open to the general public saw the light of day in Port Louis. Although Adrien d'Epinay was the official advocate of the white planters and a staunch opponent of the abolition of slavery, he generously contributed towards library development by bequeathing 2,500 books to this library. He also fought for the freedom of the press and founded the Mauritius Commercial Bank. (Toussaint, 1977). Around the same period, another private library – the *Bibliothèque Desjardins*, a rich collection of natural history was set up. The municipal library of Port Louis was established much later in 1851 (Benoit, 1977). In the mid-nineteenth century, there were no more than ten commercial printing establishments in Mauritius (Toussaint and Adolphe, 1956). At that time, most of the books found in Mauritius were printed, published and imported from abroad. According to the Directory of Libraries, Documentation Centres and Bookshops in Mauritius and Rodrigues (2000), during the British colonial era, there were only six public libraries, namely the Municipality of Port Louis library (1851), the Mauritius Institute library (1902) the Carnegie Library (1917), the Municipality of Beau-Bassin /Rose Hill library (1946), the Municipality of Quatre Bornes library (1948), the Municipality of Vacoas- Phoenix library (1966) and only two special libraries, viz., the Supreme Court Library (1875) and the MSIRI library (1961). Today, there are twenty public libraries, seven academic libraries, around thirty five special libraries and a national library.

### 3. The First Librarians

During the first half of the twentieth century, the main qualification for becoming a librarian in Mauritius was proficiency in writing. Thus journalists, poets and playwrights such as Léoville L'Homme, J. Olivier Bijoux, Oscar Grandcourt, and Edouard Maunick were at one time in charge of the municipal library of Port Louis. This trend continued until 15th March 1952, when L. E. Rose who joined the Mauritius Institute on 1st March 1948, was appointed librarian after successfully completing a two-year course of study in librarianship at the Loughborough college and qualified for becoming an Associate of the Library Association (U.K). His studies were made possible thanks to a scholarship which was granted to him. Regrettably, after specialising in this field, he was transferred to the Colonial Secretary's Office as Assistant Secretary as from 1st July 1959. He was replaced by Sydney Jean Francois, a B.A holder who was promoted to the post of librarian on 11 July 1960. Rose may be rightly considered as the first professionally trained Mauritian librarian. Meanwhile, Madeleine Ly-Tio Fane, Assistant Librarian at the Mauritius Institute since 21 December 1956, resigned from the Civil Service to assume duties of librarian at the MSIRI in 1961 (Administrative Reports, 1960-62). Georges Mayes who was also trained in the modern techniques of library science in the United Kingdom succeeded Edouard Maunick as librarian at the Municipal library of Port Louis in 1960. He remained at the helm of this library for a period of nine years. (Benoit, 1977). It has also been unofficially reported that in the 1970's, some primary school teachers who, for some reasons or another were found to be unfit for teaching, were transferred to the former Teachers' Training College library at Beau Bassin. This sheds light on the poor image and status of the library profession prevailing in Mauritius at that time. Nevertheless, history bears testimony that some of the above mentioned literary figures who became 'librarians' at the Municipality of Port Louis without holding the appropriate qualifications, were indeed good administrators. They managed to develop their libraries despite the fact that they did not attend any formal library school and had to face financial constraints. Léoville L'Homme (1857- 1928) in particular, was a remarkable personality. He initiated interesting reforms such as the extension of library opening hours and retired after twenty seven years of meritorious service. Other professional librarians followed. They all graduated from foreign universities. Prominent among them was Gaëtan Benoit, who wrote a book on the contribution of Eugene Morel for the promotion of public libraries in France and an essay on the Afro-Mauritians or the Creoles. He also has to his credit the publication of an index to local newspapers. Moreover, he used to lecture at the University of Mauritius. It is noteworthy that he was the first Mauritian to be awarded the prestigious title of Fellow of the Library Association (FLA). Unfortunately, he died at a relatively young age. But he has left the image of a very capable, dynamic, passionate, warm and foresighted librarian as opposed to the stereotype image of a librarian being an austere intellectual, secluded in his office and cut off from his patrons and staff.

### 4. Library Education in retrospect

#### 4.1 Certificate in Library Studies (1981 - 1995)

When a UNESCO expert visited Mauritius in 1978, he reported that there were no formal library education and training at any level (Harrison, 1978). Some self-motivated candidates used to study for the Library Assistants' Certificate of the City and Guilds of London Institute by means of private tuitions. However, the standard of this course was considered to be high while the syllabus was entirely based on the British library system.

The need for a Mauritian equivalent programme started to be felt to cater for the personnel of the increasing number of secondary school libraries, in addition to those of the existing public libraries, the academic libraries of the four tertiary education institutions and the special libraries of several Ministries. In 1978, the University of Mauritius started planning a course in librarianship for library assistants. This institution secured the necessary funding from the International Development Research Centre of Canada and launched a part-time, in-service course initially extending over fifteen months. The chief librarian of the Carnegie library, Mrs Marie C Benoit, a fully qualified information professional holding the Associateship of the Library Association of United Kingdom (ALA) was seconded for duty for two years to take charge of this project (Harrison, 1978). The total number of library staff

who have benefited from this training amounts to sixty nine. This certificate course was offered for the last time in 1995.

#### **4.2 Certificate in Librarianship and Information Science (MCA)**

After the University of Mauritius upgraded its Certificate course in Library Studies into the Diploma in Information and Library Studies, there was a void left in the training of library assistants. Thus, in June 1999, the Open University of Mauritius (previously known as the Mauritius College of the Air) started to run a one and half year part-time distance learning course leading to the Certificate in Librarianship and Information Science. To date, enrolment amounts to over four hundred students, out of whom two hundred and sixty nine have successfully completed this programme. This course which is serviced by local tutors is still going on.

#### **4.3 Diploma in Information and Library Studies (1993-2012)**

Holders of the Certificate in Library Studies of the university started to feel the urge to upgrade their skills and knowledge base in order to be able to aspire to higher positions such as Documentalist and Library Officer. Despite mounting pressure from library assistants, it took the university twelve years after the launching of the certificate course to start offering a two-year part-time in-service Diploma in Information and Library Studies programme in 1993. The first intake amounted to twenty five students. To date, nearly three hundred library personnel have already enrolled in the DILS course – the successful completion of which, may entitle one to become para-professionals or library technicians. Most of the staff of secondary school libraries and documentation centres of various Ministries are diploma holders. After a number of years of service as Library Officers, diploma holders may be promoted to Senior Library Officers.

#### **4.4 Higher Certificate in Librarianship & Information Science – Napier University**

Almost at the same period when the Diploma course of the University of Mauritius was launched in 1993, the Ministry of Education signed an agreement with the Napier University of Edinburgh, Scotland to offer the Higher Certificate in Librarianship and Information Science – a part-time, distance learning course jointly with the then Mauritius College of the Air, mostly to staff of state and private secondary school libraries. Some marked differences between the diploma course of the University of Mauritius and Napier's Higher Certificate course were: the latter was mostly a distance learning course requiring minimum face to face interactions with tutors, it covered less modules and ended by an open book examination. However, for the purpose of recruitment and promotion, it was granted the same status as the diploma, i.e. holders can aspire to become Library Officers and Senior Library Officers. Nevertheless, there is still a perception among certain members of the library profession in Mauritius that the Napier course was more or less a replication of the Diploma offered by our university and as such, was not totally justified. Official figures indicate that one hundred and twenty seven library staff were enrolled in the Higher Certificate course which ceased to be offered in 1998. Out of them, one hundred and eighteen successfully completed it.

#### **4.5 Diploma in Library and Information Science**

The Open University of Mauritius has launched this new distance learning course in 2010 despite the fact that the University of Mauritius (UoM) is already running a similar one by the face-to-face mode of learning since 1993. It is aimed mostly at holders of the Certificate in Librarianship offered by the Open university. To date, no less than thirty eight students are enrolled in this new programme, the duration of which is two and a half years covering a total of eighteen modules.

#### **4.6 Bachelor of Art in Library and Information Science**

Most of the fifteen or so professional librarians who were practising in Mauritius prior to the launching of the B.A (LIS) course by the University of Mauritius in 1999, graduated in Britain, Canada, France, U.S.A, India and South Africa. This was probably due to a lack of local expertise or resource persons to run an undergraduate course here. There was a pressing demand from diploma holders who wanted to further upgrade their qualifications and climb the professional ladder. Their struggle was not an easy one due to the fact that some narrow-minded conservative librarians from the old establishment, who happened to hold top positions, were opposed to this project. A small group of daring enthusiasts from among the younger generation of diploma holders founded the Library Diplomates Association (LDA) in 1997. The latter started to lobby in favour of a distance learning course in Mauritius leading to the Bachelor of Arts degree. It did not take them long to establish contacts with Charles Sturt University of New South Wales, Australia in following a recommendation made by the Library Association of United Kingdom to whom the initial request was made and to convince the University of Mauritius. No stone was left unturned to obtain exemptions or course credits with CSU, to reduce the course fees to the lowest possible level and to initially reserve it to library staff holding the diploma in library studies. Finally, after intense negotiations and much perseverance, their efforts were crowned with success. Ten subjects were exempted from the syllabus, a partnership agreement was signed between the Australian university and the University of Mauritius for running this programme jointly over a three year period. Registration for this course began in December 1998. A first batch of thirty six diploma holders enrolled for the B.A (LIS) course which started in January 1999. In all, twelve modules were studied: seven library modules and five non-library modules. The initial cost amounted to no less than Rs 120,000 equivalent to USD 4,000 per student inclusive of textbooks. A second cohort of twenty-four students successfully completed the same programme and graduated in 2008, but at a much higher cost, i.e. USD 10,000. This achievement is rightly considered as a milestone in the history of library education in Mauritius. This pool of graduates can pave the way to more professionalism in libraries of all sectors although merely holding an appropriate academic degree from a recognised university does not in itself automatically make one a competent, proactive, dynamic and fully-fledged professional librarian. The University of Mauritius,, the oldest library school is currently exploring the feasibility of launching a cheaper, yet equivalent alternative under-graduate programme worthy of its name in order to satisfy the demand from diploma holders who are aspiring to higher positions within the profession.

#### 4.7 Postgraduate Course in Library and Information Science

The University of Mauritius does not presently offer any course leading to a masters degree. Should the need arise in future, it is desirable that appropriate academic linkages be established with reputable tertiary institutions overseas. This will enable UoM to benefit from foreign expertise, secure international recognition for the programme and ensure that quality is always maintained at a high standard.

**Table 1. The various LIS courses offered**

| <b>COURSE</b>                              | <b>INSTITUTION</b>           | <b>DURATION</b> | <b>ENROLMENT</b> | <b>MODE OF TEACHING</b>     | <b>DATE STARTED</b> | <b>DATE LAST OFFERED</b> |
|--------------------------------------------|------------------------------|-----------------|------------------|-----------------------------|---------------------|--------------------------|
| Certificate in Library Studies             | University of Mauritius      | 1 Yr            | 69               | Part-time face-to-face      | 1981                | 1995                     |
| Certificate in Librarianship & Information | Open University of Mauritius | 1.5 Yrs         | 408              | Part-time distance learning | 1999                | On-going                 |

## Science

|                                                           |                                                  |         |     |                               |      |          |
|-----------------------------------------------------------|--------------------------------------------------|---------|-----|-------------------------------|------|----------|
| Diploma in Library & Information Science                  | University of Mauritius                          | 2 Yrs   | 292 | Part-time face-to-face        | 1993 | On-going |
| Higher Certificate in Librarianship & Information Science | Open University of Mauritius                     | 2 Yrs   | 127 | Part-time distance learning   | 1993 | 1998     |
| Diploma in Library & Information Science                  | Open University of Mauritius                     | 2.5 Yrs | 38  | Part-time distance learning   | 2010 | On-going |
| Bachelor of Art in Library & Information Science          | University of Mauritius/Charles Sturt university | 3 Yrs   | 60  | Part-time face-to-face and DL | 1999 | 2007     |

**Courtesy:** University of Mauritius: Faculty of Social Studies & Humanities and the Open University.

## 5. The Role of the Mauritius Council of Registered Librarians

The establishment of this Council has been made possible by the enactment of a legislation in 2000. As such, it is the highest authority for all registered professional librarians in Mauritius. It must be stressed that some of its statutory objectives are directly concerned with the improvement of library education although it is not itself responsible for the delivery of appropriate courses. The Act provides at section 4 (d): “*to establish appropriate linkages with any educational body in Mauritius or outside Mauritius with a view to upgrading the standard of education in librarianship*”. Furthermore, section 4 (f) stipulates that the Council is mandated “*to approve programmes of training leading to registration of librarians in Mauritius.*” It is desirable that the MCRL works in close collaboration with both the Open University and the University of Mauritius for the periodic revision of the curriculum so that students can remain abreast with the latest developments in the field of library and information science and for the continuing professional development of LIS graduates. However, a necessary precondition is that the Council must rise up to the expectations of its members by taking bold initiatives and acting more proactively.

## 6. Revisiting the curriculum of existing programmes

One vital aspect that is too often overlooked by policy makers is the need to reconcile course content not only with the requirements of the local labour market, but also with recommended guidelines and best practices from recognized institutions and library schools worldwide. This issue was recently raised at the first African Library Summit held in Johannesburg in 2011. There is an urgency on the part of library education providers to seriously consider reviewing on a periodic basis, the syllabus for the certificate, diploma and degree courses in order to bring them more in tune with the latest trends. In this respect, the assistance and expertise of the IFLA Section for Education and Training and of some of the best library schools across all continents need to be solicited. For

instance, in addition to the traditional core modules such as classification, cataloguing, indexing, abstracting, collection management, user services, the application of ICT to library operations, library management, information seeking and retrieval, records and archives management, and bibliographic control, emerging topics like web publishing, web design, digitization, online user services, Resource Description and Access (RDA), metadata harvesting, institutional repositories, ought to be introduced so as to equip the new generation with the required skills and competencies to enable them to transform their traditional libraries into hybrid, ubiquitous learning centres. Joint-ventures with reputable foreign universities in scarcity areas also need to be tapped. Library schools, library associations and the Mauritius Council of Registered Librarians must take the lead and work together in partnership to achieve this objective failing which libraries will continue to lag behind and never be able to play their legitimate role in this knowledge-based economy.

## 7. Continuing Professional Education

Bill Gates rightly predicted as far back as 1995 that “*the pace of frenzied technological change is so fast that sometimes, it seems that the world will be completely different from one day to another. More than once, people will be pushed out of their comfort zones.*” He advocated education, training, and re-training as part of the solution. Continuing professional development is the shared responsibility of library schools, library associations and individual information professionals. Regrettably, CPD has remained a much neglected area for too long in the library profession in Mauritius. Only a handful of LIS graduates have been lucky enough to attend training courses, conferences and workshops abroad. In these times of economic downturn, such opportunities have become even more scant. Interacting with foreign peers is indeed a boon not to be missed as it broadens one’s intellectual horizon, enable one to remain abreast with the latest issues, fosters professional networking and knowledge sharing. Alternative options such as inviting resource persons from abroad to conduct training for the benefit of our members on a regular basis, joining Listservs, and participating in webinars must be fully explored. In this respect, two recent initiatives are worthy to be mentioned, namely the half-day interactive training session organized by the Association of Professional Librarians (APL) in collaboration with two staff of the University of South Africa library who dilated on : *How to prepare a strategic plan for a library* and *Digitization: some practical considerations*; in November 2012 and the workshop conducted by a resource person from IFLA on the theme ‘*Re-skilling of Library Staff in the 21st Century*’, held in December 2012 at the initiative of the Mauritius Council of Registered Librarians. Such laudable endeavours ought to be replicated as often as possible.

## 8. Conclusion

It is hoped that no stone will be left unturned by existing library schools to carry out objective evaluation of all courses on a regular basis with a view to update their content, make sure these programmes are serviced by highly competent professionals with a proven track record and make them more responsive to the latest trends in library and information science education worldwide and to the needs of the local labour market. The Tertiary Education Commission must also see to it that any duplication of resources and energy in the provision of library education is eliminated. It is high time that a concerted approach involving the various stakeholders such as universities, library associations and the Mauritius Council of Registered Librarians work relentlessly for the betterment of the profession. It is only at this price, that the future of librarianship in Mauritius will be more promising.

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## Chapter 37

# Library Science And Librarianship In Swaziland: An Overview

**Thiyam Satyabati Devi**  
**Assistant Librarian & Cataloguing Head**  
**University of Swaziland**  
[sdthiyam@uniswa.sz](mailto:sdthiyam@uniswa.sz)

**Nkosinathi Dlamini**  
**University of Swaziland**  
**Swaziland**  
[ndlamini@uniswa.sz](mailto:ndlamini@uniswa.sz)

**Abstract.** *This article will present an overview of library development in Swaziland. It will describe the various types of libraries in Swaziland. Highlight the basic problems in the development of the library in the country. Suggestions for the improvement of the present situation are outlined along with recent moves by the government to improve the state information activities.*

**Keywords:** Libraries, National Library, Public Library, Academic library, Special Library, Swaziland, FUNDZA

## 1. Introduction

Swaziland is a small, land-locked country in Southern Africa with an area of 17,363 Sq. km that is situated between Mozambique and South Africa with an estimated population of 1,386,914 as of 2012 with a literacy rate of 81.6%. It is the smallest country in southeast Africa founded by Bantu peoples from Mozambique in the 18th century and became a British protectorate when colonial rule was established in 1903. Swaziland was led to independence by King Sobhuza II in 1968, and is now a dual monarchy with a King (currently King Mswati III since April 25, 1986) and the Queen Mother. Swaziland is proud of having achieved its independence and restored its traditionalist African way of life. The friendly Swazis mainly live in small rural communities with still stable polygamous family structures and strict morale. Since 1986, the young King Mswati III rules the country. King Mswati III is the sovereign head of the Kingdom of Swaziland. The affairs of the country are administered by the Prime Minister and Cabinet through a Parliament of elected members. Mbabane is the administrative capital, with a population of 60,000. Manzini is the hub, situated next to Matsapha Industrial Estate. The population of Manzini is about 80, 000. SiSwati and English are the official languages although English is used extensively in government and business.

The various landscapes are characterized by forested Highveld in the north-west, the softly undulating hills of the Middleveld in the central part, flattening out towards the south-east, where the subtropical Lowveld begins, which is being used mainly agriculturally and covers 40% of the entire country. In the very east, the Lubombo Mountains form the border to Mozambique and run south in to KwaZulu-Natal. The Swaziland landscape comprises of three types of land forms: savannahs, plateaus and mountains. The landscape is full of tourist attractions. The climatic conditions prevalent in Swaziland are dependent on the landscape and altitude of the country. So, different regions in the country sport different temperatures, although the variation is marginal. The Highveld temperature is temperate and seldom uncomfortably hot while the lowveld may record temperature around 40 °C (104 °F) in summer. The country has a wide range of habitats and great variations in flora and fauna.

Swaziland is famous for its many cultural ceremonies, celebrated in a picturesque and colorful way. The most important and spectacular one is the Incwala Kingship Ceremony. No less popular is the Umhlanga Reed Dance at the end of August where young women from all parts of the country - they must be still virgins - gather herein the royal village to dance before the king and his mother. Swaziland is an attractive destination for the lovers of nature and hikers, boasting a number of excellent nature reserves. The country depends heavily on South Africa, which it relies on for 90% of its imports and sends 60% of its exports. 70% of the population works in the agricultural sector and sugar and wood pulp are important foreign exchange earners. The majority (80 percent) of the people are Christian and the rest (20%) have indigenous beliefs. Sugar, soft drink concentrates, citrus products and wood pulp are the major exports, mainly to South Africa from which the Kingdom of Swaziland receives almost (90%) of its imports. Tourism is one of the Kingdom of Swaziland's biggest industries.

## **2. Libraries in Swaziland before independence**

Prior to the attainment of Swaziland's independence in 1968, volunteer housewives drawn from the community of colonial officials operated the few Libraries that were available. Professional librarianship in the Kingdom only took root in the 1970s and 1980s. This ushered in a new era of service enhancements among which were information technology (IT) applications. However, progress on library IT initiatives has been slow due to pressing financial, human resources, and socio-economic challenges.

Libraries have always been central to education and self-improvement. They also have the power to act as motors for more dynamic and effective learning, whether for individuals or for groups. The library plays a vital supportive role as a source of research and reading material in school or college or at University. It has always had a significant role in supporting reading and literacy, as well as helping to develop pupils' independent learning. The library is the heart, which itself has learning at its core and good libraries can empower the learner. The resources in a library can allow our imaginations to run free, introduce us to new experiences and promote access to knowledge and enjoyment. The situations of the libraries in the country are in the various stages of development. There are three major types of libraries in the country the National Library or the Public library which serves the nation, the Academic Libraries and the Special Library.

### **2.1. The National Library/ Public Library**

National Libraries are libraries that are mandated by their governments to collect and preserve a complete collection of everything published in that country. Collections often comprise of books, newspapers, journals and magazines, maps, government publications, etc. National Libraries are usually notable for their size, compared to other libraries in the same country.

#### **2.1.1. The Swaziland National Library Service (SNLS)**

The Swaziland National Library Service is the nation's leading documentary resource institution under the Ministry of Information and communication and technology. It was started in 1970 in Manzini and the service began in 1971 under the Ministry of Home Affairs then known as the Ministry of Local Administration. The British Council, the United States Embassy and the Ranfurly Library Service were instrumental in its construction and in getting the SNLS functional information needs of Swaziland (Kingsley, 1991: 33). The SNLS was initially established for recreational purposes rather than to perform the functions of a National Library. Hence it was more of a Public Library than a National Library (Mkhwanazi, 1996: 1-2). The vision of the SNLS is "to develop the Swaziland National Library Service as the nation's leading documentary resource institution" (Swaziland Government, 2008a: 1). In 1983 the Swaziland National Library was opened in Mbabane which is now the present headquarter. The Swaziland National Library Service provides two types of services, the Public Library service and the National Library service. The library is run by 160 staff of which 13 are trained professional staff. The Public library service

consists of two main Public libraries, namely, Mbabane and Manzini Public Libraries and thirteen branch libraries, Bhunya, Big Bend, Hlatikhulu, Lavumisa, Lomahasha, Mankayane, Mhlume, Mpaka, Nhlangano, Pigg's Peak, Simunye, Siteki, Tshaneni which are scattered all over the country and operates school libraries at secondary levels. There is also a mobile library service. The Mbabane library acts as the headquarters, and also houses the National Library service. The National Library is charged with the responsibility to expand the collection and promote the accessibility of research and study materials in Swaziland on a National and centralized basis. The National Library provides the following service i) Reference ii) Lending services iii) Interlibrary Loan iv) Internet services v) exhibition and conference facilities vi) Computer literacy, vii) Digital Opportunity Centres viii) School Library service ix) Information Literacy x) Outreach programmes (Services to Correctional institutions, Hospitals and Tinkhundla centres/ Constituencies. The library has a collection of over 270,945 volumes including fiction and children's collection and subscribed to 300 periodical titles at present. At the beginning in 1974 the library has a total collection of 55,800 volumes and 155 periodicals. The National library and most of the libraries in the country use Dewey Decimal Classification and AACR II.

## **2.2. The Swaziland National Archives**

The Swaziland National Archives was established by the Archives Act no.5 of 1971. Its mission is to empower Swazi citizens to fully participate in their country's social, political and economic life through the equitable development, preservation and protection of the Swazi cultural heritage. The National Archives were then placed under the Deputy Prime Minister's offices in Mbabane. On the 7th September 1978, a purpose built Archival building in Lobamba was officially opened by His Majesty King Sobhuza II with Queen Mamohato of Lesotho as guest of honour. Thereafter, the Department was placed under the Ministry of Natural Resources and Energy, Ministry of Tourism, Environment and Communication. From 2009 to date, the Swaziland the National Archives is placed under the Ministry of Information, Communications and Technology. The Swaziland National Archives comprises of the different sections including:

- Records management, which is mainly concerned with improving the economy and efficiency in the creation, maintenance and use of records;
- The Archives administration/research centre, which deals mainly with non-current records of permanent value. Indexes date between 1947-1969. This is mainly consulted by researchers and visiting scholars;
- The Library, which is a section where there is secondary materials on Swaziland; books, government publications, reports, conference papers, Gazettes dating from 1901, times of Swaziland dating from 1905; press cuttings from south African newspapers and SADC publications;
- There is also the Photography section and this has a collection of photographs dating from the pre-independence era to date. These photographs are of national events;
- Last but not least is the Book binding section, which deals with all materials to be bound from all sections (Swaziland Government: Ministry of Tourism, 2002).

## **2.3. Swaziland National Museum**

The Swaziland National Museum, located in the Royal Area adjacent to the houses of parliament was built in 1972, and is run by the Swaziland National Trust Commission. The museum located in Lobamba is dedicated to King Sobhuza II who led Swaziland to independence in 1968, and is well known by many in Swaziland, and provides an interesting and insightful introduction to the origins and history, culture, lifestyles and traditional attire of the Swazi nation. The museum also highlights the close relationship between the Swazi people and nature, and features amongst other interesting exhibits, a natural history hall built in 1991, which houses various dioramas covering a range of topics including vegetation types, numerous animal displays, and a representation of the nation's well know Mantenga Falls and it aquatic species. The Swaziland National Museum include a library with an impressive collection of Swazi historical books and other material set aside for research purposes, and a showroom which houses three of the royal cars once used by King Sobhuza II.

## 2.4. Academic library

An academic library is a library that is attached to academic institutions above the secondary level, serving the teaching and research community of the institute. The University of Swaziland is the only University in the country which provides multidisciplinary courses. The University of Swaziland was started as the University college of Swaziland (UCS) in the year 1972 at Faculty of Agriculture at Luyengo in Swaziland. The University of Swaziland was developed into an independent University in the year 1982. The UNISWA (University of Swaziland) Library was started along with its parent body the University of Swaziland in the year 1982. Since its inception the Library supports the educational research and learning functions of the University and a number of services are directed to these efforts. It also caters to the needs of the students and teachers of the university at large. The Mission of the Library is to “effectively provide services and access to quality academic information resources, irrespective of format and location to the University staff, students and associates in support of the instructional, learning, research and administrative functions of the University”. The University has the most comprehensive collection in the country, housed on the three campus libraries Kwaluseni, Luyengo and Mbabane. The library has a total membership of 5767 out of which 5251 are graduate 165 students are Post graduates , 1695 students are form IDE and 351 members are from Academic and administrative staff. The UNISWA library has a collection of 1,966,500 monographs and current subscriptions to more than 325 print journals with back issues for more than 600 journals. The collections are categorized into:

- General lending materials;
- Reference materials;
- Journals;
- Law collections;
- Health Science;
- Agricultural science;
- Special collections comprising of Swaziana, SADC, World Bank, IMF, African Development Bank and UN materials.

Library automation improves the image of the library and staff. It also provides additional services to the users. The UNISWA library is automated with the system URICA (form 2000) in the beginning and now is using SirsiDynix Symphony. It is the most versatile and customizable Integrated library System (ILS) in the industry, and is the best place to start from basic library functionality to complete customizable tools based on the library ambitions.

### 2.4.1. Services offered

The UNISWA Library has a mission to provide service and access to quality academic information resources in support of instructional, learning, Research and Administrative functions of the University. It also offers a combination of print and electronic resources to its readers. Others service includes: Reference service, Circulation, Inter-library loan, Internet and CD-ROM database searches, Duplication and Block loans:

## 2.5. Special Library

A special library is a library established, supported, and administered by a business firm, private corporation, association, government agency, etc., to meet the needs of its members or staff in pursuing the goals of the organization. Special libraries include corporate libraries, law libraries, medical libraries, museum libraries, news libraries, and nonprofit libraries. These libraries are not usually open to the public. In Swaziland special libraries are available in most government ministries, international, private and Non-Governmental organizations mainly to serve the needs of their parent organizations. The Malkerns Research Centre (1959), The British Council, USIS (United States Information Service), United Nations Children’s Fund, the Central Bank, Swazi Bank, UNDP (United Nations Development Program), UNICEF, Tibiyo, Provident Fund, Women's Resource Centre, a Save the Children's

Fund STBC, the Attorney Generals Chamber's, Swaziland Farmers Development Foundation (SFDF), National Agriculture Marketing Board (NAMBOARD), Swaziland Finance Development Corporation (FINCORP), Swaziland Broadcasting and Information Services (SBIS), University of Swaziland Faculty of Agriculture (UNISWA FoA), Royal Swaziland Sugar Corporation (RSSC), Sebenta National Institute Library, William Pitcher Training College Library, SCOT Library (Swaziland College of Technology Library). Others include the Coordination of the Assembly of the Non-Governmental Organizations and the World Universities Library and Information Centres, the former having indicated an interest to join as an international member of our Association SIMPA formerly known as the staff training institute library, the current Swaziland Institute of management & Public administration.

## **2.6. School libraries**

A school library is a library within a school where students, staff have access to a variety of resources. The development of school libraries can be traced back to 1971, when the British Council established the Swaziland National Library Service, which started the school library service in 1974, after a donation from the British Council. Ever since then the British Council has continued to support school libraries through various donations, as reported by Tawete (1993). He further noted that The Swaziland National Library Service now provides only professional advice to schools on the establishment of school libraries and the selection of books. A new director that was appointed in 1979 recognized the need for libraries in schools, revival of school libraries (Kingsley 1991).

Principals and teachers started school libraries on their own, through library fee payments and donations. In 1987 a non-governmental organization FUNDZA was established after a study into the reading materials in schools was carried out (Simelane 1991). The study further showed that there were very few schools with supplementary reading material. Most learners were stuck with textbooks and teachers' notes and it also revealed that most schools did not have library rooms. Even schools that had libraries converted them into classrooms, because of the large numbers admitted to schools, or because of lack of appreciation of the library facility. Recently, the Swaziland National Library Service and Fundza were invited to a meeting by the Ministry of Education officials to look into the possibility of formulating a policy document for school libraries. The National Library Service is currently in the process of arranging a meeting with all stakeholders to discuss the logistics of formulating this important document which will assist in streamlining support services of the said libraries. The Extension Services division of the National Library Service and Fundza continue to supply books to a number of selected schools. It must be noted that no harmony exists between the two institutions, based on the fact that one is a government department and the other a non-governmental organization.

## **3. Learning and Libraries in Swaziland:**

Swaziland has 14 public library centres serving a population of approximately 900,000 (Swaziland, 1995a) and spread across the four administrative regions of Hhohho, Lubombo, Manzini and Shiselweni. The libraries and population distribution are as follows: two centres in Hhohho serving a population of over 201,464; six centres in Lubombo serving a population of over 168,388; three centres in Manzini serving a population of over 219,06; and three centres in Shiselweni serving a population of over 162,374 (UNDP, 1998). The operations and services of these libraries are manual.

A representative random sample of eight libraries, two from each region, was surveyed from July to September, 1998. The libraries covered were Bhunya, Hlatikhulu, Manzini, Mbabane, Nhlangano, Piggs Peak, Simunye and Siteki. The collections in these libraries are organised in accordance with the Dewey Decimal Classification scheme (DDC). The HIV/AIDS information resources assessments were based on an examination of the catalogues, as well as shelf browsing, guided by the respective Dewey subject classes. Attention was also paid to evidence of any information publicity relating to the epidemic.

Observations were made with respect to availability of information resources, currency, scope, appropriateness, accessibility, and usage. Consultations with library personnel were also carried out where appropriate. With respect to usage observations, it is noteworthy that circulation records, mainly date-issued stamp marks, indicate only a general overview and not a comprehensive picture of usage trends. The records exclude users who prefer to read within the library premises. Moreover, in Swaziland, where communities are closely networked, HIV/AIDS is stigmatised and some users will not check out material to avoid suspicion. The result is a sensitive and secretive transaction, which leaves no trace behind. Also usage of non-circulating material such as reference, posters and serials are not captured by the circulation records.

#### **4. Library organization in Swaziland:**

##### **4.1. Professional organization:**

SWALA: The Swaziland Library Association (SWALA) is the only professional organization in the country. It was formed on April 28, 1984. The association has an Executive Committee, which is elected by the general membership during an Annual General Meeting (AGM), and is headed by the Chairperson. The Association has four membership categories, namely; individual, institutional, corresponding, and honorary. Membership subscriptions are determined by the Association's membership and subject to annual renewal. The current rate for individual membership is E 100.00 and E 500.00 for institutional membership. The Association has a publications programme that covers issues of interest to the profession. Among some of its publications are the *SWALA Newsletter* and the *SWALA Journal*. The publications are freely available to paid up members. In addition to the Annual General Meetings, the Association organises workshops, courses, conferences and seminars on issues of interest to its members. From time to time, members are either nominated or sponsored to represent the Association and/or participate at international conferences to enable the profession to keep abreast with topical issues in the library and information services. SWALA is committed to high standards of service and to promoting a strong sense of professional identity among its members. In this connection, members are encouraged to participate in study tours, production, purchase and sale of SWALA regalia at affordable prices and terms, and other fundraising events.

##### **4.2. Non-Governmental Organization:**

FUNDZA: Fundza is a Non-Governmental Organization (NGO) established in 1987 which has its headquarters in the Ministry of Education and Training that focused on library development. The organization has a board of directors that sets Fundza's direction. The members have developed their conviction in the power of reading to change lives through personal experience. Their daily operations are led by Ms. Nonkululeko Mdluli, a dynamic and professional librarian with many years of experience in library development. The word Fundza is a SiSwati word meaning "to learn" or "to read" depending on the context. Their mission is to raise the literacy rate and promote life-long learning among Swazi children. Their aim is to the increasing literacy rates by making information and library services available to primary and high schools. They train teachers in library management and methods to improve literacy. In addition, they provide and promote HIV/AIDS materials, run annual school debate competitions and train other NGOs on how to manage their Information Resource Centers. Fundza is a partner of the African Library Project. They conduct one-day library management skills training workshops for two teachers-librarians from each school. Fundza host the 3rd ALP African Partners Summit in our capital, Mbabane in November 2011. 38 delegates from 6 nations attended the Summit and our schools were very proud to show their libraries off. On the last day of the Summit, 90 of our teacher-librarians came to Mbabane for workshops run by the ALP partners from other African countries. They are looking forward to initiating more libraries in 2012.

#### **5. Library Automation in Swaziland**

The automation scenario of libraries in Swaziland is quite discouraging. Libraries are still in the automation planning stage. So far the fully automated library in the country is the University of Swaziland Libraries. The UNISWA Library has, since August 1998, installed the URICA integrated library management software for its housekeeping operations. The library started automated in the year 1999. Now they have upgraded the system to SirsiDynix Symphony and all the functions are carried out by the system. Waterford College has a small in-house system covering approximately 65 per cent of its stock which is capable of conversion into a union catalogue. No other library had any degree of automation other than some small in-house databases using Procite or CDS/ISIS microcomputer software. There is clearly an inadequate provision of staff trained in information technology, and most libraries do not have access to a computer.

## 6. Bibliographical control and service

The bibliography is said to be the structure of the book world of any nation. The importance of any nation can be gauged from its publication and its bibliographical activities. The SNB provides a complete catalogue of publications and other documents issued in the kingdom of Swaziland and by the Swazi authors which have been deposited in the University of Swaziland Libraries, The Swaziland National Archives and the Swaziland National Library in terms of Swaziland National Library Act 2002. They include monographs, serials, conference proceedings as well as other publications of the government, statutory bodies, societies and associations. In addition it also includes periodical articles and other publications issued from other countries whose subject matter relates to Swaziland. Swaziland is unable to establish a National Bibliographic Control Agency (NBCA) and has been unable for quite some time. Under the circumstances the UNISWA Library assumed the role of a quasi-NBCA and published the first four issues of the *Swaziland National Bibliography* starting in 1977 (Muswazi, 1998b). It has however been unable to realize the aim of producing it on an annual basis. The last was published in 2008 which covers from 2005-2007.

Swaziland does not have its own union catalogue or an interlibrary lending scheme, although certain libraries are part of the Southern African Inter-lending Scheme (SAIS) and some have contributed to the *South African Joint Catalogue (SACat)*, the catalogue of books and journals which are held by cooperating libraries in Southern Africa (Westra, 1993). The *SACat* forms the backbone of the SAIS, which is coordinated by the South African State Library in Pretoria. The *SACat* is managed as a union database by the South African bibliographic utility, SABINET Online, whose members add their holdings to the database. For many years the State Library undertook the task of adding the holdings of smaller and foreign-based LIS (including those in Swaziland) to the *SACat* on their behalf, but owing to its budgetary restraints it had to cease this service in April 1998. *SACat* thus enabled a degree of National Bibliographic Control, and it is to be regretted that there are now no Swaziland Libraries adding holdings today.

## 7. Library development and problems

Libraries in Swaziland have been in the developing stage. There had been practically no planning of libraries before the country got her independence from the British in 1968. The importance of libraries and information came gradually recognized only with the establishment of the Swaziland National Library services and the University College of Swaziland which is now known as the University of Swaziland and other few libraries, but the country has not granted them significant support because the educationalists and the top administrators in the country seem to unaware of the role of the library as an effective instrument for education and decision making. Hence the library has hardly any place in the national education programme. This is evident from the fact that the importance of school libraries in the country is not fully recognized. Unless this is done there will be total lack of library awareness and vital importance of libraries and information for educational effort would remain only at the instructional level and would certainly lack the cultural element which is important for education. Another characteristics observation

about library development in Swaziland has been the greater degree of dependence on foreign aid for capital and recurrent library expenditure and the undue reliance upon the expatriate professionals for establishing and running of libraries.

### **7.1. Other problems include**

- Absence of a National Body responsible for planning and coordinating the development activities in the field of librarianship and information science,
- Lack of qualified library personnel in the library,
- Nonfunctional of any professional association at the national level that would enhance the status of the profession as well as promote the library service in the country,
- Acquisition of library material due to the poor performance of publishing and book-selling industry in the country.

### **7.2. Some development**

Important development in the field is the publication of the king's order-in –council No 3 (1978) being the copyright (Amendment) order 1978, which confers the legal deposit status upon the library of the University, the National Library and the SNLA. The order requires every publisher in the country to deliver one copy of every book coming out of his press to each of the enumerated libraries with effect from 14th April, 1978. A seminar was organized by the government and the CRIT (Coordinating Centre for Regional Information Training –a joint programme of the Kenya National Academy for Advancement of arts and Science and the German Foundation for International Development) in 1979 was a landmark in the development of libraries in Swaziland. The Swaziland National Library Services initiated a partnership with African Library Project in 2008 to develop primary and secondary school libraries throughout Swaziland. SNLS partner with FUNDZA to work with the African Library Project (ALP) to provide learning materials for schools. The African Library Project started in 2005. It is a project which changes lives of book by book by starting libraries in rural Africa. They approach the grassroots, mobilizes U.S. volunteers, young and old, to organize book drives and ship books to a partner library in Africa. Since 2008 the ALP has provided books for 65 libraries out of which FUNDZA helped to establish 15 ALP libraries in 2010. The school provides the space, furniture and staffing for a library and the partners provide teacher-librarian training and coordinates the book distribution.

### **8. Challenges of the library profession in Swaziland:**

A library based education train's people to find out evaluate and present ideas. It also trains critical thinking and developed self-reliant thinking. Swazis are an oral society. Elias Ndwandwe (1991:10) of Macmillan. Swaziland complains that the Swazi society is not a reading society. Swazi tell and listen to stories, they do not read and write. In fact Ndwandwe is not alone in his philosophy. He is supported by schools such as Havard-William (1979:41), Andrew de Heer (1975:119) who claim that the major problem of librarianship in Africa is the strong oral tradition. Altbach (1975:119) adds that illiteracy or low literacy contributes to a limited market for books. Librarians in Africa and Swaziland have bought these ideas of the problem of the oral tradition. Mostly Librarians feel that it is better to wait until a certain level of literacy has been reached before they set up the libraries. Baregu (1972:24) notes that this argument is often used to justify the growth of urban library services at the expense of the taxpayers of the rural areas. The result of this is that our libraries of today in Swaziland as a whole are created for few elites just like the libraries which exists in Europe and America before the 18<sup>th</sup> Century.

### **9. Conclusion**

Although Swaziland librarianship is not very rich in information sources yet, in spite of all constraints on library research faced being a poor nation, it has a significant amount of literature. Information sources discussed above are available for researchers and students of Swaziland librarianship in the University Library and the Swaziland National Library and eminent public libraries in the country as well. The areas in which the compilation of work is needed are many. There is no control over report literature and government publication published in the field of librarianship. Catalogues of the holdings of the libraries of library schools should also be published.

Library and information development is necessary for every country without it is not possible to get full benefit from the government in education. It is time that any plan adopted for library and information development in the country in the next developmental plan should be taken as a pilot project with well-defined parameters and the time –table should be established for its execution with special consideration to the education and training of library personnel as well as users. It should however be flexible and responsive to change with the changing needs and the priorities of the country. Information is essential commodity and the information centre which may be taken to be the library of today has to change its outlook and methods to make the information flow easy and fruitful for users. The library user depends on the resources of a good library not general enlightenment to the treasure of knowledge. At the end it is recommended that Swaziland Library Association, with the help of the National Library of Swaziland, should set up a documentation center on the subject of library and information science and should provide all documentation and information facilities to researchers throughout the country.

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## Chapter 38

# Public Library Changing Scenario With A National Overview Of Tanzania

Julius T. Tweve

Lecturer, Tumaini University, Tanzania

[julius.tweve@gmail.com](mailto:julius.tweve@gmail.com)

**Abstract.** Public libraries are inclusive institutions created for everyone to equally and freely access information for educational, social and cultural development; indeed that is the essence of inclusion. An informed society exercises democratic rights and plays a vigorous role in the society through democratic participation and understanding, improved decision making and reduce danger of human rights violations. However, productive contribution and the development of democracy depend on acceptable education and unlimited access to thought, culture and information. Freedom of access to information (to use, share and distribute) is a right praised by society, but the majority of the population in Tanzania do not have access to information. The aspects of information exclusion in Tanzania include literacy levels and language of publications, physical access to libraries, challenged persons, ICT skills, connectivity and funding problems. Information exclusion and inclusion debates have emerged as strong issues at national level by different scholars. Social information exclusion offends human dignity, denies information seekers their fundamental human rights which threatens the democracy of any nation. Librarians in Tanzania therefore have a greater opportunity to make meaningful contribution to the realization of comprehensive information inclusion.

**Keywords:** Evolving Professional Roles

### 1. Introduction

Discussion of the concept of public libraries would bear less meaning, if global emphasis on freedom of access to information and the right to information are not mentioned here. The right of access to information is considered as a crucial human right and useful tool for individual, societal prosperity, freedom and development. An informed society exercises its democratic rights and plays a vigorous role in the society. However, productive contribution and the development of democracy depend on acceptable education and unlimited access to thought, culture and information (Kinya, 2011). Freedom of access to information (to use, share and distribute) is a right praised by some as the very core of the information society, and accused by others of being a merely formal standard with little practical reality in a world where the majority of the population does not have access to information (Pateman, 2010). With access to information, people should freely express themselves, since freedom of expression is one of the basic conditions for society's progress and for the development of every man. The effective implementation of freedom of expression requires citizens' access to express opinions and to seek information in the public sphere; hence one of the current biggest challenges is to ensure that the exclusive charter of the information society is replaced by inclusiveness. This is something that any popular government in the world should pursue as echoed by some researchers who pointed out that "a popular government without popular information or the means of acquiring it is but a prologue to a farce or a tragedy, or perhaps both (Pateman, 2010; Lor, 2003).

Information plays a significant role in planning execution of plans and overall decision making in all sectors of any national development plans. Explaining the coming of Libraries and Information Services to Africa and Tanzania, Kaungamno and Ilomo say "the first stage of the transfer of library tradition to Africa was via the colonial powers and it took place in the nineteenth century although it was sporadic". The year dates back to 1945 (Kaungamno & Ilomo 1989) From there on the influence of International Conferences on the development of Library, Documentation and Information Services has been continuous in the East Africa region and in particular Tanzania

with varying degrees and levels. Since library and information is a crosscutting sector touching all other sectors of development in society

In Tanzania, just three years after independence the country witnessed the opening of the then Tanganyika Library Services Board, a network of public library service after the enactment of Tanganyika Library Services Board by the Parliament in 1963. Support agents including the British Council, UNESCO, UNDP and many others have contributed to the development of Library and Information service in the country. As such it can be justifiable to say that the library sector recognition has been there since the colonial period. The issue at stake is how it has fared since independence up to the present age especially with the emerging Information and Communication Technologies. With the new developments it is no longer feasible to talk about the library sector on its own, without showing how the new technologies has affected or dwarfed it. There are some pundits who have even dared to predict the “demise of the book” Without placing too much argument on such schools of thought, it is important to note how the new technologies effect or enhance the dissemination of information. All in all it can be safely stated that the library and the Librarian for that matter will not sit down and watch while technology attempts to wipe the book. Rather it is for all stakeholders of the library sector to swim with the boat never allow to be swept by the new technologies but become part and parcel to the same.

## **2. Status of Librarianship Training**

Fifty one years of independence in Tanzania has witnessed exponential growth of library and information services in various spheres of development. A number of governmental, non-governmental, research, academic, schools, community, religious and private libraries and information centres have been established. A number of these libraries are already automated or in the process of automation. Some of the libraries are manned by well trained staff in that direction. Notable among them include the widespread network of public libraries which are under the Tanzania Library Services Board which is now covered in all the regions of Tanzania. Likewise we have witnessed an increasing number of training institutions for library and information workers at various levels including: School of Library Archives and Documentation Studies (SLADS) offers certificate and diploma, Tumaini University offers bachelors degree and University of Dar es Salaam offer Masters and PhD degree studies. What is conspicuously lacking is the program related to postgraduate diploma in the field. This in a way is a limitation because students graduating from Tanzanian Universities and wishing to pursue librarianship and information service for a carrier do not have a direct local institution for the same. As such they have to look for the programmes outside Tanzania which are very expensive. Likewise assistance in form of scholarships has been dwindling year after year. In this case stakeholders need to come together to find a solution for this anomaly

## **3. Supportive Policies for the Library and Information Sector**

### **3.1 Government Policies**

There are a number of governmental and non governmental policies which support establishments of library and information centres. For instance; it is the government policies that all schools particularly secondary schools establish a library in their premises. This is regardless of whether the schools are public or private. Taking into account the number of schools existing in the country it is obvious that the opportunities for the library sector in this case are enormous. Likewise, other sectors of development have policies requiring establishment of library and information centres. The construction industry for example advocates creation of a central reservoir of information to serve all the stakeholders of the industry. That is the reason why the National Construction Council being the institution vested with the responsibility of co-ordinating the development of the construction sector in the country has been given the mandate to collect and organize all the information related any aspect of the sector’s development. The Act establishing the National Construction Council compels “anybody doing or intending to carry out research, producing any publication related to the development of construction sector to deliver, at his own expenses the information to the Construction Council” There is actually a fine related to non compliance with this

requirement. As result the NCC information centre is there to act as a clearing house for information in the construction sector. Other sectors of development have similar policies which creates opportunities for mushrooming sectoral library and information centres.

### **3.2 Development Agenda**

There are other development agenda in the country including Vision 2025, Millennium Development Goals (MDGs), MKUKUTA aimed at poverty reduction, Public Private Partnerships and many others which are related to the development of specific sectors including health, transportation, mining, industry and commerce and many others. These recognize the importance of library and information sector to support planning and decision making within the sectors and there are already libraries established for this purpose.

### **4. The Role of Public Libraries in Achieving MDGs**

In Tanzania, information professionals are in line with Iya that “Libraries are regarded as agencies through which sources of information of accumulated knowledge and experience are selected, organised, preserved and disseminated to those need them” (Iya, 2009:97). Libraries are pre-occupied by three major tasks: the need to make information more easily available and easily accessible for use: need to increase availability of current as well as archives information in multidisciplinary fields including local content; and the need to minimize duplication of efforts in developing/generating information and learning resources. As agencies for social change, political, economical and educational institutions, libraries in Tanzania considered as among the information vehicles are considered to have a potential role in enhancing the achievement of the MDGs. The following are some of initiatives roles that libraries in Tanzania as information agencies towards attaining of such goals.

#### **4.1 Eradicate extreme poverty and hunger**

Public libraries particularly central library has made efforts of disseminating of technological packages to the farming communities for facilitating efforts for eradication of poverty and hunger. Public libraries also facilitate poverty reduction and employment through dissemination of information related to opportunities for employment, places of studies, organizations that provide training on various skills.

#### **4.2 Promote gender equality**

One of the main agenda of the government of Tanzania is to eliminate gender disparity in all sectors. Through provision of information advocating for gender equality public libraries have give a role to re-orient and influence public opinion on this respect. Libraries design specific information literacy programmes aiming at building capacity for lifelong learning school girls for the to excel in higher education levels. This has been done particularly in those regions and district women are regarded as appendages that have no voice in their community or tribes.

#### **4.3 Improve maternal and other diseases health**

Tanzania mission 2025 is to have access to reproductive health to all communities; public libraries have given a role to play in improving maternal health through production of reproductive health education through provision of reproductive health information to the community using appropriate packaging. During its annual meetings Tanzania Library Association (TLA), one of the sub theme is about health information management of which expert from this field present their papers.

#### **4.4 Achieve Education in various levels**

Public libraries carry different types of information resources that can be used to equip pupils, students and other learners with lifelong skills for betterment of their living conditions. The Government of Tanzania has injected some fund to empower public libraries to provide effective library services to pupils and students without discrimination to build a good foundation for a literary and democratic society. A literary society is crucial for attainment of the MDGs as no matter how much is provided financially, if the expected beneficiaries are not enlightened, it will be wastage of resources.

## 5. Public Libraries and Information Inclusion

In the context of provision of information to all, social information inclusion refers to “*giving all people access to the information, services and facilities that they have a right to, and making sure that they are fully aware of and know how to take up their entitlement to these services*” (MLA, 2007, p.9). Social inclusion has various benefits that include:

### 5.1 Democratic participation and understanding

Provision of information to all members of a society is essential for public participation in all activities pertaining to the society. The public is truly able to participate in the democratic process only when they have information about the activities and policies of the government. When the public knows the reasons behind some of the government decisions, its support is guaranteed and misunderstandings and dissatisfaction are reduced. The main role of public in Tanzania is to provide information to the community so as they will be informed, as a result they can be in position to participate in different social, economical and political move of the nation (Tweve 2012).

### 5.2 Improved decision making process

Past researches indicate that decisions that are made public due to right to information laws are more likely to be based on objective and justifiable reasons. The society of Tanzania cannot make relevant decision making if they have no alternatives, the alternatives always are there when the decision make is information enough. Public libraries therefore should observe that since the enforcement of the right to information to all, decision makers focused on the need to base decisions on relevant information.

### 5.3 Reduce danger of human rights violations

Right to information to improve the enforcement of many economic and political rights is greatly enhanced. In addition, access to individual records ensures such records are accurate and decisions are not based on out-of-date or irrelevant information. The right to information has other advantages that include exposing corruption, making government and the economy more efficient; uncover mismanagement of food supplies; making economic shortages less likely; and expose environmental hazards that threaten health and livelihoods.

## 6. Challenges Facing Public Libraries in Tanzania

So far we have seen that Library sector is recognized in almost all the sectors of development and is a crosscutting issue. However there are various challenges facing the sector as enumerated hereunder:

### 6.1 Literacy levels and language of publications

Levels of literacy and the predominance of principal world languages such as English as the language of printed and online information are elements of exclusion. Many oral communities are not able to make meaning through interaction with printed resources, and hence are unable to participate in the envisaged information society. Those oral communities consider interaction with information resources as a one way communication system, quite discontinuous with indigenous forms of communication. To tackle this challenge of literacy, TLS, which is the major public library in Tanzania, through various reading campaigns, provides opportunities for communities to enhance their reading and information seeking habits, and therefore sustain literacy. It is clearly known that, an informed individual has more advantages on proper decision towards development issue compared to a illiterate.

### 6.2 Physical Access to libraries

According to Kiondo (1998) distance from the library is a crucial factor in its use. The nearer the library, the more people will use it; and the further it is away; the less people will use it. Their research on Camel libraries affirmed this when the findings indicated that more users were within a distance of 1km from where public library services were being offered. Many libraries in Tanzania are concentrated in cities and major towns in Tanzania. This leaves the remote parts of the country excluded from access to information that is crucial for the communities to make informed decisions (Jemo, 2008) as an example from Kenya. Over the years, the Government of Tanzania through the Tanzania Library Services (TLS) has tried to eliminate this kind of exclusion by opening community and mobile

libraries. Currently, TLS has over 50 branches spread countrywide. However, much more needs to be done because there are still large populations in exclusion that need to be included. Thus, among the 26 regions in Tanzania, there are still many districts where such libraries have not yet been established. It should be noted that Tanzania economy is backed on agriculture, of which are found in rural areas (districts).

### **6.3 Challenged Persons**

The available public libraries in Tanzania were not designed keeping in mind the needs of the physically and visually challenged information users. This disadvantaged group form party of the society that needs information to enable them participate in all areas of national development. They also need to be sensitized more on their rights; something that can happen only if they have access to relevant information.

### **6.4 ICT skills**

Many public libraries today have developed to what we call hybrid type; providing both print and electronic resources, while putting more emphasis on electronic resources due to their ability to be accessed by multiple users concurrently.

Inadequate ICT skills and support to use electronic resources is however a significant factor in preventing certain persons from accessing information in Tanzania. Potential information users in many of the disadvantaged groups are often prevented from making use of ICTs because of low levels of computing and technology skills. This challenge is made more complex by attitudinal barriers with some excluded citizens pointing out that computers are for “brainy” people, for males, for the young and are difficult to use (Muddiman et al, 2001). Others feel that computers are unsafe because of the amount of unsuitable material on the internet (Botha et al, 2002, p. 22). Further research has indicated some disparities between male and female use in ICTs with access to the internet by male counterparts being greater in developing countries than female (United Nations, 2000). This has had serious implications, especially for women in the participation of national and global economic growth.

### **6.5 Connectivity**

Though internet facilities are fairly spread in Tanzania like any other country in East Africa, there is remarkable concentration in urban centres with institutions far remote from cities experiencing difficulties in getting connection (Mutula, 2002), an evidence of low level of exclusion with regard to ICT network. Hence appropriate technology for rural and disadvantaged communities is lacking. Even in the areas where communities are connected and have the skill to access online information they face another challenge of low speed internet and limited bandwidth. For example, to open a document to read takes quite a while because of the snail speed of the internet.

### **6.6 Funding**

The planning, executing and implementation of any programme requires considerable financial support. However, the extent of financial support whether at local government or provincial government level in developing countries and particularly in Tanzania, has not always been consistent (Raju, 1995, p.194). Survey findings of the public library sector in Tanzania revealed inadequate funding and the consequential negative impact on important aspects of public library provision (Leach, 1998). A memorandum drawn up by the Library and Information Association of South Africa (LIASA) and directed at various ministers noted that the public library services have been steadily declining and deteriorating as a result of legislative and funding issues resulting from restructuring of government at national and provincial levels. Public library funding challenges were further emphasized by Ford (2004) who pointed out that funding is one of the major challenges for public libraries around the world. Without adequate funds, public libraries are not able to acquire enough information resources to meet the needs of an inclusive society.

## **7. Bridging the Information Gap and the Way Forward**

Librarians as Information providers can make available a variety of information collections which can be used from various physical public library location. A range of publications and access formats can be accommodated, from remote login catalogues and indexes to provision of electronic copies of entire collection or works, in print or other

formats (Muddiman et al, 2001). Librarians have knowledge and experiences to build a well-balanced collection to meet social, political and economic interests of the society. This can be enhanced by giving special consideration in provision of information to predominantly oral rural communities in Tanzania.

Librarians need to shift focus on documents and focus on information seekers. Traditional librarianship has been based on selecting materials to fill public library shelves and then wait for information seekers to visit the facility in search of information. On the contrary, in order for the library personnel to effectively meet information seekers diverse life needs, the information services have to be informed by the communities in which the libraries operate, and information needs to be based on regular assessment processes.

Repackaging the product of orality is essential considering that communities are rich with information that is in oral form that needs to be captured and repackaged (manuscripts and print) in the appropriate media such as video, digital photos, and tapes in a collaborative and ethical manner. This should be based on the understanding of the communities to which the information service is being provided.

Librarians should become researchers to enable them to frequently interact with library users and prompt them to define their information needs. It is the responsibility of the librarian to then prioritize highly relevant information from a pool of interesting information according to user preferences (Kenny, 2002). In addition, the librarian should identify through community profiles and other methodologies such as needs analysis, all groups and individuals that are socially excluded or are at risk of information exclusion for inclusion.

Librarians should effectively play the role of a reference and referral information manager. This will involve directing members of the knowledge community to outside information when appropriate and maintain high level information about sources outside the community (ibid). A reference librarian needs to be widely knowledgeable in terms of resources and where they can be found for use and appropriately directing information seekers to relevant information resources.

Librarians through their professional Associations such as Tanzania Library Association (TLA) should establish a Council Committee on social information exclusion. This Council would be charged with the responsibility of highlighting the plight of those socially excluded, draw up strategies on narrowing the exclusion gap and come up with progress reports. The Council should actively engage the socially excluded people through involving them in the planning, implementation and monitoring of services through performance indicators and targets to measure success achieved in tackling social exclusion.

The image and identity of a public library is also an important factor when discussing social inclusion matters. The connotation of some of the public library names is unwelcoming. The librarian can positively influence this by considering local measures such as renaming the libraries, (for example Community resource centres, Idea stores and many more). This is in line with Ward (1996) idea of changing names of libraries when he pointed out that the term "*mobile information delivery systems*" is more appropriate than the "*mobile libraries*". The rebranding of a traditional public library name gives it a new image that is proactive, friendly, relevant and easily accessible environment. Other library practices and procedures should be reviewed to ensure they are not barriers to information access. For instance, procedures of becoming public library members should not be over-bureaucratic. Librarians should also establish more self-help public access terminal to overcome barriers to use experienced by some excluded potential information users.

Librarians need to be careful when planning for new public libraries. Priority should be given to those libraries serving communities in greatest need. Relocation and collocation with community centres, schools, leisure centres and other centres used by socially excluded people should be considered in order to improve the impact of public libraries in tackling social exclusion (Pateman, 2010). Working with neighbouring authorities to effectively deliver

services to socially excluded communities may be an appropriate action for librarians to take.

Collection development needs to be critically examined to ensure that it is comprehensive enough and relevant to the community which the library serves. The policy should be based on the needs and interests of local potential information users, reflecting diversity of society as well as define purpose, scope and content of the collection (Kinya, 2011). Librarians also need to liaise with material suppliers (writers, publishers, booksellers etc.) to identify the range of materials available for socially excluded people and gaps in that provision.

To remain relevant, Librarians should draw up ICT plans outlining how the needs of those excluded communities and individuals are to be prioritized (Jemo, 2008). Take a case in Kenya Mutula (2002, p.3) puts it that “*wider Internet connectivity can enhance Kenya’s economic growth meaning more people spending more time on the Internet and many organizations using the Internet to do business and creation of many technical related jobs*” Tanzania is in the same situation. It is therefore the responsibility of librarians to improve connectivity, increase access, through use of multiple competing technologies, public and community access points, and sharing of best practices. Public library human resources should also be developed through ICT trainings, enhanced awareness of decision makers, and expansion of ICT learning opportunities to the rural, poor, and disenfranchised (Wolff, 2005).

## 8. Recommendations

Generally a library and information policy for Tanzania should be able to bring the following benefits:

- To bridge the gaps in existing information infrastructure;
- To institutionalize and co ordinate various information services;
- To create a legislative machinery to provide for and promote a coordinated library and information activities;
- To mobilize financial and material support from local and national leaders to support information services;
- To establish appropriate information personnel development programmes (training);
- To facilitate access to information by all members of Tanzanian society;
- To promote wider utilization of information in all sectors of development through information marketing programmes, user education, user sensitization and popularization of information as a national resource;
- To ensure that information services and resources are organized and managed to serve better priority areas in national development.

## 9. Conclusion

It has been revealed from this paper that library and information is recognized as a sector to a considerable extent in Tanzania. However, it has been pointed out that what is conspicuously lacking is an explicit policy for the library and information sector. Stakeholders are therefore urged to co operate and effect the formulation of a policy for the library sector. Benefits related to such a formulation has been enumerated and all are geared at overall development of the country.

The status of training librarianship has been established in different level of education in different institutions. The paper has listed some of developmental agenda and role of public libraries have played. Some of developmental issues are eradicate extreme poverty and hunger, promote gender equality, improve maternal and other diseases and achieve education in various levels. Factors and contribution of public libraries have been identified with the notion that, in Tanzania information exclusion is real, but some efforts are underway to improve the situation. There are number of challenges facing public libraries in Tanzania some of the are literary levels, language of publications, physical access, ICT skills, funding and connectivity. The paper ends with the idea of bridging the information gap and the way forward and recommendations.

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## Chapter 39

# Education For Library And Information Science In India: Current Trends

A. Ganesan

Director-Library, Prist University, Vallam

Thanjavur 613 043, India

[Ayyapillaiganesan@Yahoo.Com](mailto:Ayyapillaiganesan@Yahoo.Com)

**Abstract.** *The paper provides a brief description of library and information science (LIS) education in India. It deals briefly the issues, challenges, common problems, structure of LIS programme, and it explains the quality of LIS education. The topic has chosen with a view to discuss the current trends in LIS programme being offered by departments of Library and Information Science in Indian universities and colleges. It also emphasizes the re-designing of the curriculum based on the emerging needs to match the new technological age. In this article, a detail analysis has been made on recent progress in Library and Information Science. This includes processing of knowledge acquisition, knowledge of computer, internet, information literacy and change in management. This article is highly useful for teachers, students and research scholars in LIS education.*

**Keywords:** LIS education, India

## 1. Introduction

Now libraries and information centers are called also as knowledge resource centers. The new trends in the profession shifted towards the digital library and virtual services. Libraries are using blogs, twitters, chat and YouTube and other web 2.0 tools for being more user friendly, and facilitate virtual services. The resource sharing with the help of consortium of e-resources along with internet and intranet growth made revolutionary changes in the profession. The database creation, institutional repositories, open access initiatives is popular in libraries at present. There is a need for accommodating these important new issues in the syllabi of the LIS programme which comprises the three 'T's formula. i.e., Teaching, Technology and Team building. It is inevitable that the traditional profession in shifting towards the modern practices due to many reasons like application of ICT, communication technologies, development of databases, multimedia, web page design, web tools, internet resources, Meta data and digital content management.

## 2. Issues in LIS Education

In India the levels of courses ranges from certificate course, undergraduate diploma course, postgraduate Diploma course, Bachelor in Library and Information Science (BLIS), Master in Library Information Science (MLIS) advanced training course information system and management and technology, M. Phil, Ph.D and D.Litt programme in LIS. Library science courses are never being first option of the majority of students. Most of the students turn to Library Science after having failed to secure admission to other prestigious courses of study. Strength and reputation of LIS course depend on the teaching standards and adequate faculty strength with good academic record, up to date knowledge and development in the field of LIS and adequate teaching experience.

Analysis of course contents reveals that the LIS program in South Asia concentrates mainly on training students to manage a library by providing in depth knowledge of traditional library practices there is wide disparity in the course, duration, number and name of papers, contents, number of lecturers and practice, methods of teaching and evaluation, and grading system. Therefore it is an urgent need that curricula be revised by reducing the traditional value of education and to introduce emerging areas such as information marketing, knowledge of management, online information system, information processing and retrieval system, information and communication technology. Revised curriculum must be capable of preparing the future professionals to meet the new challenges in the field of LIS.

The National Knowledge Commission (NKC) in India has identified that libraries and information centers are important units to promote knowledge and so it has rightly take care of learning needs of LIS family. The National Knowledge Commission (NKC) of India has identified that libraries and information centers are important units to promote knowledge. The working group on libraries (WGL) of the NKC has already made some recommendations on these lines.

- Identify, sponsor and conduct R&D programme in the LIS field
- Develop techniques for database creation and retrieval in Indian languages.
- Formulate lists of subject headings for Indian subjects.
- Study information needs of different cultural, academic and professional groups.

Librarians are not mere information retrievers and providers; they are guides and torch bearers of knowledge. The curriculum of LIS education in India needs to be based on the traditional library practices as well as modern trends for library functions and services by adapting the ICT application.

### **3. Recent Technology changes**

During the last two decades the trends in the LIS profession are changing rapidly and there is also a need to revamp the educational programme to manage the new challenges in the profession with the help of advanced level curriculum. Information and communication technology (ICT) has made a profound impact on the life and work of people. There is a shift from teaching to learning and from face to face learning to e-learning. Our curriculum has to be broadly interdisciplinary across knowledge management, information technology, information networks, open source software, web technology and e-information. There are many challenges before libraries and librarians i.e. the libraries must change from collection oriented institutions to service oriented organizations and librarians have to change from custodians of books and documents to information managers and disseminators.

LIS profession is treated as a noble profession as it serves the users in getting their information requirement. The LIS education is also developing fast and the growth of the learned organizations are also taking proper care of the change. Today the expectation of the LIS professionals is that they should be competent enough to manage, to provide access to organize, acquire and preserve materials in print and electronic form. For this they will have keep pace with the technological changes, and changing times. The skills required for LIS professional systems and they also need to have knowledge of alternative publishing models. To face the challenges posed by the fast changing technology, information explosion, scattering of information, multi disciplinary nature, flow of information and need for quick access to information, there is a processing need that LIS professionals should be trained accordingly. Since the trends and challenges are the same throughout the country, the education imparted to the professionals should have uniformity and it should be in conformity to the standards established in the field of Library and Information Science the world over.

### **4. LIS Programs in South Asia**

South, Asia consists of seven countries; out of these seven India, Pakistan, Sri Lanka and Bangladesh have provision for LIS education. Other three countries, Nepal, Butan and Maldives depend on out side support for education and training. There are a lot of variations between and within countries and institutions in South Asia. There are no uniform models. There are one year BLIS and MLIS courses and there are two years integrated course also. And some universities and colleges are experimenting with the Choice Based Credit System (CBCS). The revolution in information and communication technology has considerably changed both the education of information professionals and information science as well. Several curricula in South Asian Universities particularly in India added many courses on the use of ICT and are gradually moving from 'pure' library science to the hybrid field of information management, which draws its philosophy form both Library Science and Information Systems.

## **5. LIS Education In India**

The Library and Information Science(LIS) education in India may be said to have taken place with the introduction of a training course in 1911, in the erstwhile state of Baroda. The real beginning of systematic education in LIS can be traced to the initiative of Dr.S.R.Ranganathan during the period 1926-1931 at the Madras University Library in association with Madras Library Association. The summer school leading to certificate in Library Science, which Madras University continued under the stewardship of Dr.S.R. Ranganathan till 1937.

Later, Andhra University, Banaras Hindu University, Bombay University, Calcutta University and Delhi University introduced Post-Graduate Diploma courses in Library Science in the year 1935, 1941, 1944, 1946 and 1948 respectively. Apart from these Universities, Documentation Research and Training Centre (DRTC) in Bangalore and National Institute of Science Communication and Information Resources(NISCAIR) in New Delhi started the Library Science Education Programme. During 1947, altogether 27 Universities were offering Diploma courses in library science. In 1957, for the first time in the country, Aligarh Muslim University started BLIS course. The course were offered at different levels such as certificate, Diploma, Bachelor's PG Diploma, Master's and Research Degree Programme (i.e.) M.Phil and Ph.D under different modes and schemes. The growth of Universities during post independent ensured improvement in the quality of education. It is due to the importance of libraries in various institutions, research centers and government departments, the demand for librarians also increased. This actually gave boost to library education in many parts of India.

Besides, there are several other Open Universities imparting Library Education as Distance Education. The professional association such as Delhi Library Association (DLA) and the Polytechnic institutions throughout the country are also imparting LIS education as lower level such as certificate, diploma in library and information science.

## **6. Objectives of Library and Information Science Education**

The goal of Library and Information Science Education is the preparation of personnel for the task of successful performance at different types of libraries with an insight into the role of these libraries in a fast changing society. There will always be changes in the environment, and these changes will affect librarians and informational professionals, there role, job opportunities, self-image, motivation and even survival. Librarians therefore need to find a solution or a quick recline and this will certainly not be a short-term. We live in an information society where the development of information technology and telecommunication networks is accompanied by a corresponding increase in knowledge with a rapidly growing flow of information. The new information environment requires new skills in seeking, processing and using information. The base for individual ability to understand and use information is a qualitative, ongoing learning process. Learning and education are important topics are the information society and the educational situation is changing for several reasons, which develop from

the social, cultural, political and economic changes in the society. The role of librarians and informational professionals in this new environment has been strongly influenced by these changes.

The main objectives of LIS profession are to provide training for building up leadership qualities among the LIS profession, develop knowledge on the latest techniques of information storage, transfer and retrieval help to acquire necessary skills in handling, accessing and application of electronic resources, tools and media and help to know the latest developments in the information technology(IT). To sum up, the basic aims of Library and Information Science Education may be as follows:

- o To develop necessary technical skills
- o To develop administrative skills
- o To develop service orientation
- o To develop through knowledge by various sources of information necessary to give the traditional and modern library services.
- o To develop the professional awareness.

## **7.New Development in LIS Field**

The curriculum of LIS must be reviewed continuously; the trends in the profession are also reflected in it. The trends in the LIS from traditional practices in the profession shifted towards the digital library, including digitization, change in the practices due to application of information technology and knowledge management techniques etc. The impact of e-resources on libraries with the help of the consortium, e-publications, web 2.0 tools, libraries 2.0, internet and intranet growth made the revolutionary changes in the profession. E-resources have become the order of the day. It has several features-such as subject gateways which provide online resources on a particular theme or discipline. There has been a paradigm shift in the methodology of reading with the advent of e-resources. Users of higher educational institutions are increasingly looking for electronic information. For that there is a need to accommodate all these new issues in the syllabi of the LIS programmes.

The information needs and pattern of information use by users are changing as part of cultural change in society. “Do the job you love and love the job you do.” should be one of the strategies of the LIS profession. According to the new trends in LIS profession, there are three categories of competencies. They are;

- Professional competencies
- Personnel competencies and
- Core competencies

## **8. Curriculum Development**

In the 1980's a marked change in LIS education was required due to the introduction of IT to the library field. As a result, the revision was initiated by the UGC in the early 1990's. The University Grants Commission (UGC) constituted the Curriculum Development Committee (CDC) on Library and Information Science under the chairmanship of Prof.D.N. Koula(1993). Soon after this, many changes accord in the ICT sector which had a direct impact on the libraries. As a result the revised curriculum was published in 2001 by Prof.C.R. Karisiddappa (2001), the chairman. However it is felt that lacunae persist so that LIC professional in India are still unable to get full satisfaction out of the present curriculum and teaching.

LIS courses offered by Indian library schools in different universities have become partially irrelevant since long. The debate on changing the LIS curricula has been going on for the last few years, but nothing concrete has yet been done at the national level, except for some cosmetic changes. The syllabus have more ICT courses like digital libraries, digital multimedia, web technology, web management, database technology, web page design, e-

publishing, expert systems, knowledge management, networking and consortium, telecommunication and data transmitting, content management systems, network technologies and semantic web. The courses include both theory and practical sessions. Besides, there is a need for interpersonal communication skills among the LIS professionals, it helps interact more with the users and provide good service to them. In this context, personality development and communicative skills may be included in the LIS curriculum.

Library and Information Science has become multidisciplinary subject as it deals with information, which is applicable to all the subjects. More particularly, management and technology has been integral part of library profession and the current demand for library professionals to have managerial and technological skills in addition to sound librarianship.

## 9. New Challenges

Curricula remodeling is a process whereby the choices of designing a learning experience for students are made and then activated through a set of coordinated activities. Curriculum development for the professionals is a logical as well as practical process to reach the problem solving stages ultimately. Today, information professional is required to be information evaluator, instructor, service marketer, innovator, data miner, information aggregator, information consultant, effective communicator and knowledge manager. He is supposed to have workable knowledge of handling ICTs, web based library and information services, digitization of document and IPR issues. He is also supposed to train users in making effective use of networked electronic information services, organize library outreach services etc. With such countless responsibilities, only multi-skilled information professionals can survive and thrive in the emerging information era.

There is need to change the LIS education system in order to face the new developments in the profession, the following important points may be useful;

- Practical orientation is an essential concept to be incorporated
- The concept of creating, managing and maintaining databases are helpful in LIS student's current job.
- Model curriculum based on the cutting edge course contents and ICTs.
- Teaching and evaluation methods must internalize the spirit of the emerging mechanism.
- Information literacy and knowledge management must be integrated in the LIS course and reflected in the nomenclature.
- Collaboration with the information and data providers to provide trail run for digital resources and training to the students to develop the skills.

## 10. Change Management

Change is permanent and rapid change is important to the survival and success of any library. Lucy Jeynes has presented the key steps in change management as follows:

- Building the vision ('be bold', 'be audacious')
- Mobilizing commitment (change is about people)
- Diagnosing reality (the SWOT (strength, weakness, opportunity and threats analysis)
- Knowing the change cycle.

Libraries and Information Centers are intermediaries between information providers and consumers. Library and Information Professionals are basically facilitators of the professional and social goals by providing instant access to

valuable knowledge and information in a cost effective manner. Dr.S.R, Ranganathan's laws are valid and useful for all time; the only change needed is to replace the word 'books' in his laws with 'knowledge and information'.

Technology will continue to change and libraries and librarians have to use the changing technology to provide the best access and service to the patrons. The library is no longer defined simply as a building or a physical repository that houses information. So the librarians must change the library environment as pathways to high quality information in a variety of electronic media and information resources.

It is inevitable that the traditional profession is a shift towards the modern practices due to many reasons like application of ICT, communication techniques, development of databases, multimedia, web page design, web tools, internet resources, metadata and digital content management etc. Therefore it is high time to make analysis of the changing context and to fine-tune the LIS courses accordingly. We have no choice but to make the LIS course consistent with the job market.

### **11. Short comings**

A country like India having multilingual and multicultural agglomeration of population, complexities of situation and diversity of information needs, setting up of stereo typed library and appointing stereo typed library professionals at all places may not work very well. We need to set up Learning Resources Centers and Knowledge Centers that may really conform to meet the information needs of various segments of society including the literates. For that there is an urgent need to redesign the LIS programmes.

Only 50% of the LIS schools have changed their curriculum according to the new trends and development in the field of LIS. We have to examine carefully the courses being offered by us in our institutions in order to ensure that 50% credit be given to the traditional school of idea. At present only 40 percent of the areas are related to IT components. Faculty, curriculum, student's intake, learning support, teaching methods are critical components for the success of any LIS programme. But LIS programme in majority of the developing countries like India are suffering from acute shortage of faculty, competent students and hence the internet connectivity is still a luxury for many of the departments. There was not enough hardware and software on the one hand and web based resources and services on the other. For that, would be librarians future is in bleak. In many universities either in regular steam or distance mode, the students have obtained degrees with limited theoretical knowledge.

### **12. Student's Intake and Infrastructure in LIS**

Library science courses are never the first option of the majority of students. Most of the students turn to Library Science after having failed to secure admission to other prestigious courses of study. During the last two decades there has been a mushrooming of LIS courses available through correspondence course or by the more respectable nomenclature 'distance education'. Most of such schools are ill-equipped for LIS education, that they have proved to be money minting machines for the parent Universities due to higher enrolment. At present about 125 institutions offer LIS programme in India. Of these, the MLIS course is being offered by 102 Universities, 85 Universities have Ph.D Research facilities, and D.Lit at two places (BHU and Utkal) only. It has been observed that more and more institutions and libraries are opening library science courses, without having even the minimum facilities for teaching, with poor libraries and funds, they have started MLIS programme.

The LIS department, need to impart the student with subject content-both traditional and emerging trends; computer skills with adequate hands on practice to meet the demands of real work situation and communication skills for personality as well as professional development. Such curriculum really imparts required employability skills.

The LIS students will have to compete with other professionals to survive in the ever changing information handling management. Based on sources available, the present LIS education system in India indicates that immediate revision of curricula is essential and unavoidable not only for its survival but also for facing the major challenges brought out by the changing information society.

Therefore it is high time for LIS faculty to give close and thoughtful attention with regard to the curriculum design to make it relevant to the demands of knowledge society and develop products capable of getting respectable professional positions and work with self esteem.

### **13. Recent Trends of Research in LIS in India**

Research in Library and Information Science briefly means the collection and analysis of original data on a problem of librarianship done within the library schools according to scientific and scholarly standards (Kumar, P.S.G. 1999).

During the reason past, a quite number of research activities have been carried out in the universities and research institutions in various parts of the world. LIS education in India has now become ten decades old and is centered in the universities. This is a professional education and of late doing quite well in the job market. For the past three decades quite a number of research activities have been carried out in the different universities in India and this has improve the status of the field even more. After independence it has been noticed that the amount of research activities has drastically increased. In India about 130 Universities and Research Institution are offering Ph.D programmes in LIS.

Dr.S.R.Renganathan introduced Library Science Education at the University of the Delhi in 1951 and it become the first University in India to award Ph.D Degree in Library Science in the year 1957 to D.B.Krishna Rao. Who worked on “faceted classification for agriculture” Library and Information Science is an emerging discipline and now LIS education has become a global phenomenon. In India near about 130 Universities which offer Ph.D in LIS do not have any particular and single data base or any documentary source which holds a list of the doctoral theses completed throughout these years. Any one who wishes to know about the research activities that have been carried out in the past or the research projects being under taken in the present days need to consult several sources to get the accurate information. In spite of their efforts they are often misguided and reach to false inferences. This all happens due to lack of a proper research agenda prepared by experts in the field who have immense research experience and a single source containing records of the research activities being carried out all over the country not only in the field of Library Science but also in almost every discipline.

Though India has contributed a lot to the field of Library and Information Science it lacks in the research in LIS, if there is any, it is not up to the mark. This is mainly due to ;

1. Traditional method of teaching and lack of research orientation in most of the Indian Universities
2. Lack of research experience of the faculty members and the librarians.
3. Inadequate strength of the teaching faculty in may Universities and thereby over burdening them with classroom teaching.
4. Inadequate financial support
5. Lack of good library facilities and services.
6. Absence of identification of research area (Kumar, P.S.G., 1987) till the year 2008 there are 802 doctoral degrees awarded by the different Universities in India (Chandrasekara and Ramesh, 2009). For this there is an urgent need to deal with the problem areas to contemplate on whole some changes for success of LIS research and to re-establish the importance of LIS research for professional practice.

### **14. Suggestions**

- ❖ An accreditation agency for LIS courses in our country at the National level is urgently required on the pattern of All India Council for Technical Education (AICTE) for Technical Education and Medical Council of India (MCI) for Medical Education. The absence of such a national body has been the main cause of inadequacy of quality education in LIS in India.
- ❖ For effective teaching and learning we will have to follow the technology based learning and teaching (TLT) and Computer Assisted Learning (CAL) is the need of the hour.
- ❖ There is also a need to formulate a standard syllabus for all the Universities to follow the concept of standardization, which may be helpful for the migration of students and professionals anywhere for seeking the employment. The suggested standard syllabus may be similar to that of the UGC.
- ❖ To establish a computer laboratory in the department and train the students for a competitive world.
- ❖ Start Data Bank, information analysis centers and transition centers etc.
- ❖ Refresher courses in LIS are to be conducted often by Academic Staff Colleges in Universities for Librarians and Teachers in Library Science in order to update their professional skill in specialized areas like digitization, automation, web based information searching, web page development and application of web 2.0 in library etc.
- ❖ Student evaluation of faculty must be encouraged to keep the faculty agile.
- ❖ LIS courses must be based upon the leading edge, feedback from the Alumni, and needs of the existing and emerging job markets.
- ❖ Students must be trained in online searching information literacy, interpersonal skills, research skills, and leadership competencies.
- ❖ For quality assurance, mechanisms for professional accreditation must be evolved,
- ❖ Commercialization and privatizations of education must be regulated,
- ❖ Open and distance education courses should be allowed only if the adequate faculty, infrastructure and transparency are in place.
- ❖ Funding bodies like UGC in India and Library Association like Indian Library Association (ILA) and Indian Association of Teachers in Library and Information Science (IATLIS) in India should play a leading role in promoting excellence and collaboration.

## 15. Conclusion

In a networked society, based on information economy, the LIS profession has to change its outlook and methods to learn new tools and retain the dwindling clientele encroached upon by the IT people and allied professions. Librarians are not mere information retriever and providers; they are guides and torch bearers of knowledge. There is a need for the qualified professional as many changes in the profession during the past few years have taken place for future challenges. The curriculum of LIS education in India definitely needs to be based on the traditional library practices as well as modern trends for library functions and services by adapting the ICT application. Thus the LIS curriculum development today is a very difficult task in order to keep in mind the changing paradigms of library and information resource centers. Changing of the conservative thoughts and to get in its place the mind, tools, methods and mechanisms is an imperative need of the hour and that alone will fulfill the future dreams of a knowledge thirsty class of LIS professionals in the country.

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