Contents

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v Editorial

77 Knowledge Management through Academic Portal: A Case Study of Bodhidroom E-learning Portal
Nirmali Chakraborty and Bikika Laloo

93 Knowledge Management Practices at Goethe Institute Libraries Worldwide
Anil Zafar

101 E-research Support Desk: A New Genre in E-reference Services
Ahmed Taha

115 Implementation and Use of Web Analytics for Academic Library Websites
Anindita Paul and Sanda Erdelez

133 Contribution of SAARC Nations towards World Digital Library (WDL)
Mudasir Khazer, Huma Shafiq and Uzma Qadri

143 News

147 Forthcoming Events

149 Guide to Authors
Knowledge Management plays a significant role in this issue and increasingly in the world of library and information science, yet the definitions of Knowledge Management are quite various, as Chakraborty and Laloo point out in their table on p. 78-79. Most of the definitions have something to do with capturing knowledge or with capturing information to transform it into knowledge. Information is relatively concrete. It includes all forms of text, images, numerical data, and can be sorted, structured, reprocessed and repurposed. Information comes in various types of containers including paper and computer-based storage, and it comes in formats that are generally well established. Knowledge is a far more slippery term that represents a level of abstraction above and beyond the information base on which it builds. Knowledge is, in a sense, how people understand information after they have interacted with it, but the moment that knowledge becomes concrete in written or spoken or visual or numeric form, it also crosses a boundary that transforms it into information that machines or paper or other media can store. Knowledge degrades into information with every keystroke of every author.

The term Knowledge Management suggests a misleadingly static process in which humans or machines put everything that has been thought or known into convenient categories and classifications for easy retrieval, and it misses the essential dynamic by which knowledge creation occurs. Knowledge Management originated in the business world, and one of the early goals of relational databases was to make it possible for anyone in an organization to query the full range of stored information (or at least the range for which they were authorized) in order to learn something new. That something new was knowledge creation, which might be stored as information (knowledge), or might merely remain in the mind of the person who executed the query in the form of a not quite fully formulated idea.

In the scholarly world knowledge creation is the goal, and every scholar who builds on existing works in the form of stored information has probably interacted with some form of Knowledge Management system, even if it is only the online catalogue of the local library or the table of contents of a book. Knowledge Management systems are so ubiquitous that
it is easy to forgot how ancient they are, and equally easy to forget how meaningless the term can become if not used precisely in a way that distinguishes it from information management. Retrieval is only one aspect of Knowledge Management, and generally the least transformative. The key question is how people will behave with the information once they have it.

In the 21st century the number of transformative tools for Knowledge Management has grown considerably. The most discussed of these cluster under the heading of the semantic web, which builds linkages that enable the dynamic recombination of information sources. A related aspect of the semantic web are the triple-store databases with inference engines of varying levels of sophistication. A well-designed and well-functioning triple store resembles the old expert systems of the 1980s in modern form. Developments in machine intelligence rarely come into discussions of Knowledge Management in the library and information science world, but the ability of machines to transform information into something like knowledge has grown rapidly. In Google’s experiments with self-driving cars, for example, computer systems are processing new information (for example, speed, distance between cars, and road conditions) in conjunction with stored information about the car’s mass, inertia, breaking capabilities, turning radius, and tipping point. The result is a set of decisions, in effect the knowledge, about how to drive that particular car under those particular traffic and road conditions.

Another transformative process that manages knowledge, but is rarely discussed in that context, is today sometimes called “distant reading” and more traditionally falls under “text mining”. It is essentially an old process that linguists and literary scholars used as soon as they could get access to computers and digital texts. Early results were used to look at word counts and to make arguments about putative authorship. The basic tools such as Regular Expressions in languages like C, Perl, or Python have not fundamentally changed, but the questions have evolved as the quantity of stored and readily available digital information has grown. Historians can, for example, now write programs to answer questions that they want to ask of archival information in digital form. At one time the only choice was to go to an archive and read the texts page by page – a slow and laborious process that limited data collection. In so far as digital content exists, and especially if it is internet-accessible, a program can do the reading. The most serious difficulty is neither retrieval nor programming, but the scholar’s ability to formulate questions that the program can reasonably answer with the available data. In other words, this process depends fundamentally on whether scholars can define precisely what they want to know about the information.

Ultimately Knowledge Management is not information storage via a database or a classification system. Managing knowledge comes essentially through the intellectual process of formulating a useful and answerable question that the stored information can answer.
Knowledge Management through Academic Portal: A Case Study of Bodhidroom E-learning Portal

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Abstract
The study aims to find out how knowledge management processes can be implemented through a portal in an academic set-up. This is a web based study of Bodhidroom e-learning portal (http://www.bodhidroom.idolgu.org/) under the Institute of Distance and Open Learning (IDOL) of Gauhati University. Portal features discussed and illustrated here might serve as model for academic institutions interested in developing a campus portal as knowledge management enabler.

Keywords: Knowledge management, Academic portal, E-learning, Bodhidroom
1. Introduction

Knowledge Management (KM) is the most powerful means for any organizational success. It is a management attitude, which unites streamline information management with the culture of organizational learning spirit. Knowledge management needs a systematic approach to develop the evolution of knowledge into a key organizational resource. Most importantly, effective knowledge management is now acknowledged as the key driver of new knowledge and ideas. Therefore, knowledge management has become a significant issue in all type of organizations across the world irrespective of profit-making or not-for-profit organizations. Academic institutions can also follow knowledge management practices to support every part of their goal. An institution’s wide approach to knowledge management can direct enormous improvements in creation and sharing of knowledge within the academic fraternity. In fact, the greatest knowledge creators are the academics. Knowledge creation is best performed by universities or higher academic institutions. Therefore, the application of knowledge management in academic sector is as important as it is in the corporate sector.

Knowledge management is a debatable term. Therefore, it is difficult to find a well accepted definition of knowledge management. Different scientists have defined it in different perspectives. Some of the popular definitions are tabulated in Table 1.

Thus, knowledge management is nothing, but managing the knowledge effectively with the processes of identification, creation, sharing,

### Table 1: Definitions of Knowledge Management (KM)

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Year</th>
<th>Definitions of Knowledge Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hannabuss</td>
<td>1987</td>
<td>KM is the knowledge and attitudes of information users, and their decision making when interacting with others (Hannabuss, 1987).</td>
</tr>
<tr>
<td>Gopal and Gagnon</td>
<td>1995</td>
<td>KM includes categories of knowledge needed to support the overall business strategy, assess the firm’s current knowledge, transfer the knowledge base to be more powerful, and to fill gaps (Gopal and Gagnon, 1995).</td>
</tr>
<tr>
<td>OPQC</td>
<td>1996</td>
<td>KM involves strategies and processes of identifying, capturing, and leveraging knowledge (Ohio Perinatal Quality Collaborative, 1996).</td>
</tr>
<tr>
<td>Bair</td>
<td>1997</td>
<td>KM aims to capture the knowledge that employees essentially need in a central repository and filter out the surplus (Bair and O’Connor, 1998).</td>
</tr>
<tr>
<td>Demarest</td>
<td>1997</td>
<td>KM forms a systematic underpinning of observation, instrumentation, and optimization of a firm’s knowledge (Demarest, 1997).</td>
</tr>
<tr>
<td>Davenport</td>
<td>1997</td>
<td>The only thing that gives an organization a competitive edge and sustainability, is what it knows, how it uses what it knows, and how fast it can know something new (Davenport, 2008).</td>
</tr>
<tr>
<td>Skyrme</td>
<td>1997</td>
<td>KM is the explicit and systematic management of vital knowledge and comprises processes of creating, gathering, organizing, diffusing, using, and exploiting (Skyrmie, 1999).</td>
</tr>
<tr>
<td>Broadbent</td>
<td>1998</td>
<td>KM is about enhancing the use of organizational knowledge through sound practices of information management and organizational learning (Broadbent, 1998).</td>
</tr>
<tr>
<td>Choo</td>
<td>1998</td>
<td>The essential goal of KM is to harness the organization’s information resources and capabilities to enable to learn and adapt to its changing environment (Choo, 1998).</td>
</tr>
</tbody>
</table>
Knowledge Management through Academic Portal: A Case Study of Bodhidroom E-learning Portal

Table 1: Contd...

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Year</th>
<th>Definitions of Knowledge Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knapp</td>
<td>1998</td>
<td>KM is the art of transforming information and intellectual assets into enduring value for an organization’s clients and its people (Knapp, 1998).</td>
</tr>
<tr>
<td>Oxbrow and Abell</td>
<td>1998</td>
<td>The ultimate corporate resource has become information, the ultimate competitive advantage is the ability to use it, and the sum of these two is knowledge management (Oxbrow and Abell, 2002).</td>
</tr>
<tr>
<td>Newman</td>
<td>1999</td>
<td>KM is the collection of processes that govern the creation, dissemination and utilization of knowledge in an organization (Newman and Conrad, 1999).</td>
</tr>
<tr>
<td>Quintas</td>
<td>1999</td>
<td>KM enables the creation, communication, and application of all kinds of knowledge to achieve business goals (Quintas, Lefrere, and Jones, 1997).</td>
</tr>
<tr>
<td>Davenport</td>
<td>2000</td>
<td>Knowledge is a fluid mix of framed experiences, values contextual information, and expert insights that provides a framework for evaluating and incorporating new experiences and information. ... in organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms (Davenport, 2008).</td>
</tr>
<tr>
<td>Holsapple and Joshi</td>
<td>2000</td>
<td>KM make needed knowledge available to appropriate processes effectively and timely to perform activities (Holsapple and Joshi, 2000).</td>
</tr>
<tr>
<td>Tiwana</td>
<td>2000</td>
<td>Management of organizational knowledge for creating business values and generating a competitive advantage (Tiwana, 2000).</td>
</tr>
<tr>
<td>Kochikar</td>
<td>2002</td>
<td>KM initiative is to move towards a culture where knowledge sharing is built into the organizational fabric. Creating such a culture of sharing is governed by principles that have much in common with Metcalfe’s Law—as more people get convinced of the benefits of participating in the knowledge-sharing movement (Kochikar, 2002).</td>
</tr>
<tr>
<td>Bergeron and Bryan</td>
<td>2003</td>
<td>KM has the ability to selectively capture, archive, and access the best practices of work-related knowledge and decision-making from employees and managers for both individual and group behaviours (Bergeron and Bryan, 2003).</td>
</tr>
<tr>
<td>Darroch</td>
<td>2003</td>
<td>KM is the process that creates or locates knowledge and manages the sharing, dissemination, and use of knowledge within the organization (Darroch, 2003).</td>
</tr>
<tr>
<td>Ron Young</td>
<td>2005</td>
<td>KM enables individuals, teams, organizations, and communities more collectively and systematically to capture, store, share, and apply their knowledge to achieve their objectives (Young, 2005).</td>
</tr>
<tr>
<td>Park</td>
<td>2006</td>
<td>Identification and sharing of the required knowledge that is controlled and protected, and fulfilling the organizational objectives (Park and Kim, 2006).</td>
</tr>
<tr>
<td>NASA</td>
<td>2009</td>
<td>KM is getting the right information to the right people at the right time, and helping people to create knowledge and share (NASA, 2009).</td>
</tr>
</tbody>
</table>

and storage. It is the utilization of organizational knowledge to improve the abilities of the human resources and to enhance their productivity, and competitive excellence.

2. Objective of the Study
The study aims to find out how knowledge management processes can be implemented through an academic portal.
3. Design/Methodology/Approach
This is a web based study of Bodhidroom, an e-learning portal (http://www.bodhidroom.idolgu.org/) under the Institute of Distance and Open Learning (IDOL) of Gauhati University.

4. Portals
A portal is a website or web service for a specific community. It provides a variety of services including search engines, directories, subject gateways, news, e-mails, chat rooms etc. It allows building a community and finding links to other web resources of common interest (Pienaar, 2003). Portals have evolved to provide a customized gateway to web information. Their idea is to offer everything that the user needs under one roof (Boyce, 1999; Melzer, 1999). Similarly, Strauss (2003) defines portal as a special kind of gateway to web resources—“a hub from which users can locate all the web content they commonly need”. Moreover, a portal is user-centric, while a home page is owner-centric.

In the words of Collins (2001), “Portal is like a house which we can review from the ‘window’ and launch an application from the ‘door’”. According to Augustyniak, Agüero, and Finley (2005), “Portal is an ultimate tool for adding value in which it offers a single point of entry through a common interface with information, resources, and business processes based on the end-user’s needs and specifications.” Moreover, Kalyanaraman, and Sundar (2008) made functional differentiations by adding some conceptual clarity to the portal concept. They coined five related metaphorical notions for the portal, viz., gateway, billboard, network, niche, and brand, which in turn suggest five leading aspects of portal — control, content, community, customization, and commerce. The introduction of the portal concept to the web has opened new possibilities to address some of the issues concerning personal management of academic information and knowledge (Kalyanaraman, and Sundar, 2008). As such, the portal concept can be further developed to function as a sophisticated web interface that can support knowledge management in an academic environment.

Similarly, a library portal serves to integrate content for the users from the multiple sources. It helps users to search any web based resources, including library catalogues, databases, subject gateways, institutional repositories, academic websites etc, and provide identical results (Cox and Yeates, 2003). In the words of Boss (2002), “a library portal is a single user interface for access to a wide variety of electronic resources both within and outside the library.” Library portals typically provide a gateway to an institution’s resources by listing them for users and creating a direct link to the native interface of each resource. Nowadays, such listings are available on most library websites. Many websites provide only alphabetic listings, whereas a few sites provide resource discovery facilities to help users identify the most appropriate resources for their searches. A relatively new feature enables users to employ a library portal’s search interface to search simultaneously or sequentially the heterogeneous resources that do not share metadata schemes or search-and-retrieval techniques. Moreover, many experts have suggested that there should always be a link between the library portal and the university portal. This allows users to start within the university portal, and reach the library’s resources whenever required (Groenewegen and Huggard, 2003). Portal’s architecture of participation offers students’ ways of learning in formal settings that are much more similar with our normal ways of learning and enable them to integrate the explicit and tacit dimensions of knowledge (Eijkman, 2008). Thus, the objective of the portal is to connect staff not only with everything they need, but with everyone they need, and to provide all the tools they need to work together, i.e. groupware, e-mail, workflow, and desktop applications should be accessible through the portal (Heye and Schagen, 2002).
Web portals began appearing in the academic environment several years ago, but became more prevalent only recently. This growth coincided with the development of “push” technology and common data format sharing capabilities, which enabled various functions to be displayed and manipulated in portal channels (Stoffel and Cunningham, 2005). Libraries were among the first users of portal technology in colleges and universities. The first library portal appeared in the late 1990s. These early portals were typically developed and administered by the library for library patrons. They started as an independent entity from campus web operations. Indeed, at that time, campus-wide portals had not emerged on the web scene (Stoffel and Cunningham, 2005).

### 4.1 Types of Portals

There are many kinds of portals in the current electronic environment. Based on their function, we can group portals into five primary categories as, Internet Portals, Application Portals, Enterprise Information Portals, Information Management Portals, and Horizontal/Vertical Portals (Brio technology, 2002). We can also categorize portals on the basis of different kinds of information they handle as, unstructured, structured, and collaborative (Collins, 2001). The following table (Table 2) shows the primary categories of portals, their sub-categories, and the types of information they handle.

#### Table 2: Types of portal given by Lam, 1996

<table>
<thead>
<tr>
<th>Primary category</th>
<th>Environment</th>
<th>Sub-category</th>
<th>Handle information type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet Portals</td>
<td>Public</td>
<td></td>
<td>Structured</td>
</tr>
<tr>
<td>Application Portals</td>
<td>Corporate</td>
<td>• Business Intelligence Portal</td>
<td>Structured</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Database Vendor Portal</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• ERP Vendor Portal</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Balanced Scorecard Portal</td>
<td></td>
</tr>
<tr>
<td>Enterprise Information Portals</td>
<td>Public/Corporate</td>
<td>• Collaborative Processing Portal</td>
<td>Structured/Unstructured/Collaborative</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Decision Processing Portal</td>
<td></td>
</tr>
<tr>
<td>Information Management Portals</td>
<td>Corporate</td>
<td>• Workgroup Server</td>
<td>Unstructured/Collaborative</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Knowledge Portal</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Intranet Unstructured Portal</td>
<td></td>
</tr>
<tr>
<td>Horizontal/Vertical Portals</td>
<td>Public/Corporate</td>
<td>• Corporate Interest Portal</td>
<td>Structured/Unstructured/Collaborative</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Electronic Commerce Portal</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Employee Portal</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Internet Hosting Portal</td>
<td></td>
</tr>
</tbody>
</table>

### 4.2 Functions of an Academic Portal

An academic portal should be developed to support academics’ routine. In the words Pienaar (2003), “The portal concept could be developed to function as a sophisticated web interface that can support the task performance (teaching and research) of academics”. Indeed, a portal enables to access all the collections in one place and to search across them. This well designed network can provide access to both internal and external information to virtually all employees. It may also be useful for employee conferencing. Of course, for knowledge revolution we must...
invest in knowledge management that helps in better decisions, products, and services. Therefore, Jackson (2003) has recommended the construction of a suit of web based services that would connect the higher education community as directly as possible with quality information resources that contribute to the teaching and learning process and advance research. The portal is a tool that enables a user to search across a certain limited but diverse and distributed websites, library catalogues, and databases of information resources to retrieve and integrate the results in a single presentation. Through portal, users can directly link to full-text articles, digitized materials, recommended websites, and subject gateways. They can retrieve print materials from the library shelves or request for document delivery of materials through interlibrary loan. Through portal, users may also avail 24x7 reference services by consulting with reference librarian or subject experts. In academic environments, the tools developed through the portal function as a library channel within a university wide portal (Jackson, 2003). Thus, portals can help in electronic scholarly communication in an academic set up.

Some of the functions of an academic portal are customization and personalization, search function for the internet, intranet and virtual group function for online academic collaboration, selective dissemination of information function, web resources, and a personal bookmark function etc. Thus, the three most popular functions of an academic portal are the electronic library function, the virtual group function, and the micro database function (Piennar, 2003). The electronic library function enables users to browse the electronic resources by type (conferences, databases, e-books, journals, thesis and websites) and by subject area (the different academic departments). The information specialist is responsible for keeping the content up to date. Academics are also allowed to take part in this process. Indeed, the virtual group function should be performed by academics and information specialists to facilitate and support academic communities of practice (COPs) or knowledge networks. Academic portals can be used to send e-mail messages, to upload any documents, to add bookmarks, and to schedule meetings.

According to Pienaar (2003), to support academics’ personal knowledge management in an integrated way, the academic portal must have the following characteristics:

- The type of portal must be a combination of a vertical portal (vortal) and a corporate or enterprise information portal.
- High levels of functionality and integration are needed—a seamless interface. This must include advanced personalization and customization capabilities.
- The portal must support both roles, i.e., the teaching and research roles of academics.
- The portal should give access to the following information sources—e-journals, e-articles, e-reserves, e-archives, databases, e-books, e-dissertations, library catalogues, and the university’s research database. Personal information sources should also be available, for example experts, information specialists, etc.
- The portal should provide web search engines, global search functions, list servers, chat rooms, e-mails, adding of URLs, interface with document delivery, and inter library loan systems.
- Academics should be able to evaluate and add information sources to the portal.

4.3 Academic Portal as a KM Enabler

The most popular form of knowledge management technology that provides a secure central space where staff, users, administrators, partners, and suppliers can exchange information, share knowledge, and guide each other is the portal (Jotwani, 2005). It is a networked information space that presents the organization’s collections, digital assets, websites,
and services to its users. It allows academic institutions to rapidly innovate, select, organize, and successfully deliver high quality web-based content. It offers easy-to-use information discovery and management systems.

Throughout history knowledge has been a highly valued element for all academic institutions. In the works of Alavi and Leidner (2001), knowledge has been viewed from five perspectives—(1) state of mind (2) object (3) process (4) condition of access to information and (5) capability. They also stated that if we talking about knowledge sharing, then we view knowledge as a process. Perhaps this can be supported by Tiwana (2000), who explained knowledge management in the view of basic element of knowledge utilization. Knowledge sharing is one of the processes in knowledge management framework apart from knowledge creation, knowledge organization/storage, and knowledge application (Alavi, 1997). It can also be viewed as one of the elements in knowledge utilization cycle when combined with knowledge acquisition and knowledge utilization (Tiwana, 2000). Knowledge sharing is a kind of knowledge development cycle. According to Skyrmie (1999), knowledge sharing cycle comprises eight processes—identify, collect, classify, organize/store, share/disseminate, access, use/exploit, and generate. These processes explain the absorption, filtration, and regeneration process of the knowledge. Tiwana (2000) stated that knowledge sharing is making use of organization’s resources to collect and digest all existing knowledge focusing on collaborative view. However, a library portal can also be used as a platform to achieve knowledge sharing cycle. The following table (Table 3) shows the possible influence of academic portals on the knowledge management processes.

4.3.1 Portals in knowledge creation

Academics are the best knowledge creators and academic environments are the best knowledge creation platform. Academic portal is a kind of technology that organization can use as a dais in knowledge management project. Therefore, portal should be designed to create and manage knowledge to influence knowledge assets within an organization. Portals have collaborative function, discussion forum, and push function that helps in innovation and knowledge creation process. For personalized view, portals can create a customized environment for different users so that they can share their thinking easily (McDermott, 1999). Moreover, knowledge products can be created by web editors and published on the academic portals. A portal must provide e-publishing facilities to support creation

<table>
<thead>
<tr>
<th>KM processes</th>
<th>Modules of academic portal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creation</td>
<td>• Discussion Forum</td>
</tr>
<tr>
<td></td>
<td>• Idea generation</td>
</tr>
<tr>
<td></td>
<td>• Share Thinking</td>
</tr>
<tr>
<td></td>
<td>• Add Knowledge</td>
</tr>
<tr>
<td></td>
<td>• Brain Storming Session</td>
</tr>
<tr>
<td></td>
<td>• Workspace for Research Projects</td>
</tr>
<tr>
<td></td>
<td>• Student Account</td>
</tr>
<tr>
<td></td>
<td>• Reward &amp; Recognition</td>
</tr>
<tr>
<td>Sharing</td>
<td>• Chat Rooms</td>
</tr>
<tr>
<td></td>
<td>• Bulletin Boards</td>
</tr>
<tr>
<td></td>
<td>• List Serve</td>
</tr>
<tr>
<td></td>
<td>• Communities of Practices</td>
</tr>
<tr>
<td></td>
<td>• E-Mail</td>
</tr>
<tr>
<td></td>
<td>• Virtual Conferences/Meetings</td>
</tr>
<tr>
<td></td>
<td>• Virtual Classrooms</td>
</tr>
<tr>
<td></td>
<td>• Lectures &amp; Tutorials</td>
</tr>
<tr>
<td></td>
<td>• People Search</td>
</tr>
<tr>
<td>Storage</td>
<td>• Institutional repositories</td>
</tr>
<tr>
<td></td>
<td>• Digital Libraries</td>
</tr>
<tr>
<td></td>
<td>• Databases</td>
</tr>
<tr>
<td></td>
<td>• Theses &amp; Dissertations</td>
</tr>
<tr>
<td></td>
<td>• Wikis</td>
</tr>
<tr>
<td></td>
<td>• Blogs</td>
</tr>
<tr>
<td>Utilization</td>
<td>• Sophisticated Web Search Engines</td>
</tr>
<tr>
<td></td>
<td>• Link to the Subject Experts</td>
</tr>
<tr>
<td></td>
<td>• Link to the reference Librarian</td>
</tr>
</tbody>
</table>

Table 3: Possible influence of academic portals on the KM Processes
of knowledge products. Academics should be allowed to evaluate and add knowledge to the portal. Moreover, knowledge contributions should be awarded to motivate knowledge creation. Such an award shows that organization is concerned about the process. It also acts as a motivating factor for the members in the organization to share more. Indeed, knowledge creation can give identity to the employees in the organization.

4.3.2 Portals in knowledge sharing
Knowledge sharing is the most important process in knowledge management framework. Knowledge is useless until and unless it is shared. Academic portals provide internet communication instruments, such as chat rooms, bulletin boards, list servers, communities of practice, and e-mails to support international contact and the creation of virtual communities. Traditional publications, such as journals, books, dissertations can be published through portals on the web. Even portals can deliver educational materials via web (e-education). Moreover, a portal can provide virtual conferences, web teaching, virtual classrooms, demonstrations and lectures, workspaces for research projects, etc. In the words of Lam (1996), “If we want to use portal to achieve knowledge sharing process, we not only have to focus on technology but also need to create a ‘knowledge sharing culture’ among the community.”

4.3.3 Portals in knowledge storing
Each and every piece of experience and knowledge is precious. Academic institutions are the aura of knowledge. But, very frequently we lose this knowledge due to lack of proper storage of knowledge and knowledge management culture. Scientific information and knowledge can be stored electronically and made available on the academic portal. For that institutional repositories and digital libraries can be linked with the portal itself to store the academic information and knowledge.. Portals can provide knowledge repository with filtering function aim to store and disseminate relevant information. This feature belongs to the element of asset management. Moreover, academic institutions can maintain their own wikis on the portal itself for storage of knowledge. Similarly, faculties and researchers can maintain their own blogs for updating storing their research outputs.

4.3.4 Portals in knowledge utilization
Knowledge is worthless until and unless it is utilized. Therefore, National Aeronautics and Space Administration (NASA) has defined knowledge management as, getting right information to the right people at the right time. Portals provide sophisticated web search engines for the end users. Also, traditional databases can be made available on the portal. The portals can be linked with the reference librarian for consultation for proper knowledge utilization. Moreover, it can be linked with the subject experts also for the same.

5. Bodhidroom E-learning Portal
The Institute of Distance and Open Learning (IDOL) of Gauhati University, formerly known as Post Graduate Correspondence School (PGCS), was established in May 1998 with the objective to ensure an opportunity to pursue quality higher education to the large number of students. IDOL strives to accommodate the students who cannot enroll in the conventional system of higher education due to various factors, such as limited number of seats in Post-Graduation, livelihood compulsion, etc., and aims to impart quality education in an intellectually challenging learning environment (http://www.idolgu.in/)

The Institute of Distance and Open Learning (IDOL) has completed 15 years of successful existence in May 2013 and aims to continue the mission of spreading and providing quality education to the students. Starting with 514 students and six courses in May 1998, IDOL now witnesses its growth in all capacities with an enrollment of more than 20,000 students.
Knowledge Management through Academic Portal: A Case Study of Bodhidroom E-learning Portal

and 25 programmes in a learning environment equipped with latest technologies. IDOL is the only institution in the country to offer Post Graduate courses in five 8th schedule languages, viz., Assamese, Bengali, Nepali, Bodo, and Sanskrit. Apart from self-learning materials and counseling services, IDOL tries to maximize learning opportunities through the first academic portal of the north-east, www.bodhidroom.idolgu.org, developed by IDOL and Radio Luit, the Community Radio Centre. These are the latest modes of student support services. With the commitment to ensure quality education to the masses, IDOL has launched undergraduate programmes from the academic session 2011-12. This journey from Correspondence School to Institute of Distance and Open Learning is not only a rise in quantity, but also in quality (http://www.idolgu.in/)

Bodhidroom is a Moodle based e-learning portal facilitating course management using the following modules—Log in module, Assignment module, Chat module, Discussion forum, News forum, Question and Answer forum, Calendar module, Message module, Glossary module, Lesson module, Online self test module, Quiz module, Resource, Survey module, Wiki module, Workshop module, Recent activity module, Contact module, etc. To access/view the e-learning modules, users are required to create an account using the Create Account button as shown in the Figure 1.

For creating an account, the users have to fill the New Account form with their details. An email will be immediately sent to their email addresses. The users have to click the web link attached to their emails. After that their account will be confirmed and they will be logged into Bodhidroom. They have to select the course they want to participate as shown in Figure 2. Then they can access the full course. From the next time they will only need to enter their personal username and password to log in to Bodhidroom and access any course they have enrolled in. Moreover, Bodhidroom is open to all, outsiders can create an account as guest user.

Figure 1: User interface for creating an account
5.1 Lecture Aids
Lecture aids are some slides or e-docs which are used for classroom teaching. These lecture aids are useful to go deeper into the texts prescribed for a particular course. These aids sometimes look unorganized as they are used only as aids during lectures. So the live commentary held these slides together. However, these slides are aimed at exploring more issues related to the texts than it can be able to cover in the printed materials, so they touch some unfamiliar points also. Even then, these lecture aids are found interesting. These aids can help in deeper understanding of the course contents. Figure 3 shows the teaching aids for the department of English on Bodhidroom.

5.2 Quiz Module/Online Self Test
The Quiz Activity module allows the teacher to design and build quizzes consisting of a large variety of question types, including multiple choices, true-false, and short answer questions. These questions are kept in the question bank and can be re-used in different quizzes. Performance feedback and self-assessment are the important parts of a learning environment. There are several ways to give feedback to students—on each question or overall. The quiz module can display feedback and scores at different times during the quiz, using the review options in the quiz settings as shown in Figure 4.

5.3 Discussion Forums
The facility of discussion forums in Bodhidroom portal gives an edge of wide learning to the students. There are three types of forums in the Bodhidroom portal—General Discussion forum, Question and Answer forum, and News forum. Students can ask questions from teacher or other mates on the relevant topic of the week in Question and Answer forum. Two students can communicate or they can discuss in groups on a point. All of these activities are properly managed and monitored by the administrator. The
Knowledge Management through Academic Portal: A Case Study of Bodhidroom E-learning Portal

Figure 3: Teaching aids for the department of English

Figure 4: Quiz module
graphical representation of General Discussion forum is shown in Figure 5.

5.4 Chat Room
The Chat activity allows course members to hold real-time, text-based conversations with other course members. A real-time discussion through Moodle can provide many of the benefits that a face-to-face discussion does. Student-student and student-teacher discussions promote a positive class climate, encouraging students to feel comfortable and ask questions. A chat room solely created for student-student interaction helps to promote group-based learning.

Different chat rooms can be set up for different courses or for the same course. For example, a course may have some chats where meeting times are scheduled, and others that are always available. Chat sessions can also be logged for reference, with instructor control over who can see the logs. Bodhidroom also provides chat room facilities to its members.

6. Findings
After close examination of the modules of Bodhidroom e-learning portal, the following major findings are drawn:

- Students and teachers can manage their knowledge on Bodhidroom very easily.
- Bodhidroom is helping the institute to create, deliver, measure, and evaluate learning programmes that enable a high level of academic output.
- Bodhidroom can be utilized as a tool for capturing teachers’ explicit and tacit knowledge.
- Bodhidroom is very useful for sharing of knowledge.
- Bodhidroom can maximize the utilization of organizational knowledge.
- Bodhidroom is very user-friendly for collaborative learning.
- Bodhidroom provide ways to display publish and organize student-generated contents,
thus, helps to move this knowledge to subsequent semester classes and other groups.

- Bodhidroom can impart a sense of community, working togetherness and joy of learning.
- Bodhidroom is providing a platform to learn, create, share, help, and improve.
- Bodhidroom has the opportunities to change/improve the ways subjects are taught and the ways through which members of the school community work, study, communicate, and collaborate.
- Through Bodhidroom provides knowledge transparency by minimizing knowledge barriers.
- Online assessment and feedback mechanisms are available on Bodhidroom.
- All the modules of Bodhidroom are supporting knowledge management and organizational learning processes.
- Of course, limited contribution is seen on the portal from teachers’ as well as students’ ends.
- Teachers and students should be encouraged to participate more on Bodhidroom.
- They should be trained to participate on Bodhidroom.
- Feedback on the utility of the e-learning modules should be taken into account.

7. Conclusion

Portals are the most influential tool for the delivery of right information to the right people at the right time. It provides a virtual platform for persons with common interests where they can communicate, share, collaborate, carry out research, and map events. The concept of academic web portal has achieved more attention with the growing success of corporate portal services. The academic web portal can become one-stop teaching and learning platform facilitating distributed access over multiple interfaces. Academic portals can also permit personalization for the members, where they can put personal information to the portal, such as their own profiles, scholarly activities, achievements, publications, research findings, research experiences, etc. Members of the portal can be informed even through their mobile phone regarding the current news in their areas of interest. Moreover, portal is quite user-friendly, reliable, and secured. It acts as a tool that combines all the applications that the user needs on a single set-up. Based on the institutional policy, an academic portal may be limited to the users of one campus or to the external members of the academic community. Thus, it saves research time as well as promotes multi-disciplinary research by offering common access to relevant information sources in a single platform.

In this paper we have discussed an e-learning portal designed to help distance learners in the context of knowledge management processes. Bodhidroom e-learning portal, a pioneer integrated knowledge environment in north-east India, is working as a knowledge management initiative for distance learners. This paradigm shift in distance education is a proactive step taken to address the increasing sophistication of higher education systems. E-learning has been a success at GU IDOL, through providing systematic sharing of knowledge and capture of experience, through both formal and informal online channels. It also made education more effective and less costly. Formal methods of knowledge sharing comprise online learning through interactive modules, such as online classes and slides presentation with narration, while informal learning comprises peer group discussion and chat room. Both elements are essential in making e-learning a success and in creating a lifelong learning culture in GU IDOL. Students are advised to make good use of these online e-learning resources to gain better understanding of the subjects matter. The e-learning facility is designed to supplement the study materials and facilitate better participation. Thus, the study highlights the importance of knowledge management and e-learning integration, and emphasizes the use of portal technology effectively with the KM processes for an academic environment.
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Knowledge Management through Academic Portal: A Case Study of Bodhidroom E-learning Portal


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Knowledge Management Practices at Goethe Institute Libraries Worldwide

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Abstract
This paper presents a case study of the present Knowledge Management practices at the Goethe Institute (GI) Libraries or Information centres. GI Libraries are serving as Public Libraries and because of their dynamic features, they invite everyone from all over the world to get information and knowledge about German culture, politics, society, and education. In this paper, I have studied explicit and tacit knowledge practices in GI Libraries. This paper mainly focuses on the concept of KM at GI Libraries in managing the knowledge and information in the digital environment. Research methodology obtained in this paper about theoretical and technical KM with the implementations of WEB 2.0 as a KM tool used by the GI Libraries are totally through the Email Questionnaire from GI libraries and GI websites. This paper also shows and explains how tacit and explicit knowledge are managed and distributed under the umbrella of social networking tools, WEB 2.0 Technology, and other networking tracks by Goethe- Institute Libraries. The implementation of KM concept and practices at GI has the potential of improving customer services by quickly providing new authentic information to communities of different nations. GI Libraries and their librarians convert the intellectual assets of workers and staff members in the organization into higher productive forces.

Keywords: Knowledge management, Explicit knowledge, Tacit knowledge, Information centres, Intranet, Web 2.0
1. About the Organization

The Goethe-Institute (GI) is a non-profit German cultural association, which is operational worldwide, promoting the study of the German language abroad and encouraging international cultural exchange and relations.

The Goethe Institute fosters knowledge about Germany by providing information on German culture, society, and politics. This includes the exchange of films, music, theatre and literature. Goethe cultural societies, reading rooms, and exam and languages centre have played a role in the cultural and educational policies of Germany for about 60 years. The areas of knowledge cover Germany’s culture and society, Architecture, Dance, Design and Fashion, Film, Literature, Music, Theatre, Visual Arts, Philosophy and religion, Politics and History, Economy, and social matters. Latest and ongoing project videos are also given on websites. Partners of the institute and its centres are public and private cultural institutions, the federal states, local authorities, and the world of commerce.

2. Types of Knowledge

2.1 Explicit Knowledge

This type of knowledge is clearly and fully expressed or demonstrated and describes the things or events in realistic detail.

2.2 Tacit Knowledge

It is complex form of knowledge. It has two dimensions, namely, technical and cognitive. This is a personal knowledge, which is in human mind and difficult to formalize and communicate.

2.3 Cultural Knowledge

B B Chand describes the cultural knowledge as knowledge which includes assumptions and beliefs. It is used to understand, describe and explain the reality as well as conventions. It is also useful to form the framework among organizational members, recognize the

new information, and evaluate alternative interpretations and actions.

3. Literature Review

In recent years, a new phrase of knowledge management has entered in Lexicon. Knowledge management is the process of transforming information and intellectual assets into enduring value. It connects people with the knowledge they need to take action, when they need it (Hawkins, 2000). According to Smith (2001), organizations recognizing and using their employees’ steadily growing wealth of tacit and explicit knowledge to solve problems and achieve goals, have a major competitive advantage. However, many organizations need to improve how they acquire and share tacit and explicit knowledge.

According to Jambekar (2003), the greatest challenge for the information manager today is to create an organization that can share knowledge. Quality library services are imperative in knowledge society as it inspires knowledge workers to be innovative, such as thinking globally and design locally. Today, information professionals have more opportunities to expand from their traditional role of organizing the digital content, and getting and filtering available information to manage the corporate knowledge and become the chief information officer (CIO) with greater responsibilities. Kumar (2010) states that the expertise of information professionals in searching and providing access to explicit knowledge in the form of documents, their skills in understanding client’s needs and organizing information, their knowledge of information sources and developing databases are the core competencies used by organizations. From a KM perspective, these skills are useful in helping professionals internalize explicit knowledge and also in facilitating the combination mode of knowledge conversion. Knowledge management (KM) is a collection of processes that governs the creation, dissemination, and utilization of knowledge in an organization (Newman, 1991). It involves the management of explicit
knowledge (i.e., knowledge that has been codified in documents, databases, web pages, etc.) and enabling the environment for the development and sharing of knowledge regarding information technologies in an organization.

4. Findings and Data Gathered

4.1 Goethe Institute Libraries
The 94 libraries of the Goethe Institute are contact points for all subject matter on society, culture, and politics in Germany. In 2010, the Goethe Institute recorded:
- 380,844 requests for information
- 869,114 media abroad
- 763,447 borrowers
- 286 funded books translations in 42 languages
- 20,000,000 page hits on the Goethe Institute website per month
- 800,000 available pages

4.2 Mailing Lists of GI libraries
The Department of Information and Library offer three different mailing lists.
- Biblio-lis (biblio-lis@lists.goethe.de) is the list for anyone who is interested in the work library to register. The list currently has about 220 members and serves as an information and communication medium for specialized topics.
- LIBR-lis is the information list of Heads of I & B work with regional order.
- LIB-lis is the list of leaders and heads of the libraries of the Goethe Institutes.

4.3 GI Libraries Mission
It supports the KM concept and makes Libraries and Librarian more intended towards provision of information at every level and in any time. GI Libraries’ mission has two focal points. Firstly, to observe the issues and trends in the professional library science, assess them and ask their colleagues worldwide to give specific stimuli and second, to provide quality offerings and services to the other libraries.

Through their activities and services GI Libraries perform these tasks:
- Training: Provide training to worldwide library colleagues and other departmental staff.
- Information: Active and reactive, on-demand information services, and consultancy.
- Design: Strategic development of information and library work.
- Quality assurance: Evaluate and control the information and library work.
- Scene observation: Maintain contacts with library experts and participation in trade events.
- Networking: Representation of the Goethe Institute Libraries in Germany and international professional associations.

The collection includes references books, daily and weekly newspapers, stocks (e.g., current German literature), and electronic databases. The library is equipped with modern information and technology, and can be used for meetings, events or similar.

4.4 About GI Readings Room (Libraries/Information Centres)
GI Libraries have 60 years of experience with more than 170,000 participants in German courses each year in 80 countries. The demand for German literature and information about Germany is particularly large in some regions of the world and the libraries and information centres in the Goethe Institutes are unable to meet the demand by themselves. Therefore, for over 10 years the Goethe Institute has been developing a comprehensive information network in collaboration with partners and experts in the host countries.

The starting point came at the beginning of the 1990s with the idea of setting up of German reading rooms in Central Eastern Europe, South Eastern Europe, and Eastern Europe. Instead of donating books in response to the demand for reading material and information,
Anil Zafar

World Digital Libraries 6(2): 93–100

the Goethe Institute decided to develop long-term, sustainable structures. This was made possible by the support of local partners and financed by special funding from the German government. The aim was to increase the extent of the provision of information and cultural knowledge, to initiate a process of communication, and to help the partner libraries with their restructuring. Reading rooms have deliberately been incorporated within efficient local library system. The “host library” provides suitable accommodation.

Library infrastructure and German speaking staff in the Goethe Institute provide a basic collection of media that is updated every year, as well as technical equipment and staffing training. Today there are 57 reading rooms from A for Albania to W for White Russia. What was intended to be a temporary project has become an established element of the Goethe Institute’s information and library work.

Political and financial circumstances have changed and so the partnership concept of the reading rooms has also changed over the past 12 years. Nowadays, in addition to the 93 libraries, 57 reading rooms, and information centers in Goethe Institutes, there are numerous other collections that are more or less firm commitments.

Around 11 Dialogue points in North Africa and the Middle East give young people a meeting point where they can discuss their opinions freely. Four German resource centres in India support the professional information work of the regional information centre in Delhi with internet access. Deutsche Welle TV provides basic information about Germany. Four information and learning centres in China have multimedia language learning programmes and are designed primarily for the language learner.

Furthermore, the Goethe Institute advises and supports numerous libraries and cultural societies in establishing and expanding German Languages particularly in Western and Central Europe, and in Sweden, Hungary, and Australia.

The Goethe Institute’s aim in doing this is always to safeguard the freedom of access to information worldwide. At the same time, the intention is also to provide experience of modern, forward looking library techniques.

The Goethe Institute podcasts actually support every software designed to make podcasts available to use like these can be run on the format of RSS 2.0, Apple iTunes (version 6 and higher), juice. etc. The name of podcast software is Podcatcher.

4.5 Facilities
- Advice and info
- Presentation and exhibition
- Read and enjoy
- Work and study
- Multimedia
- Contemporary German art
- Contemporary and classic German literature
- German film
- German history from the late 19th century to the present

4.6 E-Library of the Goethe Institute
The library is the virtual library of the Goethe Institute in North Western Europe (Great Britain, Ireland, and the Netherlands). This service allows borrowing digital documents, such as e-books, e-audio books, and electronic newspapers, for a predetermined period of time, by downloading them from the e-library. Returning the media isn’t necessary. At the end of the loan period, the media automatically becomes unavailable. With our e-library, borrowing media is possible 24 hours a day, 7 days a week.

The libraries of the Goethe Institutes offer topical books, reference books, magazines, movies, and CDs. Goethe Institute libraries provide a modern, forward looking library experience. In close cooperation with partner institutions, such as universities, public, and national libraries, and with professional associations at home and abroad, they also
promote the international exchange of expertise and knowledge transfer.

4.7 Goals and Advantage of the Intranet at GI Libraries
- Simplify and accelerate work processes to provide information to target groups, simplify workflows, and help other colleagues.
- Provide easy access to authentic information and reduce routine tasks.
- Offer modern working environment and using intranet as a positive experience to strengthen corporate culture, to identify with the company, to promote company’s goals, and to provide current project information.
- Involvement of the institute staff in discussion and decision making processes.
- Make available knowledge and promote learning

Develop, share, and store knowledge systematically.

4.8 Software used in GI Libraries
The software used in GI libraries are Allegro (Lending Library Software), Citrix, WINIBW (OCLC) online public access of catalogue, CMS (Internal content management system), Documentation Software, HR Personal Manager

4.9 Published Blogs
- Current writing in German is an up-to-date summary of German Literary activities in the United States, new translations into English, literary award winners, and other news of interest.
- Libraries in residence provide impressions, ideas, and insights from the library scene in the United Stated and Germany.

4.9.1 Use of mobile technology cutting edge services
New developments in Year 2013 were made between Goethe Institute New York Library and Pratt Institute School of Information and Library Science, New York City. They teamed up to develop German Traces NYC. This mobile experience uses an augmented reality application to allow learners to explore German cultural heritage in New York City. After downloading the app, users can simply hold their mobile phones and view archival photos layered on top of the images visible through the phone’s camera. More than 19,000 people visited the website in the year since launch. The American Library Association (ALA) recognized five libraries for offering cutting-edge technologies in library services, honouring programmes in Boston, New York, Tucson, Ariz.; Orlando, Fla.; and Le Roy, N.Y. Libraries or library service areas selected will be highlighted through various ALA publications and featured in a programme at the ALA Annual Conference in Chicago, June 27–July 2, 2013.

The recognition, presented by the ALA Office for Information Technology Policy and the Library & Information Technology Association (LITA), showcases libraries that are serving their communities using novel and innovative methods, and tools of knowledge management.

The “mobile internet” topped the list of disruptive technologies that will transform life, business, and the global economy in a May 2013 report from the McKinsey Global Institute. It is a common thread among several Cutting-edge Technology projects in Library Services. Other themes include crowd sourcing, open source development, and cost-effective online instruction. The Office for Information Technology Policy (OITP) of the American Library Association (ALA) and the Library Information Technology Association (LITA) are pleased to share short case studies from five libraries that are leveraging technology to extend the scope of library services in their communities and managing knowledge.

5. Internal Knowledge Sharing and Transfer
Internal knowledge and information sharing between colleagues and all department staff
is done mostly through intranet, which provide diversified features and different software applications to perform various job activities, e.g., Project management software is done by Project Planning Software (PPS). Document management and updation of website is done through Electronic Document Management Software that includes Digital Asset Management, Document Imaging, Document Scanning, Workflow, Records management, Document Archiving, Document Storage, Electronic Forms, ISO Document Control, and Paperless Office Modules under one integrated EDMS software suite. Different training seminars taking place abroad and in the centre can be seen in detailed training materials, checklists, and also important federal documents can be found in intranet. The records about library functions are available, such as total collection at each information centre, budget details, human resource force in libraries, and contact details of all library staff. The Berlin office has a well maintained address/contact database. This database is updated timely to maintain information regarding any new staff.

6. External Knowledge Sharing and Transfer
External information is maintained using various tools and resources through electronically, digitally, and supported by Networks. The website and web addresses are the primary source and beside this, web 2.0 tools are used to transfer and share knowledge amongst the GI Libraries as well as to the other department colleagues and the most important target audience.

7. The use of Web 2.0 Tools in External and Explicit Knowledge Transfer and Sharing at GI Libraries
The conversion of knowledge communication into explicit form is more effectively done by WEB 2.0 tools. The social tools of WEB 2.0 offer libraries great opportunities to interact with their patrons and each other. These new web applications provide the means to quickly and easily create valuable resources, discover new ones, collaborate, keep current, build relationships, and promote programmes. Through these new social applications, libraries are able to go where to the user creates, contributes, and connects to a global community. It plays a vital and efficient role in sharing knowledge within the Goethe organization and all over the world community, Podcasts, Facebook, RSS feeds, Wikis, Twitter, Weblogs, and Videos. Special second life software, a Second life, is an online virtual world developed by Linden Lab. It was launched on June 23, 2003. A number of free clients programmes, or viewers, enable Second life users, called Residents, to interact with each other through avatars. Residents can explore the world (known as the grid), meet other residents, socialize, participate in individual and group activities, and create and trade virtual property and services with one another. Second life is intended for people aged 16 and over, and as of 2011 has about one million active users.

Goethe Apps is a software which can run on your computer using internet, or on your phone or other electronic device. It’s also used to transfer speedy knowledge of events done day to day. Besides this, subscription of newsletters belongs to many cultural, educational, political, social, language, and information centres. These programmes are offered freely to the users.

With the help of these tools tacit knowledge is converted to explicit knowledge and by both Pull and Push approach, knowledge is shared to the whole world. Goethe Institute website is a great asset where all the resource links are available and user can access all their interest related knowledge by a single click. The Libraries in German, Digital Libraries, and ongoing Library development projects details are also given at Goethe Institute website.
8. External Communication
Goethe Institute core mission is to increase the
visibility of the Goethe Institute in Germany. In
order to convey a vivid picture possible, we can
see and communicate some interesting projects
and events to the GI. They use press releases,
monthly media info, current GI, and press
trips. The 21 regions also has a well maintained
address bank—“kontaktdatenbank”, containing
addresses of approximately 3000 relevant
German journalists.

9. Policies and Strategies
Organizations nowadays are intended to promote
knowledge sharing, improve worker retention,
and prepare intellectual capital. This intention
make them obligatory to make strategies and
policies.

KM concept has been traditionally applied
to money making organizations with the aim
of enhancing and improving operations, and
to increase profit, but this concept can also be
applied to non-profit organization, such as
government bodies and statutory boards. Goethe
Institutes has adopted policies and strategies
in which transformation of tacit and explicit
knowledge conversions has been seen in very
effective and excellent way benefitting librarians
as well as end users. Some points of the policies
are discussed as following:

- To improve communication among staff from
top to bottom.
- To deliver a world class library systems which
  is convenient accessible and useful to the
  community.
- To provide right knowledge to the right
  people at the right time.
- To find out the most efficient, most cost
effective, and most convenient way to get
things done and to share this knowledge with
others who can apply this in the future.
- To increases the employee’s faith within the
organization structure with each other.
- To expand the learning capacity of the nation.
- To prevent duplication of efforts and its
time saving device especially for desk service
providers.
- To establish an adaptive public library system
consisting of a network of national reference
libraries community and neigbourhood
libraries.
- GIL has a network of borderless libraries
linking all publicly funded libraries within
Germany to other Europeans libraries and
information service providers through
computer networking.
- To create Global Knowledge HUB with
specialized German politics arts education
and so on.

10. Features
- Ignorance regarding a given task decreases.
- Lack of time to find any info decreases.
- Lack of building relationship between
colleagues can be overcome by privilege
sharing culture amongst staff.
- Implementation of best practices will be
easier.
- Existed encourages cooperation and learning.
- People motivate themselves and aim to
improve and boost professional problem
solving abilities by capturing knowledge in
system and software.

11. Conclusion
The above findings show how gnitive “tacit”
and explicit form of knowledge is treated at GI
Libraries and the wisdom to know how to use
the information for its retrieval. Human capital
in libraries transfers their knowledge, either
explicit or tacit, with the help of technological
tools and professional practices in the form of
knowledge management concept. According to
tacit knowledge approach, every individual who
is a part of Goethe Institute as a staff or as a
patron has some tacit knowledge in their minds
and it’s very difficult to extract them easily, but with the help of KM Practices and tools it can be possible. People can transfer their ideas through mailing list, intranet, and other social media tools. Reading rooms play a vital role in transferring knowledge, as people themselves act as knowledge carriers, hence reading rooms encourage them to share their knowledge. As per explicit knowledge approach, it is simple to share knowledge whatever the policies, services offered has been defined, coded and stored in any media or format because it’s a declarative knowledge. Databases used in libraries, Content management system, and WEB 2.0, i.e., blogs, twits, Facebook, postcards, are the tools to transform explicit and tacit knowledge within and outside the organization to serve the whole world community who have any interest or relation with German literature, culture, politics, education, and so on.

Goethe Institute Libraries have tremendously adopted the Knowledge Management practice and use social media as an efficient source to disperse authentic knowledge to their end users. The professional staffs have knowledge management abilities and a willingness to apply them to a new and more challenging situation. They build trusty relationship amongst the users and show the skills, such as preserving knowledge, sharing skills, networking skills, communication skills, and ability to cooperate with other professional colleague worldwide. All the skills, such as cognitive skills, management skills, organizational and business skills, information processing skills, such as packaging, recording, storage and retrieval, and information technology skills are used very efficiently in the Goethe Institute culture. GI Libraries and their librarians play an important role to convert the intellectual assets of the organization into higher productive forces by using KM practices and concept.

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E-research Support Desk: A New Genre in E-reference Services

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Abstract
The web and the digital devices indisputably have become integral components of the e-library services as they provide smarter and convenient ways of making research information easily accessible and retrievable at a real-time. This survey seeks to shed light over the newly introduced e-research consultations as a new genre of expert library service to support postgraduate studies and research projects. We diagnosed the potential factors responsible for query processing prior to suggesting a model for improving the process of answering research inquiries and consultations. Analysis of the research queries and consultations, received via various routes of communication, revealed that the research desk can conveniently handle a wide range of information needs, such as encompassing short-answer factual information and guidance about search strategy, and offering in-depth research consultations and expert assistance in tracking down hard-to-find information. It can formulate advanced search strategies, providing guidance in using specific library e-resources and e-services, and assisting in thesis writing. The study argues that as the research devoted library moved its user centred research reference services into web-based, the research librarian should have to adjust to the new e-research paradigm and should excel in answering the needs of research students and faculty.

Keywords: E-research, Research consultations, Research users, Digital academic library, UAE
1. Introduction
The rapid influx of the smart Information and Communication Technology (ICT) has introduced a welcome dependency on the digital devices in dealing with a wide range of information resources and data sets. This new paradigm of human-ICT interaction has helped to create a library desk that specialized in providing expert information services, and deals with the present unprecedented and exponential growth of research information and scholarly e-resources that transmitted via web or released by the e-publishing industry. This abundance of research information on the web medium, along with available ICT used in organizing such information, has sparked strong interest in expanding the research service beyond the premises of the physical library to interact with its remote users (Taha, 2012). So, this virtual infosphere has initiated a dynamic increase in the scholarly use of the web for a wide array of academic, research, and business purposes. Such new form of information availability has increased the interest of many users to use the web-based academic resources, which in turn has increased the number of requests for answering diversified questions and consultations that find their ways to the research desk via electronic means (Pomerantz, 2004; Taha 2012).

This new information phenomenon has triggered an urgent need for remodelling the partnership between the research librarians and the research community. Furthermore, today’s research librarians are facing imposing challenges of offering meaningful and complete sets of reference orientation and research consultations with which the users explore the plethora of available web-based e-resources in an efficient way. Thus, the new multifaceted roles of the reference and research librarians have reflected these digital changes since the web is becoming one of the hallmark of the scholarly use of the internet.

The research queries and consultations are currently being received via telephone, e-mail, and personal interview. The received queries represent a wide array of research information needs ranging from encompassing guidance about search strategy to accessing appropriate e-resources. This study attempts to describe the new paradigm of research support services and research consultations in a networked library environment at the UAE University, focusing on the factors influencing the query assignment and suggesting a model for partnering the research students and faculty with the research desk.

2. Related Literature
- The advent of the web-based applications in the library service has accelerated the element of concern in paying much attention to investigating the pervasive effects of web-based applications on the research support services from different approaches and concepts. This attention resulted in generating a considerable amount of research and theoretical works with respect to newly scholarly e-resources available in different media ad formats. The literatures cited in this study are grouped into three broad categories that: Focuses on concerns related to the ICT, e-reference, and research service provisioning in an e-library environment (Barcellos, 2000; Braxton and Brunsdale, 2004; Chowdhury and Margariti, 2004; Gandhi, 2004; Hill et al. 2003; Lankes, 2004; Rambo 2010; Rieh, 1999; Thomas, 2011; Zanin-Yost, 2004).
- Focuses on concerns related to users’ needs, query processing and topology, research consultations, etc. (Ankem, 2004; Bankhead, 2003; Corrall et al. 2013; Diamond and Pease, 2001; Faix et al. 2014; Gale et al. 2007; Janes et al. 2001; Lee, 2004; Marsteller and Mizzy, 2003; Pomerantz et al., 2003; Schwartz, 2004; Spink, 2002; Taha, 2012; Vandegrift and Varner, 2013; Wasik, 2003). Focuses on concerns related to definitions,

3. E-research Reference Services: Shifting Boundaries and Paradigm

Change has been continual and far-reaching in libraries with the emergence of the PC technologies in early 1983 (Chowdhury, 2002). A great deal of research and effortful developments was done in the e-reference arena. The origin of e-reference services can be traced back to the early 1980s, when the University of Maryland Health Service Library launched Electronic Access to Reference Services (EARS) in 1984. It is known as the progenitor of modern e-reference services based on email technologies. Ask-ERIC has triggered off the first scholarly Internet-based reference service in 1992; followed by the Internet Public Library (IPL) in 1995.

As a part of reference and research activities, the paradigm of the mediated information searching has shifted away from professional-mediated mode to end-user self-service mode, i.e., the end-users can get remote access to the research and reference services despite the time or distance without the intervention of the librarian (Han and Goulding, 2003). The research desk in a distributed library has responded to such escalating changes in academic library by creating real-time web-based e-research reference services for providing in-depth subject search and information referral over the web (Wasik, 2003; Corrall et al. 2013). Thus, the exponential growth of such e-research materials on the web has proliferated over time to gain a primary popularity. Moreover, the terms e-reference or virtual reference are used interchangeably to describe reference services that utilize web based digital technologies.

A persisting challenge within the new landscape of the e-research reference service is to negotiate the future with the diverse research community in academic settings. In this context, the design of easy-to-access to e-resources and planning for real-time e-reference service requires re-organization of the reference/research desk taking into account the increasing information demands of the researchers. In response to this status, the academic library strives to reflect its values, mission, and long-term vision of excellence in providing support and reliable information services (Coleman and Sumner, 2004). A consensus among research librarians, students, and faculty stated that the e-library might bring them a plethora of relevant information but, “The end-users don’t want ‘data dumps’; they want information that are very summarized, analysed, and closer to what can be used in intellectual works or decision points… they are becoming frustrated from information overload” (Katz, 2002).

4. UAEU Library: Negotiating with the New Discovery Services

The UAEU library is on-campus and strives to pursue quality research service provisioning within an academic computing environment (ACE). The ICT applications have become, within the few past years, an integral part of the infrastructure, functions, and services of the academic library. This is achieved by means of implementing new discovery e-services, such as the integrated library system (Millennium), federated search engine (Summon), and cloud computing (Taha, 2012). The UAEU library furnished these IT tools to bundle its growth-oriented e-resources together with online push-type services for the remote users via a one-point access at the library portal http://www.library.uaeu.ac.ae, as shown in Figure 1.

In an advanced step, the UAEU library launched the EZProxy™ in 2004. It also adopted different e-service models purposely to expand its e-services to reach the desktops and mobile devices for an easy access to the
available e-resources via different routes for the remote users beyond library physical premises and opening hours. The different online route scheme is shown in Figure 2.

5. The UAEU Graduate Programmes: A Brief History
The Master degree programmes were launched in 1991, with the environmental studies as the
first interdisciplinary programme. Later on, many subject-wise programmes in engineering, natural sciences, and humanities, beside MBA were established in various years. In 2010, three doctorate degree programmes were launched, namely Doctorate in Philosophy (PhD), Doctorate in Business Administration (DBA), and Professional Doctorate in Pharmacy (PDPharm).

6. Research Consultations Desk: Acting as a Catalyst

The ability of the research desk service to scale-up for handling a wide array of reference queries and consultations is directly influenced by the availability of relevant research information resources, as well as ICT components employed in request processing and retrieval. These resources dedicate less effort and time consumed by the research librarian in terms of human intermediaries (Pomerantz, 2004).

The UAEU Library has launched the Research Consultations Desk (RCD) as an urgent necessity to meet the expansion in the graduate programmes and research activities coinciding with the new academic strategy and vision of the UAE University 2010 to become a research-intensive institution. Consequently, the core mission of RCD is to support the increasing number of students enrolled in more than 30 graduate programmes awarding Master (about 650) and Doctorate degrees (105), along with professional degrees in business sciences (MBA and DBA), and Pharmacy (DPharm). This expansion in postgraduate programmes has resulted in the establishment of College of the Graduate Studies in 2013.

The cumulative services of the research reference desk have been re-conceptualized as a composite of five distinct, but interrelated research-oriented online expert services, viz., directional and factual research information, research consultations, in-depth information lookups, e-literacy and instruction, and scholarly communication (e.g., assistance in proposal guidelines, research design, dissertation writing, author correspondence, etc.). Broadly speaking, RCD successfully promoted itself among the postgraduates and research faculty communities. However, not all the graduates and faculty received most of the provided services, but an increasing number of end-users became aware of the expert service bundle furnished by the RCD as shown in Appendix 1.

7. Research Reference Desk Model

The library research consultation services could be integrated with the instruction and e-literacy programme for supporting the research students and faculty in searching, retrieving, and using e-resources in a knowledge base (Gale et al. 2007). The schema of the research consultation model is consonant with the UAEU library motto “We provide the 21st Century E-Services”. The model, as shown in Figure 3, illustrates the mutual collaboration established between the research reference expert and the researchers within an academic computing environment (ACE) to go beyond the scope of the traditional reference assistance to meet the needs of a specific research information.

The main objectives of the research desk are:

- To strengthen the interoperability between the library and researcher community.
- To position itself within the research activities.
- To partner the research students and faculty with subject librarians.
- To enhance the research services as the research librarian is keeping abreast with the current research activities and advanced studies’ trends.
- To reduce the isolation of the off-campus users as e-services and e-resources are actively promoted among their community.
- To support different phases of research and dissertation study with the latest relevant literature through the web-base push services.

The processes of research consultation are a kind of symbiotic association between the expert
librarian and the researchers using a structured request form (Appendix 2). These processes were modelled on the theory of task-based information searching, which was extrapolated from the existing theories of information seeking behaviour (Vakkari, 2003), yet enlightened with RUSA Guidelines for Implementing and Maintaining Virtual Reference Services (RUSA, 2004). The submitted queries were answered through different routes, depending upon the type of query and kind of information needed. Vakkari (2003) identified the information searching as a cyclic process of basic five components:

- The kind of information that is needed and searched for.
- The query formulation process, e.g., choice of searchable terms and operators.
- Searching tactics, i.e., formulate search strategy for hard-to-find information.
- The use of the search-support tools, e.g., search hints and guidance.
- Relevance and judgement regarding the information retrieved.
The literature on conducting research revealed that the postgraduate students and novice research faculty are suffering from lack of preparedness to conduct effective information search or significant and advanced research studies (Harris, 2011). Therefore, the proposed model of the research reference desk is designed merely to ameliorate such lack of research skills. The model also exhibits that the librarian interposition serves as:

- Knowledge investigator to discover and retrieve information and data from reliable different sources.
- Editor to cumulate and compile related information in an easy-to-read fashion.
- Consultant to assess information quality and relevance for further uses in generating a scholarly work.
- Educator to assist in promoting e-literacy among the user community.
- Information therapist to assist in relief search anxiety and information overload dilemma.

8. Range of Research Consultations

A total of 315 research consultations and requests were received and processed during September 2012 to June 2013. The UAEU research faculty and postgraduate students were the core beneficiaries of the research support service. However, the senior undergraduate students occasionally consult the research desk. All the requests are usually submitted electronically via the official email of the UAEU, and sometimes using Facebook. The research faculty submitted 209 requests (69.44 per cent), whereas the postgraduates submitted 96 requests (30.56 per cent) as shown in Figure 4.

Moreover, 87 researchers (students and faculty) were from colleges of business, science, engineering, IT, and medicine to constitute the bulk of beneficiaries (77.68 per cent), whereas 25 researchers from colleges of education, humanities, and social studies have benefited from the services (22.32 per cent), as shown in Figure 5.

This appreciable difference in the percentage is due to the fact that the graduate programmes in natural science and engineering were established long back, i.e., between 1991 and 2001, whereas the humanities programmes came later at 2005.

9. Taxonomy of Research Reference Queries

All the queries and questions received by research desk, which emerged in a wide range of information domains are grouped as (Appendix 3):

- Connectivity enquiry, e.g., links to e-resources, off-campus access, etc.
- Database mechanics, e.g., search strategy, retrieval, source assessment, etc.
- Scholarly communication.
10. Discussion and Conclusion

The e-research reference service, in its many forms and terms, represents a diversification of the modes in which the DL services can be delivered and promoted to a large extent within a research community (Stemper and Butler, 2001). On the other hand, the multifaceted role of the research librarian is evolving in order to effectively integrate the academic library as an active partner in the scholarship of digital sciences (Vandegrift and Varner, 2013). However, the information seeking behaviour of the researchers in the networked library environment has drawn special concern in the domain of the library studies. The web has now become an indispensable tool for providing direct access to research information sources without the intervention of the human intermediaries. Thus, a new information-seeking scenario has been created in academic library settings with the pervasive scholarly use of the web (Chowdhury, 2002; Han, 2012).

Despite the rapid changes in research information resources and tools offering a new paradigm and many opportunities for the electronic access, the research faculty and students have not altered their research skills to approach the utilization of the digital resources in a convenient way (Harris, 2011). On the other hand, there is a strong evidence that the students are not proactive about developing search strategies to maximize their research resources usage. To overcome the ambiguity of conducting research and dissertation study, this study recommends to incorporate a session on e-literacy into the classroom courses. The study argues that as the UAEU academic library moved its research-centred reference services into web-based, the research librarians should adjust to the new digital environment and to new research information needs of the target researchers.

Acknowledgements

This work is dedicated to the memory of my late parents Taha and Mariam, who nurtured my professional career carefully, with sincere appreciation to my wife Muzna, and sons Amr, Omran, Ghufran, and Ghayth. Thanks to my colleagues who shared with me the ideas appeared in this manuscript. I highly appreciate the financial support of the UAEU Library.

References


E-research Support Desk: A New Genre in E-reference Services


Appendix 1: Examples of research consultation requests

“I am working with a research project on respiratory functions and pathologic symptoms among sewage workers. I would like to have some recent and relevant sources touching these key phrases—respiratory function test, allergic infection...”, from an Occupational Medicine professor.

“I am currently running a project dealing with the use of fibre reinforced composites for the strengthening and repairs of concrete structures. I would like to receive relevant scientific papers dealing with this subject from 2000 to present”, from Materials Engineering professor.

“Right now, I am working on a research project on video conferencing. I am sure there are many studies in the literature about video conferencing in education, but I am not getting any. I don’t know why. Could you, please, help on this issue?”, from Education professor.

“My research students have paid you a visit as you may remember fetching references for their project, but were not able to specify their need. The project is an experiment on the effects of caffeine on: a) mental rotation, b) reaction time, and c) attention”, from Psychology professor.

“I am MSc student, currently conducting my dissertation research on biochemical roles of sialic acid in initiating carcinogenesis in human; could you please kindly provide me with relevant research works recently published in refereed sources?”, from Graduate student.

“Thank you very much for this paper, I was really in need of it for my current research”, feedback from Engineering professor.

“I find it amazingly helpful that you are sending me relevant articles beyond those that I have requested”, feedback from MIS professor.

“I would like to say that the related information you sent is very useful to my research. Thank you so much”, feedback from Economics professor.
Appendix 2: Request for research consultation

<table>
<thead>
<tr>
<th>Research Desk</th>
</tr>
</thead>
<tbody>
<tr>
<td>THE UAEU LIBRARY</td>
</tr>
<tr>
<td>REQUEST FOR RESEARCH CONSULTATIONS</td>
</tr>
</tbody>
</table>

Kindly, find for me research material from the e-resources relevant to the topical theme: *(Please give concise statement of your query, < 20 words):*

<table>
<thead>
<tr>
<th>Helpful &amp; Searchable Attributes:</th>
</tr>
</thead>
</table>

The following database(s), which I believe that, is/are potential source(s) to answer my query. *(Optional):*

<table>
<thead>
<tr>
<th>Search Returns (for expert use)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevant:</td>
</tr>
<tr>
<td>Related:</td>
</tr>
<tr>
<td>Rephrase the query:</td>
</tr>
</tbody>
</table>

Email to:
Ahmed Taha
*Research Consultation Specialist*
Research Desk
E-mail: jazraby@uaeu.ac.ae
T: 03-713 4510
M: 050-583 7140
Appendix 3: Quantitative summary of request processing (Jan–Dec 2013)

<table>
<thead>
<tr>
<th>Request</th>
<th>Provided service</th>
<th>Beneficiary</th>
<th>Answered</th>
<th>Unanswered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Literature search</td>
<td>Thematic search and retrieval from e-resources</td>
<td>Postgraduates</td>
<td>85</td>
<td>None</td>
</tr>
<tr>
<td>Reference search</td>
<td>Retrieval of related works to be cited in submissions</td>
<td>Faculty, project researchers, postgraduates</td>
<td>77</td>
<td>5</td>
</tr>
<tr>
<td>Thesis writing</td>
<td>Advising in writing abstracts, reviews, citations</td>
<td>Postgraduates</td>
<td>25</td>
<td>None</td>
</tr>
<tr>
<td>Consultations</td>
<td>Providing in-depth expert answers, search orientation</td>
<td>Postgraduates, faculty, senior undergraduates</td>
<td>229</td>
<td>10</td>
</tr>
<tr>
<td>Scholarly communication</td>
<td>Author correspondence, publishing advices, citation analysis and analytics</td>
<td>Postgraduates and faculty</td>
<td>123</td>
<td>5 (abide by copyright)</td>
</tr>
</tbody>
</table>
Implementation and Use of Web Analytics for Academic Library Websites

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Abstract  
Academic libraries are often required to support decision-making related to data that are both credible and readily obtained. Library researchers and practitioners have recognized the need for tools, such as Web Analytics (WA) for online researching. However, few studies have analysed the library management’s perception towards the WA use. Understanding the management’s perspective towards WA can further help to understand the optimum usage of WA and the various challenges and obstacles faced while using it for the library purposes. Six members of the Website Usability Committee of an academic library were engaged in an interactive group interview about WA. Analysis revealed the library management’s various views about WA and the challenges faced while interpreting the WA reports. Four themes emerged out of the interview regarding the use of WA—decision about services, decision about web-design, library’s interest in user behavior, and challenges of WA use for the library. These themes are then discussed to shed light on current and future prospects of using WA for improving academic library website. Factors affecting web analytics implementation are also discussed.

Keywords: Academic library website, Library decision–making, Web analytics, Google analytics, Web site evaluation, Web metrics
1. Introduction

Use of Web analytics (WA) by academic libraries has been widely advocated in various literatures for quite some time. Covey (2002) concluded in her study that there is a need for a product that manages, analyzes, and graphically presents library data. WA enables capturing of user actions on the websites. It tracks users’ behaviour on a website and provides precise information about various usage metrics, including website visits, sources of these visits, time on site, page hits per visit, network properties, and user computer configurations. There has been stress for quite some time on academic libraries to build more user-friendly systems (Hiller and Self, 2004; Kim, 2006a; Kim, 2006b). With the use of WA packages, library websites can capture the users’ behaviour on their website through various metrics and reports that will help them in decision-making.

The extent of WA use in academic libraries has not been properly documented in the literature. Lakos (2007) found that in spite of libraries being aware that data would help them in decision-making, they stuck to their traditional mode of operations based on intuition rather than techniques that provide data through “evidence, analytics, and results”. Similarly, in a survey on methods of assessment of web services, Manuel, Dearnley, and Walton (2010) found that some academic libraries are inclined towards the use of analytics tools, but many others have yet to understand their utility.

WA has been extensively used in the commercial sector (Jacoby and Luqi, 2007; Sen, Dacin, and Pattichis, 2006; Srinivasan, Amir, Deshpande et al, 2004). Akkus, Chen, Hardt et al. (2012) has also addressed one of the most talked about facet of WA, privacy, and proposed a solution design. Bose (2009) has stressed on the opportunities and challenges offered by the advanced analytics for business intelligence that integrates data mining with text and web mining. Academic libraries have also started to recognize the usefulness of WA. Various studies have revealed that many academic libraries are nowadays recommending the use of WA (Manuel, Dearnley, and Walton, 2010; Fang, 2007; Fang and Crawford, 2008; Herold, 2010; Finch, 2010; Betty, 2009; Loftus, 2012; Farney, 2011; Black, 2009; Cooper and May, 2009). These studies have acknowledged the need to tap into the immense potential that WA tools offer for libraries. Nevertheless, many libraries across the world are yet to utilize WA for their purpose.

A case study has been discussed in this paper where the WA implementation of an academic library in a mid-western American university is studied in order to understand the extent of utilization of WA in the library and the factors affecting its use. This paper discusses the adoption of WA and its use for academic library decision-making. It looks at the existing WA reports within the library through the eyes of the librarian (instead of the tech-savvy IT executive) and understands their views from a practical perspective with regards to use of WA in academic libraries. This paper also points towards the elements of WA use in academic libraries that can hopefully lead to designing of a WA package that solely caters to academic libraries.

2. Literature Review

Studies have acknowledged that libraries need to be more holistic in their decision making including the user (Nicholson, 2004; Saraf and Mezbah-ul-Islam, 2002). Decker and Hermelbracht (2006) used conjoint analysis to evaluate library service goals, thus stressing on the need for libraries to make the right decisions. Kettunen (2007) evaluated the strategic plans of a library consortium from four perspectives—customer, financial, internal process, and learning. Beck (2003) found that libraries have recognized the need for new data measures that would help in the evaluation of the quality of their services. He also emphasized the importance of the users in the decision making...
Implementation and Use of Web Analytics for Academic Library Websites

process. Hiller and Self (2004) also discussed the importance of libraries as user or customer centered organizations and their need for data that could be used for decision making rather than subjective impressions and opinions. Additional studies have identified the importance of the library user’s perceptions and use of information sources on library management decisions (Kim, 2006a; Kim, 2006b).

Eldredge (2006) discussed the need for a systematic process of evaluation for libraries, such as Evidence Based Librarianship (EBL) to increase library decision-making efficiency. Nicholson (2006a) noted the lack of appropriate research and literature that could be used by libraries as evidence. Moreover, the time taken to collect evidences sometimes results in fewer publications, thus reducing the influence of traditional EBL. Booth (2009) performed an extensive literature review to evaluate the gap between evidence-based research and evidence-based practice. He suggested performing more studies that could help apply research into practice within the framework of EBL.

Lakos (2007), in a study, discussed that many libraries plan and make decisions for data use, but they do not actually use the data systematically or effectively. His interviews with library directors revealed that they were not satisfied with their data access needed for decision-making. Also, library staff seemed to be reluctant to provide the requested data. There was a negative reaction and distrust on their part to the use of statistics in general. This seemed to be based on a number of factors, viz., lack of analytic skills, lack of interest, and lack of time. The directors believed that staff reliance on intuition and accepted assumptions would be difficult to change, though they accepted the notion of collecting available data and using the benchmarking studies.

In recent time, studies have illustrated the use of WA for library decision-making. Betty (2009) explored the use of WA for academic libraries especially when libraries have an increasing surge of “homegrown” collections. He also suggested some best practices for libraries. Herold (2010) also analysed the use of WA to study the users of a digital archival image collection within a library. The author used WA to look at the users who access it, how many of them were from other regions of the world outside the campus, what all items they accessed, etc. Loftus (2012) also showed the use of WA in continuous tracking of health science libraries. He used other methods also to gather user feedback, such as through surveys, targeted interviews, stakeholder analysis, etc. He stressed on the use of WA as a supplemental tool. Waller (2009) also explored the use of WA for a public library website. Turner (2010) in his guidelines for website evaluation for libraries using Google Analytics (GA) recommended that libraries should have KPIs (Key Performance Indicators) to help them in more directed decision-making. These KPIs will prove more beneficial for them towards meeting their goals.

Further, Arendt and Wagner (2010) studied an academic library website and recommended the use of Google Analytics over data logs. They also found that some library decisions were not implemented despite having support from analytics (e.g., in spite of the low usage of certain prominent links on the home page, no changes were made to the presence of these links and the top 20 content was not made prominent). The authors noted the limitations of interpreting analytics reports. They felt a need for complete implementation of the WA tool that would permit a full data interpretation.

Jansen (2009) pointed out the importance of WA in collecting behavioural data and the importance of linking investment returns and website goals to support actionable outcomes. He also provided a list of guidelines for choosing a WA solution and a set of factors, such as the WA’s features, investment, ownership policies, and integration with other evaluation tools, for consideration.

On one hand libraries have been urged to use WA for academic library websites, on the
other hand businesses which have been using WA for some time have been asked not to rely solely on it. Weischedel and Huizingh (2006), in their case study of a major US player in the IT industry, observed a strong preference for the quantitative data delivered by analytics tools as opposed to user feedback by managers in the company. The authors also noted that there was a discomfort in using WA for answering “why” and “how” questions and promoted the use of complementary qualitative studies. It is not adequate to depend solely on WA data to understand the user’s views. Interpretation of the WA data needs to be supplemented with feedback data, such as user interviews or surveys as indicated by Loftus (2012) for better understanding of the results.

Individual privacy of users is a major concern with WA. Tracking user’s activities on the website is against the privacy policy of the libraries. Though there are efforts to conceal the user identities when tracking user data (Akkus, Chen, Hardt et al. 2012), it is still not reliable. Nicholson (2006b) acknowledged the importance of maintaining the user’s privacy. He recommended evaluating the overall data of the user rather than log items of individual users that are identifiable. One of the benefits of most WA tools is that aggregation conceals individual data.

As the literature indicates, there is a need for an advanced, yet uncomplicated tool to support library decision-making. There is a lack of a better understanding of how to use WA effectively in a library setting. This paper has tried to address this issue partly by looking at the concerns of the library committee, which will help in understanding the ways committee has used WA in the past, plans to use WA in future, and the barriers to a full-fledged use of WA. Apart from the reflections of the library committee on their use of WA, other emergent findings from the interview obtained from the reaction of the committee to the WA reports were also highlighted. The authors hope that these reflections and findings from the committee’s interview will further help to develop a better understanding of the aspects of WA for library decision-making.

3. Research Setting
The study was conducted in an academic library of a mid-western American university (hereinafter referred to as “the Library”) in 2008. The Library had implemented Google Analytics (a free web analytics tool by Google) on its website, but the data provided by it had never been adequately utilized, though there were instances of some application of the inferences from the reports (e.g., reorganizing hyperlinks). The Library’s management was eager to use GA for decision-making and wanted assistance in this process. The Library formed a web advisory group responsible for the website. The advisory group was further divided into three committees—the web usability committee, the content coordination group, and the design group. The eight members of the web usability committee comprising members from the main and branch libraries, were sent e-mail invites to participate in this study as they were supposed to use GA the most out of the three committees.

4. Method
The researcher was granted access to GA reports of one semester’s use of the Library website. These reports were reviewed and then included in a presentation. Based on this, an interactive group interview was conducted with the Library’s web usability committee. An invitation for participation was sent to the eight committee members for an interactive group interview conducted within the Library premises. Out of eight, six (one male, five females) members attended the interview. Only three of the six participants had previously used WA. As the three non-users were not comfortable about discussing WA, they were occasionally prompted for feedback and were probed for follow-up questions. The most junior respondent had eight years of work experience, while others had
12–35 years of experience. All participants held positions of responsibility within the Library, including head of information services in a branch library, library information specialist, catalogue librarian, head-catalogue management unit, engineering librarian, and subject bibliography/reference specialist.

4.1 Data Collection
The interview centered on a presentation of WA reports drawn from the previous semester, which provided a context for the discussion and a focus for the committee’s attention. The interactive group interview technique (Patton, 2001) was used to engage participants in the discussion and to promote specific objectives to generate an open-ended conversation with respondents to collect their views on the WA implementation for the Library, and to get their perceptions on the use of analytics reports for decision-making within the Library. The question guide used for the interview is presented in Box 1. The questions were geared towards prompting the participants to reflect on the use of WA in the past as well as on current decision-making processes.

The sessions were recorded using Morae software by TechSmith (http://www.techsmith.com/morae.html). Morae captured the monitor screen as well as the actions performed on the computer. Along with the screen capture, any facial expressions of the user also get captured. In this study, Morae captured the computer screen that displayed the Google Analytics report to the committee and also recorded the view of the group seated around the table. This data collection set up helped in capturing the contextual information along with the animated discussion captured using the video and audio.

4.2 Data Analysis
The researcher assembled the raw data from the interview, transcribed the user feedback, analyzed the transcripts, and kept extensive records from the interview. Patton (2001) explained the importance of comprehensive records that systematically arrange voluminous data into a

<table>
<thead>
<tr>
<th>Box 1: Guide questions that were used to interview the Library web usability committee</th>
</tr>
</thead>
<tbody>
<tr>
<td>When was the last time any changes to web analytics tracking code were made and why?</td>
</tr>
<tr>
<td>When was the last time a web analytics report was generated and/or was viewed?</td>
</tr>
<tr>
<td>What other uses, if any, of web analytics have been made by the Library in the past?</td>
</tr>
<tr>
<td>What are the various metrics of web analytics that have been considered for use and how they been interpreted in the past?</td>
</tr>
<tr>
<td>Has the Library implemented any of the web analytics findings?</td>
</tr>
<tr>
<td>What are the typical activities that are carried out by the web administrator on the Library website?</td>
</tr>
<tr>
<td>Does the web analytics report answer the questions that are asked by the Library management regarding the electronic services provided by the Library?</td>
</tr>
<tr>
<td>Does [web] analytics report provide the required evidence for implementing any changes to the website?</td>
</tr>
<tr>
<td>What, according to you, are the weaknesses of the report?</td>
</tr>
<tr>
<td>What are the deficiencies that can be corrected by web analytics implementation (in other words, what tracking codes can be changed in the analytics implementation)?</td>
</tr>
</tbody>
</table>
single primary resource package. The transcript of the group interview was reduced into simple sentences and analyzed. The researcher then identified statements for clarification with the interview participants. Some of these clarifications were directed to the Library’s use of GA, while the others were used to resolve the meaning of certain statements. For example, one respondent’s statement, “We have used [WA] to see what the higher [rates] are per visit. What else the users are coming through to see, so we could prioritize resources and make sure they don’t have any problems,” was rephrased as “Libraries have used analytics to see what are the visit rates, what parts of the website have higher page views, what are the top areas that the user visits on the website. Libraries would like to know what problems do the users face and try to solve those.” A follow-up question was— what specific metrics were you referring to by higher rates per visit?

The qualitative analysis consisted of content analysis with open coding followed by axial-coding. Strauss and Corbin (1990) defined axial coding as a set of procedures whereby data are put back together in new ways after open coding by making connections between categories by utilizing a coding paradigm involving conditions, context, action/interactional strategies and consequences. The researcher formulated themes and sub-themes with the respondent statements. Table 1 provides an example of an analysis table containing themes, sub-themes, statements, and underlined dimensions.

### 5. Findings and Discussions

Analysis of the interview transcripts revealed four major themes—decisions about services, decisions about web design, library’s interest in user behaviour, and challenges and opportunities of WA use. The first two themes are direct outcomes of the use of GA by the web committee in the past. These two themes have direct implications on the understanding of the current use of analytics by the academic library. The third theme relates to the observations and inferences drawn from the interview session that indicated the committee’s proneness towards using GA for the Library. This theme involved looking at the non-verbal and verbal cues of the committee when assessing the reports presented to them. This theme was important and helped to understand certain subjective elements of the Library’s inclination towards using WA in the future. The fourth theme

| Table 1: Analysis table showing example of the elements of analysis—themes, sub-themes, statements, and underlined dimensions |
|------------------------|------------------------|------------------------|------------------------|
| **Themes**             | **Sub-themes**          | **Statements rephrased** | **Explanation**         |
| Decisions about services | Providing for specific user needs | The library has used the search function in analytics to look at specific link visits (R 5.4 user behavior, service) | Libraries tend to make service related decision based on information on how users use the different links presented on their website |
| Decisions about services | Providing for specific user needs | It might or might not be necessary to link pages from the gateway as users could be bookmarking certain pages (R6.10 user behavior, services) | |
| Decisions about services | Providing for specific user needs | Any information on where the users are directly going to (probably by bookmarking) would help libraries to place links in appropriate places (R3.7 Services) | |
| Decisions about services | Providing for specific user needs | Libraries would like to know which links are redundant and hence get rid of those links (R 6.11) | |
Implementation and Use of Web Analytics for Academic Library Websites

relates to the opportunities and challenges that the participants felt would affect their use of analytics. All the themes inform about the participants’ view on GA for Library use. The participants also indicated the current deficiencies of GA for the Library’s purposes, thereby suggesting how the future use of WA tool for the Library can be enhanced specifically by improving upon the pointed deficiencies.

5.1 Decisions about Services

The theme *Decisions about Services* emerged from decision-making in order to improve services provided to patrons. It is critical for the Library to provide its patrons the required information through the Library’s resources. The team formed by the Library web usability committee ensures the smooth operation of the Library website and makes effective decisions. Themes and sub-themes associated with *decisions about services* follow.

5.1.1. Supporting staffing decisions

The committee emphasized the importance of knowing the time of day the website was used more frequently. This would help the Library to support the users’ activity on the website. As a part of ensuring proper services, it is important to know the time of day when they experience high traffic. Respondent six stated about the use of analytics to support staffing needs:

…If we were seeing big uptakes and if it, say, dropped off at certain time of the evening that will help us make a case either for or against expanding reference desk staffing hours. Certain times… maybe we need to get some chat 24/7 [as] these people are using our webpage around the clock and somebody can contact the reference.

5.1.2. Providing compatible resources

The respondents mentioned the importance of knowing users’ computer preferences. Since online visitors use different technology to access the Library resources, knowledge of the technology can help the Library services to follow these specifications. The constant upgrades in technology further enhance the need for keeping a track of whether the online visitor machines are compatible with the Library services. One respondent stated that the compatibility with users’ browsers was a major concern because one of the branch libraries has resources that are mostly audio clips, and Firefox users might have issues.

It is also important that the Library should be aware of the screen resolution of users’ computers. One respondent gave an instance when the Library had concerns about an image that was 600 X 800 pixels that was not compatible with bigger monitors accessed by users.

5.1.3. Offering useful subscriptions to electronic journals

The Library provides information services by subscribing to e-journals. The participants mentioned that due to the Library operations in the past, most of the subscription decisions have been made without usage evidence. Some of these decisions about e-journal use have been made a long time ago, and the Library’s management usually adheres to these past decisions.

The application of analytics on the Library website provided a way to understand how different e-journals are being used. According to one respondent, analytics implementation can help in decision-making regarding the journal subscription. The participants agreed that analytics can provide detailed information on the visitors’ activities on e-journal usage. This detailed information can complement the data provided by the vendors on e-journal usage. Also, analytics reports are generated from the library and hence, are trustworthy. However, the respondents expressed their concern about the noise in analytics reports.
5.1.4. Providing a satisfying search experience

Most of the online visitors accessing the Library website are accustomed to get information quickly using Google and other search engines. The Library web usability committee was aware that users prefer to search rather than browse through the different Library website links. The Library provides a search box on its website that searches across the Library gateway. Apart from this, the Library also provides a menu-based search option that allows visitors to find information across the Library’s collection. To search for a specific article, database, or a journal, there is a search box for each—“Find database,” “Search for articles on a topic,” and “Find specific article or journal.” The menu-based search options in the Library website further led the interview respondents to wonder how users are accessing the different menu options while conducting a search. One respondent stated - “…What kinds of searches people were putting in and whether they were correctly changing the drop down menu. If they were searching for what looked like an article title or book title, then were they doing their appropriate kind of search for the kind of search box they were using?”

The participants found that understanding the different access terms, which visitors use to find the information, was useful. The Library’s subscription databases allow the Library to create aliases for accessing the databases. Aliases enhance the use of databases when the visitors employ alternative terms or misspelled search terms to access a database. Respondent five mentioned that the access terms that the website visitor may use with the Library website as shown by analytics can be applied as database aliases.

The respondents wanted to know how many users are accessing the Library website from a search engine, such as Google and what search terms they use. The search terms entered can be used to make changes in the Library’s keyword search. For example, Respondent six stated:

It [has] been very useful for us to see what terms people are putting in to the search engine on our web page for a couple of reasons— one, to see the spellings of various databases, so we could incorporate the spelling in Library databases to bring the search directly to what they are looking for. So we were able to do an alias and were redirected to get people seamlessly into that page. Another [reason was] to see what kinds of searches people were putting in, and whether they were correctly changing the drop down menu to pull up [the searches]. If they were searching for an article title or book title, were they doing their appropriate kind of search for the kind of search box they were using… [Also] which kind of searches were done most often and what kind of choices were…pulled up most.

5.1.5. Providing for specific user needs

One respondent stated that it would help to know whether online users were coming from the Library staff machines or from outside the Library. The respondents were interested in knowing which of the Library visitors were students and were they behaving differently than the faculty. Knowing the profile of the specific users and if they were staff, students, or faculty, would have supported the user specific decisions of the Library, such as if undergraduate students need resources more than graduate students. Respondent six also stated that the library would like to know whether its users are coming from off-campus or on-campus. This would also help to identify staff visits. Identifying user visits from staff would provide a clear picture of the usage of the Library resources. GA could be used to segregate the visits based on the profile of the visitors (such as, students, staff or faculty) from the time they start browsing. Alternatively, the IP address of some machines internal to the Library or branch libraries that belong to the internal staff could be filtered from the reports. However, earlier a very basic form of GA was used in the
Library and so the above-mentioned settings were not implemented.

5.2 Decisions about Web Design

This theme looks at the use of GA by the Library for improving its website design. There are different pathways of information resources on the Library’s website, such as catalogues and research databases, some of which have limited access to Library users only. There are also different types of information provided about the Library, such as hours of access, different workshops held, copy services, and online chat references. The participants wanted to know how visitors successfully accomplished the tasks for which they visited the website, so that the design of the site could be improved and its content restructured for improved navigation. The sub-themes under this topic follow.

5.2.1 Continuity of users’ actions

Information about whether the user has moved forward or abandoned the website would have helped in making changes to the website structure. Participants would have liked to see the continuity of users’ actions between pages, as stated by Respondent three, “Seeing one page at a time is useful, but seeing one thing after the other is useful some times.” In other words, continuity of users’ actions when visiting the Library website was considered useful for the Library’s purposes. When users spend hours on a page it would be informative if the data suggested that the user was lost and then left the page. Analytics’ report showing the relationship between the time-duration a user spent on a page and the exits from those pages would be beneficial for the Library.

Users’ paths of access are important for the Library to guide their movement through the pages. Respondent three stated that the Library is interested in looking at whether people went from a page to where they would like them to go, where they thought they should go, or they left the website without clicking on any link. The participants indicated that it would have been useful for them if the analytics presented the full path to the Library resources.

5.2.2 Comparison of link usage

In some cases, when the Library wanted to know about user activity on a specific link, it had to search for that link from the content report in analytics to get specific metrics for that page. Analytics provided an option to compare a page metrics with the website metrics. However, the participants mentioned that a comparison of the usage of the links leading to different resources would be useful for the Library, as comparison indicates preferences of one resource over the other. The Library has taken steps to improve the visibility of the less frequently used sections of the website. One respondent mentioned that the Library has used analytics in the past mostly for moving links based on the clicks they received on each link.

5.2.3 Reorganizing links to improve navigation

Over time, the Library website has accumulated many web links across different pages. A major concern for navigation through the Library’s pages is that the users can get lost or confused. Respondent three stated, based on past experience, that most of the users got lost because of the presence of multiple links and eventually found themselves on the same page where they started. The Library website also had multiple hyperlinks that led to same pages. These links were often labeled differently. Respondent six stated that, “…We may have kinds of redundant links on our website. One [says] search for articles on a topic and another for [says] databases.” However, the destination pages for both these links were same. In order to keep an account on link which visitor used to go to the next page, analytics provided an option to tag these links. Tagging links allowed analytics to track the different links that were used to access the same destination page. However,
the presence of many developers handling the Library website without following any naming convention has resulted in the current state of the website where many redundant links exist and some of which may lead to the same page.

5.2.4 Direct entries to the web pages

The participants were curious to know how users adapted the bookmark feature of the browser to access the Library pages. If a visitor has directly entered a page through a bookmarked link, it would mean that the user visited that webpage frequently or they found it difficult to access the page by browsing and hence, preferred to bookmark it. Respondent three stated, “You know that people are going from here to there, whether they find it a whole another story.” Information on direct entries to particular pages would help the Library make decisions about structuring the navigation pathways to the resources it provides. WA data on direct entries to a page can be utilized for this.

5.3 The Library’s Interest in User Behaviour

This theme further provides insights on the committee’s inclination towards GA use by subjective interpretations of the participants’ feedback and behavioural cues as captured through the video during the interactive interview. The participants saw the Library’s analytics implementation as a means to get a bigger picture of how their users interact with the Library website when no immediate decisions were needed.

The participants expressed interest in the use of GA to understand the use of branch library resources, visitor activities, shifts in users’ behaviour, and entry points to the website. The Library provides various resources for its users within the main Library, as well as across different branches of the Library that were established under specific academic departments. The distribution of resources across the Library and its branches made the respondents eager to know the usage of the Library’s resources and its relation to the different branches, for example, the number of users who came from the branch websites to use the resources that are under the main website. Respondent five mentioned that it was interesting to see that which branches sent the most traffic to online resources. Information on usage of a particular branch website of the Library would also benefit the branch gateways and would help the respondents to know how users access the resources available through the subsidiary gateways. The participants found reports that enabled comparison of users’ behaviour on the website of interest. One example was the comparison report between the website and the database usage. The respondents noticed that the database use pattern was similar to the website use pattern, indicating that database usage contributes considerably to the total website usage.

The participants were concerned about the way users browse for information on the Library website. They would like to be aware of any shift in the users’ access behavior, such as if the catalogue use has decreased from previous years and how that might be related to the usage of other resources. Respondent three was curious to know, “[whether] there is a shift of usage from catalogue to some other medium within the Library website, if at all.”

Since, there is no one definite path for the online visitor to enter the Library website, the participants were curious about the paths the visitors take most often. Respondent one stated her curiosity, “Where people are coming from, whether they are coming from the gateway or whether doing an organic search.” As stated before, the knowledge of the visitors’ entry whether coming from off-campus or on-campus was of interest as well. Also, information on whether users were coming to branch websites through the main website or were being detracted from other websites was of interest to the participants. Use of links, as discussed before, was rather a discrete way of looking at visitors’
activities. However, the participants wanted to understand visitors’ overall intentions and actions on the Library website. These findings indicate that there is an inclination for further use of WA for the Library, but the way to achieve it is not very clear.

5.4 Challenges of Web Analytics Use for the Library

During the interview with the committee, certain opportunities of GA implementation in libraries as well as the various challenges faced in implementing some of the results from the analytics reports were discussed. Various sub-themes that came out of the analysis are described in the following paragraphs.

5.4.1 Privacy of users’ data

Web analytics data are IP-based data and are collected through scripts included in the Library website’s source code. The reports provided are aggregated without any reference to the visitors’ IP address. Though the respondents would like to get a detailed account of the visitors’ activity on the website, they feared that the privacy of the visitors was going to be violated. For example, respondent six stated that the users would not like it “if spammers and crawlers acquire the email addresses of [the Library website] users.” A tradeoff between visitor privacy and visitor detail, which either meant missed opportunities or violation of privacy was of prime concern.

5.4.2 Measuring usage

The Library provides services from proprietary systems. The visitors were directed from the Library website to these proprietary systems. Since these proprietary systems were external to the Library, it could not implement analytics to measure the usage of these external systems. One respondent mentioned that the databases they subscribe provide usage statistics to the Library. The Library had to rely on these reports for any decision-making. Hence, the Library is unable to draw a clear picture of the usage of all the services provided by it through the website. It has to rely partially on the proprietor.

5.4.3 Analytics implementation and subscription to proprietary systems

The participants recognized the potential use of analytics in providing evidence to support important decisions. For instance, one respondent stated that in case a decision was made on dropping the link to the Library website from a referral page internal to the university, the Library could use the WA reports to defend its space on the referral page. Moreover, use of journals and databases could be supported by the number of users visiting these resources. A further understanding of what the visitor was access the website from the same computer. It is difficult to get an account of the unique users to the Library website. Hence, interpreting the reports based on the visitor metrics may not always be accurate. Another challenge is to interpret the usage metrics, such as bounce rate and exits. E-commerce websites view high bounce rate and high exits as detrimental as this would mean that more visitors are leaving the website. However, for libraries the web pages that have external pointers to direct the users to appropriate resources, bounce rates and exits may not be detrimental. Hence, a high bounce and exit rate for the Library may not be much of a concern.
able to access and use could also be made by looking at the compatibility of users’ computers with the services and features provided by the Library. This facility is an opportunity for the Library to make good use of WA implementation on their website.

5.4.5 Library’s disregard of analytics use

On one hand, analytics provided useful evidence for supporting Library decisions. On the other hand, these evidences are likely to be overlooked because of the pre-existing policies. One respondent stated that,

“…We may have various kinds of redundant links on our website, one goes to the search for articles on a topic and another one goes to databases. Now we know that this [is] intuitive of people who go to databases, go to search for articles on a topic and … probably with some comparative numbers of which one of those links attracts the most clicks. But basically…for political reasons we are going to keep both of them on there.”

Another instance of a Library decision that disregards analytics figures was the ‘Announcement’ section that had to be present even if it does not capture many clicks.

5.4.6 Marketing library services

Businesses prefer commercial websites to be accessed through many referral sites. However, this study’s participants preferred to refrain from promoting the Library gateway to the referral websites, especially to the external ones, such as Factiva that sent traffic to the Library website. The participants were concerned that any promotion to the referral sites would perhaps give these sites marketing ideas and the Library may have to incur a cost for the visits they receive through these referrals. One respondent explained that if the Library tries to promote their website to an outside party, it gives marketing ideas to the sites they are not directly linked to. However, the participants favoured the usefulness of the referral reports on visits from internal referral websites as this could help support situations when other departments decided to remove the Library website link from the referral pages that reflect in the report.

6. Discussion

The study revealed the various ways to use web analytics by the libraries although it is not adequately used in the Library. Manuel, Dearnley, and Walton (2010) found that almost 60 per cent of libraries were struggling to use analytics for decision-making. This section discusses the study findings under three headings—current use of web analytics, areas where web analytics use can be extended, and factors that affect web analytics use.

6.1 Current Use of Web Analytics in Libraries

Though libraries are increasingly adopting web analytics for their purposes, there is some degree of reluctance in the full-fledged use of analytics in academic libraries. In this study, the Library’s use of Google Analytics seemed to be very limited of all the capabilities provided by the tool. The analytics reports were used mostly for improving the service and the website design. Understanding compatibility of the user’s machines with that of the technology used to avail services of the library could help in improving the services provided by the Library. Though studies (Betty, 2009; Black, 2009) have suggested the use of web analytics to check compatibility of technology of the visitor’s machines so that it could be used for planning in future, such a use was yet to establish. In this study also, the Library had used this feature only once or twice.

Use of keywords report to understand the various keywords used by the visitors to access the website was another important utility of the tool that found use in the current study. The keywords were used to improve the database
services by putting aliases wherever necessary for easier access to information provided on the website. The databases used in libraries can have names which can be confusing to spell correctly, for example, the database Psycinfo may be mistakenly spelled as Psyc’h’info. Sometimes the user base of academic libraries involves international students and hence putting aliases can help these students who could possibly misspell some of these database names.

Libraries have increasingly used analytics for rearranging website links (Manuel, Dearnley, and Walton, 2010; Loftus, 2012; Black, 2009). The participants of this study extensively used and speculated more use of Google Analytics for improving the website design. They used the “Top Content” reports for rearranging the different links present within the website based on the hit each of these links got and the need to push each link. There are many other prevalent uses of web analytics in academic libraries, which was not reported when the study was conducted. Reports on visits to library resources could be useful for impact studies of funded projects. Also, origin of the visits could help in studying region wise impact on library’s resources.

Therefore, there is much more that needs to be done in terms of increasing the current usage of web analytics for the library purposes. As mentioned before, proponents of web analytics have urged libraries to utilize the benefits offered by the tool, though there is a certain lag in understanding the context of the visitors. However, it cannot be denied that the huge amount of data captured by library website need to be interpreted well to enhance user friendliness of the library websites. Additionally, analytics can provide ‘behavioural evidence’ that can complement the real users’ intentions captured using a qualitative study.

6.2 Areas where Web Analytics is Yet to be Used

This study revealed the need for an extensive use of web analytics for libraries. The participants were aware of the potential that analytics have, but there was no urgency to use it. In future web analytics can be used in branch libraries as well. Comparative reports between the main and branch library can inform the relative stake of the branch library. Though the branches of a library could have their own analytics implementation that informs them about their website usage, any information about the use of branch resources can be useful. It will also be useful if libraries consider implementing one complete analytics solution for the entire library system which will enable a better exploration of the reports across all subsidiary websites. This will enable centralized management of data. However, issues such as any internal rivalry between the branches and the main library may lead to resistance in sharing website usage information with other branches.

The study emphasized on the maximum use of analytics to understand the importance of the Library resources. One way to know this is to look at the traffic paths of access to the website resources. The visitors could access the web pages directly or they could browse from the home page of the website. A direct visit could be made either by directly typing the URL or clicking on a bookmark. The demand for a website is more if a visitor has bookmarked it, so that they don’t have to remember the website URL. Such a habit of bookmarking can be used to understand how content needs to be organized throughout the website. Alternatively, visits through the search feature can inform about the information needs of the visitors by looking at their search terms. Most of the visitors access the information quickly using search. “Googl-ing” information has become the trend. Finch (2010) indicated the importance of search report to enhance website visibility. Academic libraries need to make better use of the search reports for better information experience by the visitor. As mentioned before, the Library has used information to improve searching for database. However, more needs to be done in terms of Search Engine Optimization.
as now visitors rely on searching techniques to get information quickly and easily. The 'Site Search' feature of Google Analytics that enables capturing of the terms used by a visitor on the website was not set. Not many studies have specifically discussed the use of Google Analytics to improve the internal search function or have looked at the internal search keywords reports that were generated in the analytics reports and related interpretations of it.

Referring site is another option to access the website apart from directly visiting the website and searching their way to the website. Businesses can make good use of such a feature to increase the traffic in their website, but libraries operate differently. Libraries are not concerned that which websites are sending traffic to their website. They are only concerned to know that visitors are coming from which internal sites of the university system and would like to use those to vouch for support to retain the links on these internal websites. Hence, the traffic sources report can be utilized to enhance traffic to the website and allow user-friendly seamless access path to information on the website.

Library websites provide a lot of information about the service, about the library hours, any new features added, maintenance related announcements, etc. Website visitors may overlook such information if it is not very obvious or if it is cluttered amidst a lot of text and links. The respondents of the study observed a feature of Google Analytics called “site overlay”, which was considered a user-friendly way of visually identifying issues within the website. Again, the usefulness of site overlay is not properly emphasized in the literature. Site overlay could be helpful for a visual presentation of data superimposed on the webpage. Such a feature is especially useful if the management would like to have a visual representation of the data filtered on the basis of links present on the page.

6.3 Factors Affecting Web Analytics Use in Libraries

This section identifies the factors affecting web analytics implementation and their use in library decision-making. Clear and concise representation of URLs without making it too long is one of the factors that can lead to possible interpretation of analytics reports. Usually library websites are multi-purpose in terms of the multiple things that the visitor could do on it, such as visiting database, searching articles, checking e-journals, etc. Sometimes there could be redundant links. Redundancy and ineffective naming of links on the website can lead to confusion, such as multiple links may end up on the same target page or the same page may be represented by multiple links. It is hence important that libraries form a naming convention for the links in the website that relates to the content of the page. Interpretation of the reports by looking at the URLs is easier when the URLs reflect the page it represents.

Another factor affecting web analytics use is the multiple users and their intentions and motivations to use the library website. Users of academic libraries have varied profiles and motivations for which they visit the website. An academic library user is frequently involved in collaborative information seeking and sharing via multiple computers, and the faculty and librarians may have considerable influences on student behaviour. Metrics of user activities must be interpreted while keeping in mind the various contexts of users’ actions and the population that the website serves. Jansen (2009) emphasized the importance of context and population in web analytics research. Further, libraries have many pages offering multiple resources and services across its

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1 The “site overlay” feature of Google analytics has been replaced by “in-page analytics”. See http://searchengineland.com/google-analytics-goodbye-site-overlay-hello-in-page-analytics-53060
many branches. As a result, interpreting user activity by assigning meaning to the metrics is very complicated. More details in the analytics reports, rather than disjointed figures can make interpretation of the metrics easier. More studies need to focus on the various metrics that should be further developed based on the library’s needs.

External environment can be another factor that determines web analytics use, such as high technological volatility determines visitors’ changing information habits. Web analytics should understand the changing trends in user behaviour on the website or any major shifts in users’ access behaviour within the website, such as any shifts from searching of information to clicking through the various links to the information or shifts in usage of the OPAC to the database. Web analytics reports on the keywords used to access the library website can also help to understand the visitors’ information seeking behaviour, specifically their information needs. Waller (2009) urged libraries to realize the untapped potential of analytics tool for interpreting visitor behaviour.

Library management supports a holistic use of web analytics. Employee motivation to use analytics reports is also an important factor for a successful implementation of web analytics in academic libraries. Manuel, Dearnley, and Walton (2010) also pointed out that continuous improvement for websites need senior management support. There is a tendency of libraries to stick to their traditional ways of operating, hence creating much resistance to any new technology. Proper guidelines for implementation of web analytics for libraries need to be provided. Libraries also need to be cautious about where to draw the line when it comes to using analytics for decision-making. More studies are required on web analytics use for academic libraries that will help in identifying best practices for libraries. Eventually, a web analytics tool solely for the purpose of libraries can be useful. Additionally, benchmarks of good performance could be established. Such a tool can further be enhanced according to the evolving needs of the libraries.

7. Conclusion
This case study attempted to identify the usage of web analytics as a tool on the academic library website. An additional contribution of this study is that it looks at the usage of web analytics from the perspective of the web usability committee formed to take decisions on improving the library website. The committee’s reflections were collected in an interactive group interview, where the respondents were shown the Google Analytics reports for the past semester and the related discussions. Qualitative analyses of the reflections were done. Four themes emerged—decisions about services, decisions about web design, library’s interest in user-behaviour, and challenges of web analytics use for the library. The decisions about services and decisions about web design brought forth aspects of analytics that are identified as useful for making decisions about library services and library’s web design, respectively, as per the opinion of the committee. It also explained the detailed aspects of the committee’s inclination to use analytics for interesting behavioural elements of the visitors of their website. Finally, challenges of web analytics use for the library include the management, policy, and other related factors that pose a challenge to a full-fledged use of analytics. Discussions point out the aspects of the current use of web analytics, areas where web analytics has not been used yet, and factors that affect web analytics use in academic libraries.

Findings in this study are based on investigations in one American based academic library where GA was implemented. Though the analytics solution had much functionality, it was not fully utilized. Future studies could look at the human information behaviour perspective that inquires how analytics can be useful as a tool for learning about users’ information, seeking process at a broader level. Google Analytics is
constantly upgrading its features. This study was conducted over a period of two years, during which many features were added. More studies involving the latest analytics solutions in a library setting are required across the world. World’s perspective to the use of web analytics for academic libraries also needs to be considered. The view of developing countries on the use of WA in the library decision-making is also an important point of consideration.

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Contribution of SAARC Nations towards World Digital Library (WDL)

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Abstract

Digital library development, since its inception in the 1990s, has made significant progress so far. Although there is still a long way to go before reaching their full potential, digital libraries are maturing. Hundreds of millions of dollars have been invested in digital library (DL) research. World Digital Library (WDL) is an internet-based, freely available resource to discover and study cultural collection from around the world. The collection includes manuscripts, maps, rare books, musical scores, recordings, films, prints, photographs, and architectural drawings, among others. The resources can be browsed by place, time, topic, type of item as well as contributing institution. The paper is an attempt to explore and analyze the contribution of SAARC Nations to the World Digital Library.

Keywords: Digital library, Digital preservation, Digital collection, World digital library, SAARC Nations, Manuscripts, Rare books
1. Introduction

Libraries are preserving resources since many centuries with little change in their role. Technological developments have an intense impact on library resources. It challenges the role of librarians in preserving digital materials. Libraries are currently in a transition period from print to digital collections. Traditional libraries are changing to digital libraries. Some libraries are already transformed into digital libraries (Moghaddam, 2010). Smith (2001) (as cited in Alhaji, 2008) defined digital library as an organized and focused collection of digital objects, including text, images, video and audio, with the methods of access and retrieval and for the selection, creation, organization, maintenance, and sharing of collection. The digital preservation of valued information resources opens up new avenues of access, use, and research and is an important aspect in the development of digital libraries. According to Gbaje and Mohmmed (2013), the term “digital preservation” refers to preservation of materials that are created originally in digital form and have never existed in print or analogue form, and the use of imaging and recording technologies to create digital surrogates of analogue materials for access and preservation purposes. Oehlerts and Liu (2013) defined “digital preservation” as the conscious effort to maintain the integrity and authenticity of the master digital object and its accompanying files by creating a preservation plan and periodically reviewing the digital files to identify and correct any degradation. Thus, digital preservation permits the users to read rare or unique documents without damaging the original work and makes the documents more accessible, e.g., it let the users to search the full text of the documents or serve more users from remote locations. Digital libraries have fascinated almost all the developed and developing countries by contributing to many digital preservation projects. The World Digital Library is in the forefront of digital preservation of numerous important and rare documents from all over the world. World Digital Library (WDL) is a resource to search primary sources from countries and cultures around the world. It includes examples of “manuscripts, maps, rare books, musical scores, recordings, films, prints, photographs, and architectural drawings”. The Library of Congress worked with several countries in forming this database by setting up digitization centres in Brazil, Egypt, Iraq, and Russia (Knight, 2010). All resources on the World Digital Library may be searched by a variety of methods. An interactive map permits the end user to simply click on a geographical area (North America, Latin America and the Caribbean, Europe, Middle East and North Africa, Africa, Central and South Asia, East Asia, Southeast Asia, or Oceania and the Pacific) to easily access any relevant resources (Millard, 2013). The present study is an attempt to assess the contribution of SAARC Nations to World Digital Library.

2. Problem

With the rapid popularization of electronic documents, electronic publications, web resources, and network communication, more and more libraries, archives, and information centres have begun to collect, preserve, and access digital resources from one’s desktop or mobile computing device at just one click. There are many digital libraries that have fascinated almost all the developed and developing countries due to their dynamic role in digital preservation of resources and the WDL is not any exception to it. World Digital Library (WDL) is an internet based resource presenting, in a multilingual format, significant primary documents from countries and cultures around the world, regardless of time period. Thus, the study is an attempt to assess the contribution of SAARC Nations to World Digital Library.

3. Objectives

- To assess the contribution of SAARC Nations to the collection of World Digital Library (WDL).
To identify various parameters on the basis of which the digitized resources are categorized in WDL.

To carry out statistical analysis of various resources on the basis of the identified parameters.

4. Methodology
An online survey was done to accomplish the objectives. Homepage of World Digital Library was accessed to explore and analyze the categorization of digital resources in the library. Each country was browsed separately to carry out the statistical analysis of the resources.

5. Scope
World Digital Library has a digital collection of thousands of resources from almost all the countries of the world. Keeping the time constraints in consideration, the contribution from SAARC Nations to the Library was explored and analyzed.

6. Review of Literature
The domain of digital libraries is at the intersection of many disciplines and fields, including data management, information retrieval, library sciences, document management, information systems, the web, image processing, artificial intelligence, human-computer interaction, archiving, and digital curation. Libraries prefer digital collections for copious reasons, such as digital journals can be linked, indexed, and abstracted universally any time, the library can get usage statistics that are not available for print collections, require less space, and are easy to maintain. When whole processing and space costs are taken into account, electronic collections may also result in overall reductions in library costs. Jeng (2005) reveals in his paper that digital library development, since its inception in the 1990s, has made significant progress so far. Although there is still a long way to go before reaching their full potential, digital libraries are maturing. Hundreds of millions of dollars have been invested in Digital Library (DL) research since the early 1990s. Research has showed the importance of DL in education, but there is a lack of investment in supporting teaching and learning through DL. Such research investment is of ongoing importance in the United States and other nations (e.g., Australia, China, India, Japan, and many European nations) where significant DL development is being undertaken.

According to Gbaje and Mohmmed (2013), digital preservation is the process of active management of digital objects to ensure their accessibility in the future. Digital materials can be preserved by finding ways to represent what was originally presented to users through a combination of computer software and hardware. Oehlerts and Liu (2013) explained that digital preservation is the conscious effort to maintain the integrity and authenticity of the master digital object and its accompanying files by creating a preservation plan and periodically reviewing the digital files to identify and correct any degradation. Digital preservation includes, but is not limited to, mitigating any degradation by providing multiple copies of the original file, monitoring format and technology changes, which may require the migration of the digital masters to another format, and including all stakeholders in the preservation decision-making processes. Kalusopa and Zulu (2009) divulges that preservation is an umbrella term under which most librarians and archivists cluster all the policies and options for action, including conservation treatments of different formats of information materials. Digital material preservation, therefore, is a way of preserving information materials referring to digital surrogates created as a result of converting analogue materials to digital form (digitization).

Sen, Dutta and Das (2007) in their research have discussed the development of digital library initiatives in South Asia, particularly in India. They comment that large volumes of cultural
heritage resources (documentary) are on the verge of extinction due to lack of preservation, non-availability, rarity, and natural decay. Bansode (2008) highlights the importance of manuscripts available in India and making them accessible by creating a digital library. He mentioned about the manuscripts available at Shivaji University, which has very rich collection of rare materials and manuscripts donated by different personalities. It has nearly 8,000 rare manuscripts preserved in the archival cell of the library.

The National Library of China started and completed its digital library system, aimed at demonstrating the life cycle of its digital resource collection. The system provided reference implementation for digital resource retrieval, metadata collection, resource distribution and selection, user interface design, and indexing and searching across different library systems (Zhen, 2010). Cole (as cited in Burrows, 1999) found that the University of Sydney Library, under a project named Scholarly Electronic Text and Image Service (SETIS), provides a range of commercially and locally produced texts including more than 100 Australian literary works from the nineteenth to early twentieth centuries. It also provides facilities for creating and manipulating electronic literary texts.

The University of California at Berkeley is in the forefront of digital library innovation for many years and has completed many projects, including the creation of specifications for encoding electronic finding aids that are used to access special collections. It has also become a significant resource for digital library researchers and developers worldwide. It also accomplished project named as SunSITE (Sun Software, Information, and Technology Exchange) that has provided catalogues and indices to electronic content, links to significant digital collections, digital library information resources, links to significant digital library research and development, information on tools used to build digital libraries (Sun Microsystems, 2002). Poll (2010) reveals that NUMERIC, a project of the European Commission that started out to define measures and methods for assessing the current state of digitization in Europe’s cultural institutions (archives, libraries, and museums), found that only about 19 percent of the analogue collections in cultural institutions have been digitized till now and at least 50 percent of the analogue collections in cultural institutions are still waiting for digitization, while remaining 30 percent of the institutions do not plan digitization. Kalusopa and Zulu (2009) found weak policy formulation on digitization both at the institutional and national levels, weak legislative framework for digital preservation, ill-defined national digitization coordination for digitization activities at institutional, national, and regional levels, lack of awareness about digital preservation by national heritage institutions, a dearth of human resources for digitization, and a lack of common standards on digital heritage materials preservation in Botswana. According to Krtalic and Hasenay (2012), different issues necessary for successful preservation management are brought together within these components, such as policies and strategies, financial issues, legal regulations, knowledge and competences, preservation methods and techniques, user needs, and the cultural and social impact of preservation.

Knight (2010) highlights that UNESCO’s World Digital Library (WDL) is a resource for those interested in searching primary sources from around the world. As indicated by the site, there are examples of “manuscripts, maps, rare books, musical scores, recordings, films, prints, photographs, and architectural drawings”. Part of the impetus for this project was found in the inability of developing countries to adequately digitize and preserve their cultural history. The Library of Congress worked with several countries in forming this database by setting up digitization centres in Brazil, Egypt, Iraq, and Russia. The Bibliotheca Alexandrina, the National Library of Brazil, the National Library and Archives of Egypt, the National Library of Russia, and the Russian State Library partnered with UNESCO and the
Library of Congress to provide content. Millard (2013) reveals that WDL is truly an internet-based, freely available resource that makes it possible for any researcher to discover, study or simply enjoy cultural treasures from around the world. These treasures include manuscripts, maps, rare books, musical scores, recordings, films, prints, photographs, and architectural drawings, among others. As of January 2013, there were 6,627 items in total to consult, but now it has increased to 9742 items (July 2013). There are other ways also to search the collection. From a bar on the top of the page, the researcher can browse the results by place (large geographical area only), time (e.g., 8000 BCE-499 CE, 500 CE-1499 CE, 1500 CE-1599 CE), topic (e.g., arts and recreation, history and geography, religion, social sciences, etc.), type of item (books, journals, manuscripts, maps, motion pictures, newspapers, prints and photographs, and sound recordings), and by contributing institution.

7. Data Analysis and Interpretation
World Digital Library (WDL) is an international digital library that promotes intercultural understanding, expands the volume and variety of cultural content on internet, and provides access to a total collection of 9742 items currently. The present study is an attempt to assess the total contribution of SAARC nations towards WDL through various parameters, namely, (i) Time, (ii) Topic, (iii) Type of Item, (iv) Language, and (v) Institutions.

It is observed that out of the total contribution of SAARC nations towards WDL, most of the resources preserved belong to the time of 1850CE-1899CE, i.e., 205 forming 2.10 per cent of the total collection of the WDL. This is followed by 66 resources (0.68 per cent of the total collection of WDL) from 1800CE-1849CE, 43 resources (0.44 per cent of the total collection of WDL) from 1500CE-1699CE and 1900CE-1949CE each, and 37 resources (0.38 per cent) from 1700CE-1799CE. 34 resources belong to the time of 500CE-1499CE, which forms 0.35 per cent of the total collection of WDL. Only 11 resources (0.11 per cent) belong to 8000BCE-500CE and only five resources (0.05 per cent) belong to 1950CE-2010CE. (Table 1)

WDL categorizes the collection of SAARC countries in 10 different topics in general, other than the additional subjects which are different

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<td>37</td>
<td>66</td>
<td>205</td>
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</table>

*The numbers in parenthesis denote the percentage calculated on the total collection of WDL, i.e., 9742 items
*BCE – Before Christian Era, CE – Christian Era
for each country. It is evident from above table that a total of 1354 resources (13.90 per cent of total collection of WDL) belong to ‘Additional Subject’ category. Among the ten topics, 257 resources (2.64 per cent) belong to ‘History and Geography’, followed by 66 items (0.68 per cent) from ‘Arts and Recreation’. 42 resources (0.43 per cent) belong to ‘Social Sciences’, followed by 31 resources (0.32 per cent) from ‘Literature’ and 26 items (0.27 per cent) from ‘Religion’. 9 resources (0.09 per cent) belong to ‘Technology’, followed by 5 items (0.05 per cent) in ‘Science’. 4 resources (0.04 per cent) belong to ‘Language’, 3 resources (0.03 per cent) belong to ‘Philosophy and Psychology’ and only one item (0.01 per cent) belongs to ‘Computer Science, Information, and General Works’. (Table 2)

The above table shows that among the four types of resources contributed by SAARC countries in WDL most of the items belong to prints, photographs (157), which form 1.61 per cent of the total collection of WDL. This is followed by maps (78), which form 0.80 per cent of the total collection available in WDL. 76 resources (0.78 per cent) are in the form of books and 47 resources are in the form of manuscripts which form 0.48 per cent of the total collection of WDL. (Table 3)

It is ascertained from the above table that 152 resources (1.56 per cent of the total collection

<table>
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<tr>
<th>Country</th>
<th>History and Geography</th>
<th>Arts and Recreation</th>
<th>Literature</th>
<th>Religion</th>
<th>Science</th>
<th>Social Sciences</th>
<th>Technology</th>
<th>Language</th>
<th>Additional Subjects</th>
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<td>15</td>
<td>16</td>
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<td>Total</td>
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<td>31</td>
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<td>5</td>
<td>42</td>
<td>9</td>
<td>4</td>
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*The numbers in parenthesis denote the percentage calculated on the total collection of WDL i.e., 9742 items
of WDL. The collection of SAARC nations includes seven resources (0.07 per cent) in Latin, followed by three items (0.03 per cent) in Portuguese and Brahui each. Two resources (0.02 per cent) are available in Hindi, Chinese, and Sanskrit each and only one item (0.01 per cent) is available in Chagatai, Marathi, Tamil, and Punjabi languages each. (Table 4)

There are 10 different institutions through which SAARC nations contribute their resources to WDL. Among these 10 institutions, Library of Congress contributes highest number of resources, i.e., 284 from eight SAARC nations forming 2.92 per cent of the total collection of WDL. This is followed by Brown University Library contributing 34 items (0.35 per cent). 17 items (0.17 per cent) are contributed by Government College University, Lahore followed by Allama Iqbal Library, University of Kashmir contributing seven items (0.07 per cent). Walters Art Museum contributes four resources forming 0.04 per cent of the total collection available in WDL. Bibliotheca Alexandrina, National Library of Brazil, and Qatar National Library contribute three items each forming 0.03 per cent of the total collection of WDL. University Library in Bratislava contributes two resources (0.02 per cent) while Yale University Library contributes only one item, i.e., 0.01 per cent of the total collection of WDL. (Table 5)

8. Conclusion

The World Digital Library, the cooperative project of the Library of Congress, the United Nations Educational Scientific and Cultural Organization (UNESCO), partner libraries, archives, and educational and cultural institutions from the United States and around the world brings together a single website comprising rare and unique documents including books, journals, manuscripts, maps, prints and photographs, films, and sound recordings, covering the various aspects of the world's culture. At launch, in April 2009, the library had 1,236 items, by November 2012 the items were raised to 6,506 and at present (Jan 12, 2014) there are about 9,742 items. Amongst the total items in World Digital Library, the contribution of SAARC nations is so far only 358 items (i.e., only 3.67 per cent of the total collection of WDL) covering various subjects, such as History and Geography, Arts and Recreation, Literature, Religion, Science, etc. The contribution of SAARC nations is not too promising. Only Afghanistan, India, and Pakistan are paying some concern to increase their contribution towards WDL instantly while the rest of the five countries, Bangladesh, Bhutan, Maldives, Nepal, and Sri Lanka seem least concerned about the preservation of their valuable resources in WDL.
Table 4: Assessment of SAARC nations towards WDL through language

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<tr>
<th>Country</th>
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(1.56) (0.46) (0.17) (0.13) (0.12) (0.07) (0.01) (0.13) (0.03) (0.02) (0.02) (0.01) (0.01) (0.01) (0.03)

* The numbers in parenthesis denote the percentage calculated on the total collection of WDL, i.e., 9742 items
Table 5: Assessment of SAARC nations towards WDL through institutions

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<td>(0.17)</td>
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<td>(0.01)</td>
</tr>
</tbody>
</table>

* The numbers in parenthesis denote the percentage calculated on the total collection of WDL, i.e., 9742
References


Sun Microsystems (2002), SPARC Assembly Language Reference Manual, Santa Clara, California

Emerald teams with the Gates Foundation's Global Libraries initiative to promote research

Emerald Group Publishing set up an informal arrangement with the Bill & Melinda Gates Foundation's Global Libraries initiative, which aimed to provide public access to information through computers in public libraries. Under this arrangement, Emerald publishes the findings of the Global Libraries initiative on Impact Planning and Assessment and makes them freely accessible nine months post official publication. Global Libraries initiative are now hosting easy to read summaries of the eleven articles published in a special issue of Emerald's journal Performance Measurement and Metrics.

Source: http://www.emeraldgrouppublishing.com/about/news/story.htm?id=5088

Open Government Data Platform in India

Open Government Data Platform India is a joint initiative of the Government of India and the US Government. Open Government Data Platform India is packaged as a product and made available in open source for implementation by countries globally.

This platform supports Open Data initiative of the Government of India and is intended to be used by the Ministries/ Departments of the Government of India to publish datasets, documents, services, tools and applications collected by them for public use. It intends to increase transparency in the functioning of Government and also open avenues for many more innovative uses of Government Data to give different perspective. The entire product is available for download at the Open Source Code Sharing Platform "GitHub".

Open Government Data Platform India has 4 (four) major modules, Data Management System (DMS) – Module for contributing data catalogs by various government agencies for making those available on the front end website after a due approval process through a defined workflow; Content Management System (CMS) – Module for managing and updating various functionalities and content types of the Open Government Data Platform India Platform; Visitor Relationship Management (VRM) – Module for collating and disseminating viewer feedback on various data catalogs; and Communities – Module for community users to interact and share their zeal and views with others, who share common interests as that of theirs. All are implemented on a single Drupal instance – An Open Source based Content Framework Solution.

Source: http://data.gov.in/
Pranab Mukherjee Launches National Mission on Libraries

The National Mission on Libraries (NML) was set up by the Government of India at the Ministry of Culture in 2012, in pursuance of National Knowledge Commission’s recommendations for sustained attention for development of Libraries and Information Science Sector in India. In continuation of this initiative, the President of India launched the website of the National Mission on Libraries on 3rd February, 2014 at the Rashtrapati Bhawan. He stated that libraries are social institutions which are repositories of knowledge and information and its goal is to improve the society by helping individuals to access knowledge and understand the world of which he or she is a part. He expressed that the project of National Mission on Libraries would contribute substantially to quickening the pace of social and economic development of the people and extended his best wishes for the effective implementation of the project as also of the new scheme of “Upgradation of libraries providing services to the public.”

Source: http://rrrlf.nic.in/nml_launch.asp

UGC initiates e-PG Pathshala Project

The MHRD, under its National Mission on Education through ICT (NME-ICT), has assigned work to the UGC for development of e-contents in 77 different subjects at postgraduate level. The content and its quality is the key component of education system. A high quality, curriculum-based, interactive content in different subjects across all disciplines of social sciences, arts, fine arts & humanities, natural & mathematical sciences, linguistics and languages is being developed under this initiative named e-PG Pathshala.

Source: http://epgp.inflibnet.ac.in/about.php

NISO releases draft open access and Metadata indicators recommended practice for comments

The National Information Standards Organization (NISO) is seeking comments on the draft recommended practice Open Access Metadata and Indicators (NISO RP-22-201x). In January 2013, the NISO launched Open Access Metadata and Indicators Working Group to develop protocols and mechanisms for transmitting the access status of scholarly works, particularly to indicate whether a specific work is openly accessible and what re-use rights might be available. This draft recommended practice proposes the adoption of two core pieces of metadata and associated tags: <free_to_read> and <license_ref>. The first tag would indicate that the work is freely accessible during the specified timeframe and second tag would contain a reference to a URI that carries the license terms specifying how a work may be used. The draft recommended practice is open for public comment and one can download the draft or submit online comments, for this visit the Open Access Metadata and Indicators webpage at: http://www.niso.org/workrooms/oami/.

Source: http://www.dlib.org

International Conference on Digital Libraries: ICDL 2013

The International Conference on Digital Libraries (ICDL) 2013 was the fourth edition of ICDL, and its theme was 'Vision 2020: Looking Back 10 Years and Forging New Frontiers'. The Conference received an overwhelming response globally and was a huge success. The conference was attended by more than 600 professionals, including librarians, computer science
professionals, academicians, policy makers, and students from across the globe. The conference witnessed participation from more than 23 countries.

ICDL 2013 was inaugurated by the Hon'ble Vice President of India, Shri M Hamid Ansari. Dr M M Pallam Raju, the Hon'ble Minister for Human Resource Development, Government of India was also present on the occasion. Dr Ansari emphasized that knowledge creation and use will be the driving force in the 21st century for India’s socio-economic development. In this endeavour digital libraries will be a critical instrument as they would enable people to access, share and apply knowledge in a more efficient manner. The first day of the conference had six tutorials running parallel. On the next two days, the conference had several parallel Technical Sessions, nine Thematic Workshops-cum-Panel Discussions, poster presentations, exhibitions, and interviews sponsored by the government, and multilateral and bilateral organizations. The major recommendations of the ICDL2013 conference were as follows:

- National digital library platform that nations can adopt
- Digital deposit legislation
- Commission a national survey to assess the status of digital libraries development in developing countries
- Capacity and capability building through public and private sector partnership
- Harness digital library technologies for e-learning and open and distance learning
- National governments should fund and support policies, programmes for digital library development

International Conference on Asian Digital Libraries: ICADL 2013

ICADL 2013 brought a truly interdisciplinary group of researchers and practitioners of digital libraries with a focus on the theme of “Social Media and Community Networks”. The interdisciplinary group of professionals such as Library and Information Science; Computer Science; and Historians presented their papers covering areas like ontologies, mining, social networks, document classifications, information retrieval and so on. Out of total 87 entries, 21 papers and 10 posters were accepted for publication.
The event provided unique opportunities to participate in various innovative events like Talk a DL, where participants shared their success stories on DL; showcased Innovative Indian Digital Library Initiative IIDLI; took part in International level quiz Programme “Infoquiz 2013” and many more.

Prof. Rangappa, Vice Chancellor of Mysore University, emphasized the paradigm shift happened from print technology to digital which leads to information revolution. He also highlighted the importance of metadata, information retrieval and Interoperability.

Dr. Hansraj Bhardwaj, Governor of Karnataka, and Honourable minister, H K Patil, Rural Development and Panchayat Raj, Government of Karnataka, were also present on the occasion. Mr. H K Patil launched i-scholar platform developed for wider research community.
Forthcoming Events

13 - 15 January 2014
Digital Book World Conference & Expo
New York City, New York, USA

5 - 6 February 2014
APA International Conference on Digital Preservation and Development of Trusted Digital Repositories
New Delhi, India
Details available at <http://www.ndpp.in/APA-DPDTR-2014/>

18 - 20 March 2014
The Third International Conference on E-Learning and E-Technologies in Education (ICEEE2014)
Kuala Lumpur, Malaysia
Details available at <http://sdiwc.net/conferences/2014/iceee2014/>

10 -11 April 2014
International conference “Sustaining the networked future: Use and Reuse of Digital Content
Innsbruck, Austria
Details available at <http://books2ebooks.eu/eod2014>

19 - 20 June 2014
3rd Spanish Conference on Information Retrieval (CERI 2014)
A Coruña, Spain
Details available at <http://ceri2014.udc.es>
22 - 24 September 2014
The International Conference on Education Technologies and Computers (ICETC2014)
Lodz, Poland
Details available at <http://sdiwc.net/conferences/2014/icetc2014/>
Guide to Authors

World Digital Libraries is an international peer-reviewed biannual journal. The journal seeks quality research papers that present original theoretical approaches. It also seeks experimental case studies related to digital library developments, maintenance, and dissemination of digital information focusing on research and integration of knowledge at the interface of resources and development. The journal will, therefore, keep readers abreast with the current developments and contain articles, reviews, current developments, and case studies, encompassing the following areas.

- Theoretical and methodological issues that relate to the interrelationships among electronic resources management, digital preservation, multiple access, multilinguality, copyright issues, and security aspects.
- Theoretical approaches as well as experimental case studies related to digital library development and maintenance.
- Initiatives towards digitization through lucid case studies.
- Current developments across the globe.
- Dialogues between the scientific community and society at large.

Articles should examine concepts, analyses, and case studies of important issues in the field.

Book reviews should be of recent publications in the field, to be reviewed by an independent reviewer.

Commentaries should discuss critical issues in the field.

Submissions

Authors are requested to send a soft copy (in Microsoft Word format) of their contribution to the editor, either in a CD or as an e-mail attachment.

All submissions will be peer-reviewed using the criteria of originality, accuracy, and quality of contribution in these fields.

Presentation of manuscripts

Articles must be original, in English, and should not exceed 8000 words. The main text should be double-spaced with headings and subheadings clearly indicated in the text. All tables, figures, and equations should be numbered in Arabic numerals and clearly cited in the text. All measurements should be in metric (SI) units. The manuscript should be arranged in the order given below.

- Short title (10 words is the desired maximum length), subtitle (if desired)
- Author’s name, affiliation, full postal address, and e-mail, telephone, and fax numbers (respective affiliations and addresses for co-authors should be clearly indicated)
- Abstract (not exceeding 200 words)
- Main body of the text, suitably divided under headings
- Acknowledgements, if any
- References
- Appendices (each on a separate sheet)
- Tables (each on a separate sheet)
- Figures (each on a separate sheet)

Shorter items

The following shorter items are also welcome and must be typed in the same way as major articles.

- Commentaries (research notes and short communications) and case studies (maximum 5000 words)
- Book reviews (maximum 1200 words)

In-house style: references

In the text, the surname of the author(s) followed by the year of publication of the reference should be given, for example, (Hall 1993). In case of several publications by the one author or by a group of author(s) in one year, use notations ‘1993a’, ‘1993b’, and so on. Up to three authors can be mentioned in text references; more than three authors should be limited to the first three authors’ names followed by ‘et al’. References must be listed alphabetically at the end of the
paper (double spaced) and should conform to the following style.

For journals
Davis G R. 1990
Energy for planet earth
Scientific American 263(3): 55–62

For books
Carmichael J B and Strzepek K M. 1987
Industrial Water Use and Treatment Practices

For chapters of edited books
Sintak Y. 1992
Models and projections of energy use in the Soviet Union
In International Energy Economics, pp. 1–53
edited by T Steiner

For grey literature
Togeby M and Jacobsen U. 1996
How conflicting goals concerning environment and transport influence the policy process?
Paper presented at the Conference on Transport, Energy and Environment,
3–4 October, Helsingor, Denmark

WBCSD (World Business Council for Sustainable Development) and UNEP (United Nations Environment Programme). 1998
Industry, fresh water, and sustainable development
Details available at <www.gm-unccd.org/FIELD/Private/WBCSD/freshwater.pdf>, last accessed on 9 January 2004

Footnotes
Authors are requested to use as few footnotes as possible, and keep their length to the minimum. Footnotes should be indicated in the text by superior Arabic numerals, which run consecutively through the paper. They should be grouped in order of appearance at the bottom of the concerned page in numerical order and must be double-spaced.

Accepted manuscripts
On acceptance, contributors are requested to provide the editor the final version of the article in soft and hard copy. Please observe the following instructions.
- Tables, figures, illustrations, should be on separate sheets.
- Retain a back-up disc for reference and safety.

Proofs
One set of proofs will be sent to the author before publication, which should be returned promptly within 48 hours of receipt. Authors are urged to check the proofs carefully as late corrections cannot be accepted.

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Apart from one free copy of the journal to the authors, 10 free offprints will be supplied to the first author. Further offprints and copies of the journal can be purchased at a reasonable cost, if ordered when sending the final copy of the article, or when returning the proofs.

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