LIBRARY PORTAL OF MAHATMA PHULE KRISHI VIDYAPEETH
RAHURI: A CASE STUDY

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Abstract:

Library portals are important vehicles by which to support the information needs and uses of library patrons. These systems provide users with convenient, personalized Web-based access to a comprehensive collection of information resources of relevance and authority. Moreover, library portals support a broad range of information seeking activity from browsing to search, provide mechanisms for communication and collaboration, and facilitate knowledge creation and sharing – all through a usable, intuitive interface. Research and education are progressive with the paradigm changes in the valuable services offered by the Libraries. The spectrum of electronic resources required for research and the necessity of customizing them for use have contributed to the design and function of Library Portals. These portals contain gateway functionality and also provide tools for organized knowledge discovery. The paper highlights the concept of library portals and information architecture and the relationship that exists between the two concepts. Also paper illustrates the features and proactive role of the University Library Portal of the Mahatma Phule Krishi Vidyapeeth Rahuri in enhancing the quality of research.

Key words: Library Portal, MPKV, University Library, e-Resources

INTRODUCTION:

The library portal arena offers clients opportunity to browse and sieve resources which promise to be useful for their research work and other things they may need the information for. Clients stumble upon a myriad of information while on the library portal and some of the information are not
useful to them due to the manner in which the resources are linked and made available on the portal. Sometimes, priorities are misplaced and information is uploaded on some library portals which are not meant to serve the immediate needs of the library clients. Library portals are meant to bridge the gap between the clients and the cumbersome method the traditional setting of information location offers. [Sadeh and Walker, 2003]

The current process of accessing several resources for the sake of seeking information is cumbersome and requires some knowledge of the various resources, their access mechanisms, the query interface they provide, and the type of results they return. Library portals have tremendous roles to play in the present age and here comes in the information architecture aspect and who plays the role. Information architecture is the arrangement of information in classes which they belong; classification of information in an orderly manner. Librarians are trained classifiers of information – they catalogue and classify, in which case they are termed ‘cataloguer librarians’. The role of librarians as Information Architects cannot be overemphasized, more so relating it to library portals design.

The demands of the contemporary society have become highly selective and expect customized information, are it either about products or services. Reaching out to such demands successfully has become possible through mechanisms namely ‘Portals’. Michael Looney and Peter Lyman define them as: “Portals gather a variety of useful information resources into a single, ‘one-stop’ Web page, helping the user to avoid being overwhelmed by ‘info glut’ or feeling lost on the Web”. Academic users of portals seek valuable services provided by the Libraries to the academic community which select and organize information resources that support research and education. Library portals in the digital realm enhance the value and function of electronic resources with the facility of searching multiple resources.

LIBRARY PORTALS:

There has been considerable interest and research activity in library portals in recent years. At the end of 2000, a special issue in Information Technology and Libraries (ITAL) journal was devoted to the topic. There, library portals were defined as “user-centered, customizable interfaces to collections of library resources” (Morgan, 2000, p.166). Such a description emphasizes the need to build robust interfaces to library resources – interfaces that address the information needs and uses of patrons through personalization of information content tailored to individual preferences. As libraries create, license, or negotiate access to more and more digital content, the need for such easy-to-use interfaces becomes increasingly important (Pasquinelli, 2002).
“A library Web portal has the potential of changing how libraries are used and how librarians will do their work. These portals have the potential of bringing about real change to our professional and organizational culture. These changes will enable libraries to be customer centered. Systems and processes will be based on dynamically linked and scalable databases that will enable library staff to concentrate on content delivery and teaching. These trends will inevitably enhance the academic library’s ability to deliver positive learning outcomes to customers and stakeholders.” (Lakos and Gray, 2000, p. 169).

There are variations in the literature on the agreement over what constitutes or differentiates a library portal from other library Web initiatives, such as a Web-based front-end to a library catalogue. According to Pasquinelli (2002):

“Library portals typically include an online catalog of materials as well as gateways to collections of digital resources accessible to the user. Broadcast search tools allow library users to search all of these sources simultaneously with a single query. Portals may include electronic reference services (“ask a librarian”), personalization features (“my bookshelf,” custom intelligent searches), and other research tools. Enriched content, such as author biographies and book reviews, tables of contents, and jacket images can be provided to supplement the online catalog. Some libraries have built interactive features into their portals, allowing development of virtual communities.” (Pasquinelli, 2002, p. 24)

OBJECTIVE

This paper plans to visualize the proactive role of the M.P.K.V’s Library Portal of taken up as a case study.

University Library Portal of MPKV:

Mahatma Phule Krishi Vidyapeeth Rahuri has an institutional portal which furnishes information to its stakeholders in a wider perspective pertaining to its mission and motto. Library services forming a component of the portal provide a link to all the Campus of the University. MPKV Campus which caters to the academic needs of the Agricultural Education has an exclusive Library Portal. This portal is at present accessible in the intranet only. Efforts had been taken to satiate the needs of the academic science community; a one stop point wherein the researcher saves much of his precious time to look for what he/she requires most importantly and urgently – starting from the basic Library Info to specialized electronic resources such as Subject Gateways.
The following illustrates the facets of the Campus Portal.

**Library Info**

- **About Library:** Provides information about the Librarian, History of Library, Introduction of Library, Building, Library Collection, Library Section, Opening Hours, Borrowing eligibility, Library staff of the Library.

- **Services:** Both traditional services and value added electronic information services are listed to give an overview of the library services offered.
• **News & Events**: Information regarding forthcoming Seminars, Conferences or Workshops organized by the Departments of the Campus, Orientation programmes for Research scholars, Refresher courses for faculty etc are periodically furnished.

• **Photo Gallery**: Displays an image gallery of the events organized by the Library such as Workshops, Orientation programmes, Faculty interaction programmes and also those associated with the Librarian who spearheads & participates in various events.

• **Training**: Provides different Workshop and training session organized by the university.

• **Publication**: Provides the latest publication details from the Research Scholar and from the teaching staff.

• **Rules**: Provides the rules and regulation of the Library.

**Search Facility**

• **Member Status**: The Library members could check out the transactions, about what documents are due to be returned and could renew the borrowing period from their desktop without having to walk into the Library.

• **Books/Theses**: Members have the OPAC accessible in the intranet to search for the books they require the no. of copies available; locate theses by various parameters such as by the Guide, Author, Keyword, Title, Accession no etc. A detail of submission from which Department and whether it is a doctoral or B.Tech, M.tech. dissertation is also indicated. University being a research institution, a lot many searches are done for Theses.

• **Journals Subscribed**: The currently subscribed print journals and the archive of subscribed journals can be searched for availability with details of missing volumes and the receipt date of latest issues. This enables the user to know if the current issue is displayed for use thus saving his precious time.

• **Online Journals and Databases**: The electronic resources under the ICAR, CeRa consortia both electronic journals and databases can be searched alphabetically, by subject coverage or by publisher. The links created at the portal for journals in the consortia (over 2939 e journals) helps the user to access the homepage of the journal right away and download the full text articles required. There has been an overwhelming appreciation for this facility because of the ease at which they can access electronic resources.
Details of the Catalogue theses of different Disciplines (relating to the departments of the Campus) and the themes on which electronic resources are compiled are listed below.

- **Agricultural Engineering**
- **Agricultural Chemistry**
- **Agricultural Extension**
- **Agricultural Microbiology**
- **Agronomy**
- **Animal Sci. & Dairy Science**
- **Biochemistry**
- **Economics**
- **Food Sci. & Technology**
- **Horticulture**
- **Irrigation**
- **Meteorology**
- **Plant Breeding**
- Plant Pathology
- Plant Physiology
- Seed Science
- Soil Science

**Open Access Resources:** In the light of the open access movement gaining ground globally, it was felt that open sources of journals, directories, tutorials, PowerPoint presentations, Conference proceedings etc provide a rich supplement to research.

**Other Resource Links:**
Links to important URL’s, CeRa, J-Gate, Krishiprabha, e-Granth, Indiastat.com which are time again required to be accessed to apply for projects etc. also serve as quick access points.

**METHODOLOGY**

The data required to be uploaded on the portal is done periodically. Constant scrutiny, reviewing, evaluation of resources, removing dead links forms the back-end tasks. Focus areas on specific themes are arrived at with several discussions with the respective faculty and scholars and also as a result of the queries received time and again to furnish details. Open sources, several institutions like universities who give access to resources are given links to. Internet indeed has been a major highway to cull out the required information after constant evaluation of the resources.

**Librarian’s Role**

Academic Librarians play a major role in evaluating and organizing the content created in the Campus portals in tune with their parent institutions. Right from planning to implementation, knowledge about copyright, expertise in creating customized web-based information delivery systems are several of the skills that they display.

In tune with these skills the Library personnel of the University Library MPKV too have exercised keen interest in determining what is valuable with more scholarly focus to support the academic programs offered by the Campus.

**Future Plans**

The Library intends to build up an Institutional Repository (IR) of the research output of the Campus of Journal articles, Research Reports, Conference Proceedings Lecture material and also the Theses and Dissertation, and the work is going on and it will be available to user very soon. Being a institution of higher education the need for an IR is deemed essential. The Library personnel have undergone training with the required software to establish an IR and progress in this direction would enhance the visibility and use of the institutional research output.
CONCLUSION:
The University Library of M.P.K.V. Library portal was an initial attempt to customize the existing resources like the library catalog, commercial full text databases, electronic journals, Subject Gateways etc accessible in the intranet. More resources tailored to the user requirements would be added as and when possible.

Next move would be to integrate all the four Campuses of the University of Madras for a cooperative effort to share their respective areas of strength. This would enrich the level of content in the institutional portal environment. Library portal would translate to Scholarly portals leading users to discover the depth of information at their fingertips.

REFERENCES:

RESEARCH TRENDS IN INDIAN JOURNAL OF MARINE SCIENCES (2001-2010): A SCIENTOMETRIC STUDY

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ABSTRACT
This scientometric study covers 506 papers published during 2001-2010 in the Indian Journal of Marine Sciences using tools such as exponential growth, co-authorship index, publication efficiency index, collaboration index and research length index. Pattern of co-authorship indicates the world average for the multi authors. India is the most producing country to the journal literature. Review articles have attained the higher value of PEI.

Keywords: Bibliometrics, Growth Rate, Co-authorship Pattern, Relative Research Effort, Multi Institute Collaboration, Relative Length Index

INTRODUCTION
Science and Technology is playing a vital role for the development of India’s growth in all respects. Though there have been some shortfalls, India has made substantial progress in high rates of economic growth, research and development, considerable food security, substantially high average life expectancy, growing literacy rates, success in higher education, etc.

The assessments of research output of various fields are increasing in recent years. The term Scientometric often used with the same meaning as the Bibliometrics originated in Russia. Using Scientometric indicators for the quantitative analysis of the published literature and for decision-making is constantly on the rise resulting in the rapid growth of Scientometric studies.

Indian journal of Marine Sciences has been published by National Institute of Science Communication and Information Resource, New Delhi (India) since 1972 as quarterly publication. This multi-disciplinary journal
publishes full papers and short communications in marine biology, marine chemistry, marine geology, physical oceanography, ocean engineering, marine instrumentation, marine corrosion and material science, satellite oceanography & modeling, marine engineering, marine pollution, marine archaeology, coastal zone management.

**REVIEW OF LITERATURE**

A few studies have been carried out in the past related to the some of the important journals in the field of science. Jeyshankar, Rameshbabu and Gopalakrishnan\(^1\) have analysed the research productivity and citation pattern in current science journal. The study covered period from 2002-2006 and covered 4318 articles and 69976 citations given in the 110 volumes, Authorship pattern, types of publication, year-wise distribution and country-wise distribution etc.

Raghuraman and Chander\(^2\) were compared research performance of Indian institutions with foreign institutions on selected bibliometric parameters. A more recent study compared overall S&T publications output of India, China, and South Korea across 20 broad subjects as defined by Scopus bibliographical database. Jeyshankar, Ramesh Babu and Rajendran\(^3\) have studied and analysed the research out of CSIR-Central Electro Chemical Research Institute (CECRI) for the period of 10 years (2000-2009).

Neeraj Verma and Rajnish Tamrakar\(^4\) analyzed the papers of Defence Science Journals published during 1997-2006 and found that more than 60% of the papers were published in range of 6 to 10 pages. Bakri and Willet\(^5\) conducted a bibliometric study on Malaysian Journals of Computer Science published during 1996-2006 to map the country of affiliation to the journal.

The present study is to analyse the authorship and collaboration pattern, length of papers and distribution of reference of the contributions of Indian Journal of Marine Sciences published for the period of 2001-2010.

**OBJECTIVE OF THE STUDY**

The main objective of the study is to highlight the publication trends of Indian Journal of Marine Sciences using Scientometric tools and methods. The following are the objectives of the present study.

- To examine the growth of literature published during 2001-2010;
- To examine and analyse the authorship pattern in Marine Sciences;
- To study the multi institute collaboration in Marine Sciences and
- To study and examine the page wise literature output.

**Hypotheses**

The following are the hypotheses formulated for this study:

- Research productivity in marine sciences is comparatively higher in developed countries.
- There exists a significant level of difference in contributions in Indian Journal of Marine Sciences by the Indian scientists and scientists of other countries.
Collaborative research dominates in contributions in Indian Journal of Marine Sciences.

Methodology

Indian Journal of Marine Sciences has been selected as a source for the present study. Forty issues of ten volumes from 2001-2010 have been taken into consideration for the present study and information on author, references, pages, author’s affiliations and geographical indications for each paper have been collected and entered into a spreadsheet. The collected data has been analyzed with the MS excel spreadsheet and presented in the form of tables. Further, scientometric indicators such as Exponential Growth, Co-Authorship Index, Publication Efficiency Index and Activity Index have been employed to analyze the data.

Scope and Limitations

Being the source journal publishes various kinds of literature; the present study is limited to research papers, reviews and short communications published during 2001 - 2010.

Data Analysis and Discussion

Growth of Literature

Table 1 reveals the growth of research literature appeared in the Indian Journal of Marine Sciences. A total of 506 research papers (with an average of 50 papers per year) have been published in the source journal during 2002 - 2010. The analysis shows the declining trend of literature during 2001- 2006 and thereafter there is an increasing trend.

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Year</th>
<th>Papers</th>
<th>Percent</th>
<th>Cumulative Percent</th>
<th>Exponential Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2001</td>
<td>42</td>
<td>8.3</td>
<td>8.3</td>
<td>--</td>
</tr>
<tr>
<td>2.</td>
<td>2002</td>
<td>54</td>
<td>10.7</td>
<td>19.0</td>
<td>1.29</td>
</tr>
<tr>
<td>3.</td>
<td>2003</td>
<td>52</td>
<td>10.2</td>
<td>29.2</td>
<td>0.96</td>
</tr>
<tr>
<td>4.</td>
<td>2004</td>
<td>47</td>
<td>9.3</td>
<td>38.5</td>
<td>0.90</td>
</tr>
<tr>
<td>5.</td>
<td>2005</td>
<td>44</td>
<td>8.7</td>
<td>47.2</td>
<td>0.94</td>
</tr>
<tr>
<td>6.</td>
<td>2006</td>
<td>41</td>
<td>8.1</td>
<td>55.3</td>
<td>0.93</td>
</tr>
<tr>
<td>7.</td>
<td>2007</td>
<td>42</td>
<td>8.3</td>
<td>63.6</td>
<td>1.02</td>
</tr>
<tr>
<td>8.</td>
<td>2008</td>
<td>56</td>
<td>11.1</td>
<td>74.7</td>
<td>1.33</td>
</tr>
<tr>
<td>9.</td>
<td>2009</td>
<td>57</td>
<td>11.3</td>
<td>86.0</td>
<td>1.02</td>
</tr>
<tr>
<td>10.</td>
<td>2010</td>
<td>71</td>
<td>14.0</td>
<td>100</td>
<td>1.25</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>506</td>
<td>100</td>
<td></td>
<td>1.07</td>
</tr>
</tbody>
</table>
Pattern of Co-Authorship

Co-Authorship Index (CAI) is obtained by calculating proportionately the publications by single, two and multi authored papers. The following formula for Co-Authorship Index developed by Garg and Padhi (2001) have been employed.

\[ CAI = \frac{N_{ij}}{N_{io}} + \frac{N_{io}}{N_{oo}} \times 100 \]

Where,
- \( N_{ij} \) = Number of papers having authors in block i
- \( N_{io} \) = Total output of block i
- \( N_{oij} \) = Number of papers having j authors for all blocks
- \( N_{oo} \) = Total number of papers for all authors and all blocks

CAI = 100 indicates that a country's co-authorship effort for a particular type of authorship corresponds to the world average, CAI > 100 reflects higher than average co-authorship effort and CAI < 100 shows lower than average co-authorship effort by that country for a given type of authorship pattern.

For calculating the co-authorship index for authors, countries have been replaced with block. For this study, the authors have been classified into three blocks, vz Single, Two, and Multi Authors and period of the study has been divided into two block periods as 2001–2005 and 2006–2010.

Table 2 - Pattern of Co-authorship

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Period</th>
<th>Single</th>
<th>Double</th>
<th>Multi</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2001–2005</td>
<td>26(95)</td>
<td>76(102)</td>
<td>137</td>
<td>239</td>
</tr>
<tr>
<td>2</td>
<td>2006–2010</td>
<td>32(105)</td>
<td>81(98)</td>
<td>154</td>
<td>267</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>58</strong></td>
<td><strong>157</strong></td>
<td><strong>291</strong></td>
<td><strong>506</strong></td>
</tr>
</tbody>
</table>

( ) Co-authorship Index

Table 2 depicts the data pertaining to Co-Authorship Index. The value for CAI for single authors has been increased from 95 in the first block to 105 in the second block which shows the increasing trend of co-authorship. On the
other hand, it is decreased from 102 in the first block to 98 in the second block for the double authors. However it is calculated to 100 for both the block periods to the multi authors.

**Relative Research Effort**

Relative research effort is being measured by the Publication Efficiency Index (PEI) and it is based on the references appended to the research articles by the authors. It indicates whether the impact of the publications in a year in a research field is compatible with the research efforts of the world. It is described by the ratio of publication efforts to the publications. PEI is calculated by using the formula derived from the Activity Index suggested by Price (1981)\(^7\).

\[
PEI = \frac{TNC_i}{TNP_i} / \frac{TNC_t}{TNP_t}
\]

Where,

- \(TNC_i\) = total number of references in a year
- \(TNC_t\) = total number of references for all the years
- \(TNP_i\) = total number of papers in a year
- \(TNP_t\) = total number of papers for all the years

The value of PEI > 1 for a country indicates that the impact of publications is more than the research effort devoted to it for that particular country and vice versa. PEI has been analyzed for various block periods, for number of authors, for collaboration pattern and institutions.

Table 3 depicts the year-wise Publication Efficiency Index. PEI has calculated for all the years and it reveals that the papers published in the years 2005, 2006, 2007, 2009 and 2010 have higher than the world average value of PEI while the publication in the remaining years have lower than the world average.

**Table 3 - Quality of Research (Year-wise)**

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Year</th>
<th>No</th>
<th>Ref</th>
<th>PEI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2001</td>
<td>42</td>
<td>855</td>
<td>0.82</td>
</tr>
<tr>
<td>2</td>
<td>2002</td>
<td>54</td>
<td>987</td>
<td>0.73</td>
</tr>
<tr>
<td>3</td>
<td>2003</td>
<td>52</td>
<td>857</td>
<td>0.66</td>
</tr>
<tr>
<td>4</td>
<td>2004</td>
<td>47</td>
<td>1055</td>
<td>0.90</td>
</tr>
<tr>
<td>5</td>
<td>2005</td>
<td>44</td>
<td>1467</td>
<td>1.34</td>
</tr>
<tr>
<td>6</td>
<td>2006</td>
<td>41</td>
<td>1158</td>
<td>1.13</td>
</tr>
<tr>
<td>7</td>
<td>2007</td>
<td>42</td>
<td>1668</td>
<td>1.60</td>
</tr>
<tr>
<td>8</td>
<td>2008</td>
<td>56</td>
<td>1168</td>
<td>0.84</td>
</tr>
<tr>
<td>9</td>
<td>2009</td>
<td>57</td>
<td>1528</td>
<td>1.08</td>
</tr>
<tr>
<td>10</td>
<td>2010</td>
<td>71</td>
<td>1854</td>
<td>1.05</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>506</td>
<td>12597</td>
<td>1</td>
</tr>
</tbody>
</table>
Further PEI has been calculated for various forms of papers and presented in the table 4. For this study, year has been replaced with the forms of papers. Only review articles have higher than the world of average of PEI (3.71), research articles have close to the world average (0.98) and short communications have lower than the world average of PEI (0.56).

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Type</th>
<th>Papers</th>
<th>Ref</th>
<th>PEI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Research Article</td>
<td>428</td>
<td>10492</td>
<td>0.98</td>
</tr>
<tr>
<td>2</td>
<td>Review</td>
<td>13</td>
<td>1202</td>
<td>3.71</td>
</tr>
<tr>
<td>3</td>
<td>Short Communication</td>
<td>65</td>
<td>903</td>
<td>0.56</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>506</td>
<td>12597</td>
<td></td>
</tr>
</tbody>
</table>

**Table 4 - Quality of Research (Forms-wise)**

**Multi Institute Collaboration Pattern**

Table 5 depicts the country-wise distribution of papers to the journal. It reveals that India secured the top position with 391 (77%) papers followed by Malaysia and Turkey with 12 and 10 papers respectively. This study proposed the following index to measure the multi institute collaboration (collaboration at national or international level) derived from the Domestics, International collaboration pattern suggested by Carg & Padhi (2001) \(^8\).

\[
MICI = \frac{MI_{ij}/MI_{io}}{MI_{oj}/MI_{oo}} \times 100
\]

Where,

- \(MI_{ij}\) = Number of multi institute collaborated papers for a country
- \(MI_{io}\) = Total output of a country
- \(MI_{oj}\) = Number of multi institute collaborated papers for all the countries
- \(MI_{oo}\) = Total output of all the countries

MICI = 100 indicates that a country's co-authorship effort for a particular type of authorship corresponds to the world average, MICI > 100 reflects higher than average co-authorship effort and MICI < 100 lower than average co-authorship effort by that country for a given type of authorship pattern.

Multi Institute Collaboration Pattern of top producing papers to the journal has been presented in the table 5 and it reflects that the Multi Institute Collaboration index is higher than the world average for the countries Turkey (131), China (219), USA (146), Bangladesh (141), Canada (263), Indonesia (197) and UK (197) while it is lower than the world average for the countries India (92), Malaysia (55), Australia (55) and Iran (66).
Table 5 - Country-wise distribution of papers (having papers >=5)

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Country</th>
<th>Papers</th>
<th>MICP</th>
<th>MICI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>India</td>
<td>391</td>
<td>109</td>
<td>92</td>
</tr>
<tr>
<td>2.</td>
<td>Malaysia</td>
<td>12</td>
<td>2</td>
<td>55</td>
</tr>
<tr>
<td>3.</td>
<td>Turkey</td>
<td>10</td>
<td>4</td>
<td>131</td>
</tr>
<tr>
<td>4.</td>
<td>China</td>
<td>9</td>
<td>6</td>
<td>219</td>
</tr>
<tr>
<td>5.</td>
<td>USA</td>
<td>9</td>
<td>4</td>
<td>146</td>
</tr>
<tr>
<td>6.</td>
<td>Bangladesh</td>
<td>7</td>
<td>3</td>
<td>141</td>
</tr>
<tr>
<td>7.</td>
<td>Australia</td>
<td>6</td>
<td>1</td>
<td>55</td>
</tr>
<tr>
<td>8.</td>
<td>Canada</td>
<td>5</td>
<td>4</td>
<td>263</td>
</tr>
<tr>
<td>9.</td>
<td>Indonesia</td>
<td>5</td>
<td>3</td>
<td>197</td>
</tr>
<tr>
<td>10.</td>
<td>Iran</td>
<td>5</td>
<td>1</td>
<td>66</td>
</tr>
<tr>
<td>11.</td>
<td>UK</td>
<td>5</td>
<td>3</td>
<td>197</td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>42</td>
<td>14</td>
<td>109</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>506</td>
<td>154</td>
<td></td>
</tr>
</tbody>
</table>

*MICP = Multi Institute Collaborated Papers, MICI = Multi Institute Collaboration Index

Further MICI has been calculated for the top producing institutes and presented in the table 6. For this study, country has been replaced with the institutes. Out of 10 most producing institutes to the journal, Space Application Centre (India) only attained the higher than world average of MICI (128) remaining attained the lower than the world average of MICI.

Table 6 - Most Productive Institutes (having papers >= 10)

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Institutes</th>
<th>Country</th>
<th>Papers</th>
<th>MICP</th>
<th>MICI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>National Institutes of Oceanography</td>
<td>India</td>
<td>60</td>
<td>13</td>
<td>71</td>
</tr>
<tr>
<td>2.</td>
<td>Space Application Centre</td>
<td>India</td>
<td>18</td>
<td>7</td>
<td>128</td>
</tr>
<tr>
<td>3.</td>
<td>Central Salt &amp; Marine Chemicals Research Institute</td>
<td>India</td>
<td>15</td>
<td>4</td>
<td>88</td>
</tr>
<tr>
<td>4.</td>
<td>Andhra University</td>
<td>India</td>
<td>14</td>
<td>3</td>
<td>70</td>
</tr>
<tr>
<td>5.</td>
<td>Annamalai University</td>
<td>India</td>
<td>14</td>
<td>3</td>
<td>70</td>
</tr>
<tr>
<td>6.</td>
<td>National Geophysical Research Institute</td>
<td>India</td>
<td>13</td>
<td>1</td>
<td>25</td>
</tr>
<tr>
<td>7.</td>
<td>Tamilnadu Veterinary and Animal Sciences University</td>
<td>India</td>
<td>12</td>
<td>1</td>
<td>27</td>
</tr>
<tr>
<td>8.</td>
<td>Indian Institutes of Technology</td>
<td>India</td>
<td>12</td>
<td>3</td>
<td>82</td>
</tr>
<tr>
<td>9.</td>
<td>Central Marine Fisheries Research Institute</td>
<td>India</td>
<td>11</td>
<td>3</td>
<td>90</td>
</tr>
<tr>
<td>10.</td>
<td>Goa University</td>
<td>India</td>
<td>10</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>11.</td>
<td>Others</td>
<td></td>
<td>327</td>
<td>116</td>
<td>117</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>506</td>
<td>154</td>
<td></td>
</tr>
</tbody>
</table>
*MICP = Multi Institute Collaborated Papers, MICI = Multi Institute Collaboration Index

**Distribution of Pages**

It is observed from the table 7 that a total of 3795 pages published by 506 papers with an average of 7.53 during the period 2001-2010 and average pages ranges from 5.59 in 2002 to 9.50 in 2005. This method is just an average of pages. We proposed the following index to the pages and it is a derivative of Activity index suggested by Price (1981).

\[
RLI = \frac{\frac{PG_{ij}}{PP_{io}}}{\frac{PG_{oj}}{PP_{oo}}}
\]

Where,
RLI = Relative Length Index
PG\text{ij} = No. of pages in a year
PP\text{io} = No. of papers in a year
PG\text{oj} = Total no. of pages
PP\text{oo} = Total no. of papers

RLI = 1 indicates that a specific years relative length to the world average, RLI > 1 indicates higher than the average relative length and RLI < 1 lower than the average relative length.

**Table 7 - Distribution of Pages (Year wise)**

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Year</th>
<th>Papers</th>
<th>Pages</th>
<th>Average Pages</th>
<th>RLI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2001</td>
<td>42</td>
<td>257</td>
<td>6.12</td>
<td>0.82</td>
</tr>
<tr>
<td>2.</td>
<td>2002</td>
<td>54</td>
<td>302</td>
<td>5.59</td>
<td>0.75</td>
</tr>
<tr>
<td>3.</td>
<td>2003</td>
<td>52</td>
<td>319</td>
<td>6.13</td>
<td>0.82</td>
</tr>
<tr>
<td>4.</td>
<td>2004</td>
<td>47</td>
<td>343</td>
<td>7.30</td>
<td>0.97</td>
</tr>
<tr>
<td>5.</td>
<td>2005</td>
<td>44</td>
<td>418</td>
<td>9.50</td>
<td>1.27</td>
</tr>
<tr>
<td>6.</td>
<td>2006</td>
<td>41</td>
<td>351</td>
<td>8.56</td>
<td>1.14</td>
</tr>
<tr>
<td>7.</td>
<td>2007</td>
<td>42</td>
<td>371</td>
<td>8.83</td>
<td>1.18</td>
</tr>
<tr>
<td>8.</td>
<td>2008</td>
<td>56</td>
<td>410</td>
<td>7.32</td>
<td>0.98</td>
</tr>
<tr>
<td>9.</td>
<td>2009</td>
<td>57</td>
<td>430</td>
<td>7.54</td>
<td>1.01</td>
</tr>
<tr>
<td>10.</td>
<td>2010</td>
<td>71</td>
<td>594</td>
<td>8.37</td>
<td>1.12</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>506</strong></td>
<td><strong>3795</strong></td>
<td><strong>7.53</strong></td>
<td><strong>1</strong></td>
<td></td>
</tr>
</tbody>
</table>

RLI has been calculated for all the years and it reveals that the papers published in the years 2005, 2006, 2007, 2009 and 2010 have attained higher than the world average value of RLI while remaining years have attained lower than the world average.
Conclusion

Scientometric study of research literature published in Indian Journal of Marine Sciences during 2001-2010 shows the growth of literature towards upward trend and high percentage of articles are contributed by India with 391 papers. The most productive institute is Indian Institutes of Oceanography with 60 papers. Out of 10 most producing institutes, only Space Application Centre, India has reached the above world average value of MICI. Multi authored papers has attained the average value of CAI throughout the period. Relative research effort is average value throughout the period and review articles have attained the higher than the world average of PEI (3.71).

Normally Indian journals are considered as low profile journals. But the study indicates that the Indian Journal of Marine Sciences has good contributions on science by Indian authors and also attracts foreign authors to publish their contributions. Hence it can be considered as core periodical in marine sciences.

REFERENCES

KNOWLEDGE, ATTITUDE AND PRACTICE (KAP) STUDY OF FACULTY MEMBERS ON INTEGRATED DIGITAL LIBRARY (IDL) IN TEHRAN UNIVERSITY OF MEDICAL SCIENCES

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Purpose- the purpose of this paper is to measure Knowledge, Attitude and Practice (KAP) of faculty members on Integrated Digital Library (IDL) in Tehran University of Medical Sciences.

Design/ methodology/ approach- A cross-sectional study was conducted through a self-administrated questionnaire in 2011. In total, 150 faculty members participated from different departments of Tehran University of Medical Sciences. An accidental sampling method was used for selection of respondents. On the basis of the responses received through questionnaires the data is analyzed by SPSS 16.

Findings – The paper concludes that Integrated Digital Library (IDL) plays valuable role of the information needs of faculty members at Tehran University of Medical Sciences. According to the results of the current survey, Knowledge, Attitudes, Practice (KAP) of faculty members have increased. The most preferred databases have been Science Direct, Ovid and Web of knowledge.

Practical implications – since research activity is an important element in academic excellence Therefore universities should give more funding to provide electronic resources and facilities. Special training programs for faculty members should be organized.
Originality/value – Few attempts have been made to study the Knowledge, Attitudes, and Practice (KAP) on Integrated Digital Library by faculty members.

Keywords Knowledge, Attitudes, Practice; faculty members; Integrated Digital Library (IDL)

INTRODUCTION

The demand for information among the academic and research community has increased over the years. The development of new technology makes direct access to information easier for users that were previously impractical. Libraries are increasingly involved in collaborative endeavors of both Preservation and retrieval of collections in order to minimize costs and prevent duplicative effort.

The rapid growth of new technologies has changed the communication process and reduced the cost of communication for individuals. Electronic information sources can be seen as the most recent development in information technology and are among the most powerful tools ever invented in human history. Electronic information sources are becoming more and more important for the academic community (Kumar and Kumar, 2008).

University academics are a unique population and rely on recent and timely information. Electronic resources are now used more often that print resources (Morse and Clintworth, 2000).

Electronic resources and services have become the most popular tools for research and academic activities (Golwal et al., 2008).

University libraries in Iran are facing the problems of shrinking budgets along with rising costs of journal subscriptions. The major barrier for researchers in their use of e-journals is the lack of subscriptions in their field. Therefore there is a great need to study the use of electronic resources and investigate the level of knowledge, attitude and practice among faculty members.

REVIEW OF LITERATURE

Electronic resources and services have become the most popular tools for research and academic activities. The Web is influencing the development of new modes of scholarly communication and new electronic resources that have emerged have become powerful media of communication for university libraries. Electronic information sources also provide faster reliable information for researchers (Kumar and Sampath, 2008).

The Internet provides access to unlimited sources of information and search engines is continuously being advanced to provide efficient ways to help users to find what they want. The Internet eases and increases access to a large
amount of data, saves time and money, and obtains an opportunity to consult several experts with a single request (via discussion groups), and greater independence from specific times and places for information seeking (Savolainen, 1999).

Sources of information available via the Internet are increasing exponentially, leading to steady increase in the use of Internet for education and research. Since past few years, free online information sources like e-Journals, e-books, e-databases have increased considerably. Earlier, information and knowledge were passed by word of mouth or through manuscripts, and communication was a slow process. Today, it is passed from one individual to an infinite number of other users through a number of media and formats which makes rapid and widespread dissemination of information possible. (Thanuskodi and Ravi, 2011)

Studies from other countries, however, have examined the use of online resources in the academic environment and provide a useful context for considering the using databases. The key issues in digital library assessment, including consortia collection assessment are defining library users’ and their needs, evaluating functionality of online resources, and identifying system requirements.

Manoj Kumar Sinha and et al. highlighted the important survey findings in respect of Internet Awareness, Internet Use Pattern and attitude of library users towards the electronic resources, which have been made available to them under UGC-INFONET Digital Library Consortium. (Sinha, 2011)

Kumar and Kumar showed that the students and faculty who participated in their survey are aware of e-sources and also the internet. Even though a majority of the academic community uses electronic information sources for their academic-related work, most of them prefer print to electronic information sources. Many of the students and faculty learned about the electronic information sources either by trial and error or through the advice of friends. (Kumar and Kumar, 2010)

Margam Madhusudhan concluded that electronic resources have become an integral part of the information needs of research scholars at Kurukshetra University. Further, it found that e-resources could be good substitutes for conventional resources, if the access is fast, and more computer terminals are installed to provide fast access to e-resources. Google is the most widely used search engine for locating information electronically. (Margam, 2010)

Bancroft, et al. reported a user survey examining the library services, including Electronic journals, at the Washington State University. This survey requested faculty members and graduate students to rank the electronic resources as essential for their work. Faculty reported that the library OPAC was the most important source for their work (37.5%). However, over 70% of
faculty expressed “No opinion /never used” concerning online full text journals. As proved to be the case for our study, the results of the WSU survey were also useful in subsequent decision-making involving journal cancellation. (Bancroft and et al, 1998)

A survey of the use of the electronic journals at the University of Parts in Greece looked at the frequency of use according to the demographic profile of library patron’s including faculty members. Age, gender and academic position were considered. E- Journal service appears to be used by all ages, although the majority of use was reported by those under 35 as a result of the high proportion of students who completed the questionnaire. Proportionally, more males used the service on a daily, weekly or monthly basis than females. This survey also investigated reasons for using electronic resources.

A similar survey undertaken by the Utah State University Libraries asked respondents whether they were aware of the libraries’ electronic databases. More than two-thirds of the respondents were aware of some of the electronic resources. Respondents who were aware of and made use of databases were asked to rate the importance of each database to their own work. The majority of faculty respondents (77.8%) gave a high priority rating to Elsevier electronic journals. Tenner and Yang analyzed the relationship between electronic journal use and the age and status of faculty members and found that assistant professors were most likely to have used electronic journals (44.7%), followed by full professors (34.5), and associate professors (34.2%)

In recent years many Iranian university libraries have joined digital library consortium, however, their efforts are focused on providing a digitized collection rather than maintaining a user-centered system for that collection. Integrated Digital Library (IDL) is an ambitious programme to interlink all the universities in Iran with state of the medical science. IDL is an advanced system which gives faculties simple and one step access to all electronic resources at the Iranian National Medical Digital Library. Users can search all Databases, E-Journals, E-Books & References in IDL or by subject and also find the relevant ranking information. This programme is wholly funded by Ministry of Health and Medical Education.

Tehran University of Medical Sciences, which was one of the IDL centers in the first batch get the opportunity to implement the said programme since 2009 with the expectation that the different groups of the users of the library will be more benefited to meet their information need.

Since that, University teachers are expected to teach students, guide and research scholars as well as to contribute for enhancing the horizons of their own subject diciples, focuses on viewpoint of faculty members is useful. Therefore, the purpose of this study is to measure knowledge, attitude and practice (KAP) of faculty members on IDL in Tehran University and medical sciences.
Methods:

This was a cross-sectional, descriptive study carried out between April-October 2011 in Tehran University of Medical Sciences (TUMS). The survey included faculty members from 7 faculties: School management and medical information sciences, school of Medicine, school of Rehabilitation, College of Allied health sciences, Faculty of Nursing and Midwifery, School of Public Health and Institute of Public Health Research, Tehran Psychiatric Institute Faculty of Psychology. A self-administered questionnaire was designed. It contains 30 core questions or statements: 10 for knowledge, 10 for attitude and 10 for practice on IDL.

The sample size was determined by using Morgan Table. A sample of 165 Faculty members was requested to take part in this study. In order to ensure reliability and effectiveness of the instrument, the questionnaire was pilot tested on twenty faculty members from different departments. The investigator visited all the departments of Tehran University of Medical Sciences and personally handed over the questionnaire to 165 faculty members. The completed questionnaires were collected after one week. About 150 filled questionnaires were returned; out of which, fifteen questionnaires were rejected from the ultimate sample as they were not properly filled.

The data was entered and analyzed by SPSS 16 statistical computer program. For knowledge questionnaire, right answer is considered as “having knowledge” and wrong answer as “no knowledge”. For attitude questionnaire answer is considered as “positive or negative attitude” and for practice questionnaire is considered the rate of using electronic databases as performance.

The score of knowledge, attitude and practice were analyzed as numerical variable.

RESULTS

Questionnaires were distributed to a total of 150 faculty members. The response of Demographic part is presented in Table 1. The response of the knowledge questionnaire is presented in Table 2. Over 64% of the Faculty members have excellent knowledge (answering right). Results show more than 36% of the faculty members lack the knowledge (answering wrong).

The response of to the faculty members’ attitude questionnaire on IDL is presented in Table3. Over 76% of the faculty members have great positive attitude. Less than 24% of the faculty members have negative attitude.

The response of faculty members to practice questionnaire on IDL is presented in Table 4. Over 50% of the Faculty members have good practice.

The best practice of the faculty members was presentation on congresses and publishing Articles in specialty journals in Iran. On the other side, the faculty members have bad practice on writing books.
Figure 1 shows that Science Direct, Ovid and Web of Knowledge are the most common databases among faculty members for reaching their research purpose.

Table 1 Distribution of respondents by Demographic

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>90 (60%)</td>
</tr>
<tr>
<td>Female</td>
<td>60 (40%)</td>
</tr>
<tr>
<td>Age (Years), Mean (Range)</td>
<td>44 (31-57)</td>
</tr>
<tr>
<td>Highest Degree earned</td>
<td></td>
</tr>
<tr>
<td>Master’s</td>
<td>28 (18.66%)</td>
</tr>
<tr>
<td>Doctoral</td>
<td>65 (43.33%)</td>
</tr>
<tr>
<td>Sub Specialty</td>
<td>42 (28%)</td>
</tr>
<tr>
<td>Others</td>
<td>15 (10%)</td>
</tr>
<tr>
<td>Profession</td>
<td></td>
</tr>
<tr>
<td>Professor</td>
<td>23 (15.33%)</td>
</tr>
<tr>
<td>Associate professor</td>
<td>56 (37.33%)</td>
</tr>
<tr>
<td>Assistant professor</td>
<td>43 (28.66%)</td>
</tr>
<tr>
<td>Lecturer</td>
<td>28 (18.66%)</td>
</tr>
</tbody>
</table>

Table 2. Mean (SD) of knowledge of IDL

<table>
<thead>
<tr>
<th>No</th>
<th>Question statement</th>
<th>Having knowledge n (%)</th>
<th>No knowledge n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Journal Citation Report (JCR) is in web of knowledge database.</td>
<td>110 (73)</td>
<td>40 (27)</td>
</tr>
<tr>
<td>2</td>
<td>Endnote is a reference manager.</td>
<td>135 (90)</td>
<td>15 (10)</td>
</tr>
<tr>
<td>3</td>
<td>Cochrane is part of Wiley database.</td>
<td>81 (54)</td>
<td>69 (46)</td>
</tr>
<tr>
<td>4</td>
<td>Proquest presented full text of theses.</td>
<td>122 (81)</td>
<td>28 (19)</td>
</tr>
<tr>
<td>5</td>
<td>Medical Protocols are in Springer.</td>
<td>91 (60)</td>
<td>59 (40)</td>
</tr>
<tr>
<td>6</td>
<td>BMJ Learning is for continues medical education.</td>
<td>102 (68)</td>
<td>48 (32)</td>
</tr>
<tr>
<td>7</td>
<td>MD consult presented pharmacology and Drug Information</td>
<td>89 (60)</td>
<td>61 (40)</td>
</tr>
<tr>
<td>8</td>
<td>Up to date is for evidence based medicine (EBM).</td>
<td>110 (73)</td>
<td>40 (27)</td>
</tr>
<tr>
<td>9</td>
<td>Emerald is for human sciences.</td>
<td>76 (51)</td>
<td>74 (49)</td>
</tr>
<tr>
<td>10</td>
<td>Primal pictures site is in Ovid.</td>
<td>43 (29)</td>
<td>107 (71)</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>64</td>
<td>36</td>
</tr>
</tbody>
</table>
Table 3 Mean (SD) of attitude of IDL

<table>
<thead>
<tr>
<th>No</th>
<th>Question statement</th>
<th>positive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IDL can retrieve too much information.</td>
<td>114(76)</td>
<td>36(24)</td>
</tr>
<tr>
<td>2</td>
<td>IDL has led to ease and accelerate research.</td>
<td>106(71)</td>
<td>44(29)</td>
</tr>
<tr>
<td>3</td>
<td>IDL has led to new ways of learning and teaching.</td>
<td>147(98)</td>
<td>3(2)</td>
</tr>
<tr>
<td>4</td>
<td>IDL reduce search time.</td>
<td>141(94)</td>
<td>9(6)</td>
</tr>
<tr>
<td>5</td>
<td>IDL has led to increased motivation</td>
<td>126(84)</td>
<td>24(16)</td>
</tr>
<tr>
<td>6</td>
<td>IDL databases are in accordance with your scientific field.</td>
<td>124(83)</td>
<td>26(17)</td>
</tr>
<tr>
<td>7</td>
<td>IDL has the adequacy of information.</td>
<td>123(82)</td>
<td>27(18)</td>
</tr>
<tr>
<td>8</td>
<td>IDL can replace the print resources.</td>
<td>122(79)</td>
<td>28(21)</td>
</tr>
<tr>
<td>9</td>
<td>Difficulty in using IDL due to lack of IT knowledge.</td>
<td>139(39)</td>
<td>11(7)</td>
</tr>
<tr>
<td>10</td>
<td>IDL can access all of databases that you need them.</td>
<td>76(50)</td>
<td>74(50)</td>
</tr>
</tbody>
</table>

76 24

Table 4. Mean (SD) of Practice of IDL

<table>
<thead>
<tr>
<th>No</th>
<th>Question statement</th>
<th>High practice</th>
<th>Low practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>For training</td>
<td>93(62)</td>
<td>57(38)</td>
</tr>
<tr>
<td>2</td>
<td>For researching</td>
<td>76 (50)</td>
<td>74(50)</td>
</tr>
<tr>
<td>3</td>
<td>For publishing articles / books</td>
<td>120(80)</td>
<td>30(20)</td>
</tr>
<tr>
<td>4</td>
<td>For advising student theses</td>
<td>134(89)</td>
<td>16(11)</td>
</tr>
<tr>
<td>5</td>
<td>For keeping up-to-date in your subject area</td>
<td>46(30)</td>
<td>104(70)</td>
</tr>
<tr>
<td>6</td>
<td>For getting relevant information in the area of specialization</td>
<td>85(56)</td>
<td>65(44)</td>
</tr>
<tr>
<td>7</td>
<td>For getting current information</td>
<td>66(44)</td>
<td>84(56)</td>
</tr>
<tr>
<td>8</td>
<td>For communicating knowledge and practice</td>
<td>49(32)</td>
<td>101(68)</td>
</tr>
<tr>
<td>9</td>
<td>For clinical treating</td>
<td>32(21)</td>
<td>118(79)</td>
</tr>
<tr>
<td>10</td>
<td>For consulting to patients</td>
<td>78(52)</td>
<td>72(48)</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>52</td>
<td>48</td>
</tr>
</tbody>
</table>
Discussion

The fast growth of ICT (information Communication Technology) and particularly the Internet has changed the traditional methods of research, storage, retrieval and communication of scholarly information. Now-a-days digital resources have emerged as the most powerful medium for storage and retrieval of information. In the electronic environment, libraries need to recognize that they are not the only one in distributing knowledge. The overall percentage mean score 64% for knowledge is considered good. Good knowledge faculty members of TUMS on some important factors related to workshops holding, bruscher providing and guide book publishing. Majority of the faculty members are using IDL for enhancing and upgrading their scientific purposes.

36% of the faculty members have expressed lack of time and inadequate knowledge about information retrieving techniques is the main problem in access to IDL. This pointed out for the needs of provision of training for faculty members for searching online information for whatever purpose. This result supports the idea that the use of electronic databases is influenced by the level of knowledge of them.

Doğan and Ozlem (2006) showed that there is a relationship between level of knowledge of databases and use of databases.

Despite of present study, Walmiki (2010) found that Lack of knowledge to use, insufficient internet nodes, slow bandwidth and lack of relevant information sources are the major problems of the faculty members knowledge. The second part of this study assessed faculty members' attitude towards IDL. The attitude has the highest percentage mean score (76 %) of the KAP components.
The results show that learning and training are determined as the key factors affecting attitudes of faculty member's toward using of IDL. In addition, reducing search time and existing useful database for learning and teaching as important factors in determining their attitudes toward IDL in faculty members of Iranian.

Findings of this study confirmed the results of research by Bhatti (2010) that the faculty members from all the faculties showed enthusiastic attitude towards use of Internet for teaching and research purposes.

Heterick research (2002) reported that faculty’s perceptions and attitudes about electronic resources have become invaluable tool for research, and faculty will become even more dependent on them in the future and hard copy archives should not be replaced entirely by electronic archives, but preserving electronic journals for the future is extremely important.

In overall, Findings of this study showed that faculty members’ level of knowledge in IDL is the key factor in determining their attitudes toward IDL. Inasmuch as the mean percentage score for practice was 52% the majority faculty members found the features and use of electronic resources to be "good."

The survey result as shown in Table 4 indicates that out of 134 faculty members visit IDL regularly to search and access to the electronic resources frequently for publishing articles and books.

In Consistent with Sakshi, Uppal and singh research (2011) found that 23.80% of the respondents used the consortium National Institute of Science Communication and Information Resources (NISCAIR) for writing research articles and 63.49% respondents attest to the fact that they needed training programme for searching the consortium.

According to the results, the interdisciplinary databases of Science Direct, Ovid and Web of Knowledge have been the most common databases used for researching and training.

Findings of this study confirmed the results of research by Cemal and et al (2008) that

The most preferred databases have been Web of Science, Science Direct and Ebsco.

In general, the mean of the overall KAP score for all the respondents was 64%. The majority of the faculty members of TUMS have adequate KAP about IDL. The study also shows that more effort is needed to encourage the use of IDL. Based on the findings of the study, the following suggestions are made to improve the use of IDL among the faculty members.

1- the library must conduct training programmes for faculty members regarding how to use the electronic resources effectively;

2- TUMS should increase the number of e-journals subscription in all subjects.
3- More computers should be installed in the library for the benefit of the faculty members;
4- More funds should be given to acquire electronic resources;

Finally, this study helps the faculty members to know the importance of IDL in academic environment.

Conclusion
The present study has clearly indicated that, the Integrated Digital Library is highly useful for the research and academic community in the present environment.

IDL has had a very positive impact in meeting the research needs of faculty members at TUMS. IDL has significantly enhanced the quality of research and publications.

Training of faculty members and researchers is acknowledged as a continuing challenge that requires new and more innovative approaches. Moreover, upgrading skills and retraining library staff is a priority, particularly in the areas of e-resources management, e-services development and teaching skills. Inasmuch as, Regional and national workshops are the usual chosen modality for training.

The present survey was limited to faculty members in TUMS. A similar survey of IDL in other universities would complete the picture of IDL development presented in this paper.

ACKNOWLEDGEMENTS

The authors are thankful to all the respondents for returning filled –in questionnaire instantly. The authors are also thankful to Center for Educational Research in Medical Sciences (CERMS) and Central Library and Document Center of Tehran University of Medical Sciences for their constant encouragement and funding support.

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OPEN COURSEWARE INITIATIVES FOR ENGINEERING CURRICULUM

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ABSTRACT

Open Courseware is the repository of the study and learning materials in digital form in the web which is open for every user i.e. Open Access. These repositories envisage to store, index, preserve, distribute and share the digital learning resources with any time access offering interoperability. What is most significant about the method is that it ensures faster learning at comparatively reduced cost and gives access to more learning resources. The OCW project is rooted in the MIT Faculty’s decision at United States, stated in 1999. In India, a number of institutions are digitizing their course materials and a good number of open courseware have been established e.g. National Programme on Technology Enhanced Learning (NPTEL), eGyankosh - a National Digital Repository, CEC Learning Object Repository, Indo-German eGurukul on Digital Libraries, NCERT Online Textbooks, UNESCO SALIS e-Learning Portal, etc. This paper presents a scenario of the Open Courseware initiatives in the world as well as in India that can be helpful and necessary to the engineering curriculum.

Keywords: Open Access, Open Courseware, OCW, MIT, NPTEL

1. INTRODUCTION

India is in the forefront of the developing world as well as the South Asian region in terms of both economic growth and scientific productivity. The National Knowledge Commission (NKC) is a high-level advisory body to the Prime Minister of India, with the objective of transforming India into a knowledge society. It covers sectors ranging from education to e-governance in the five focus areas of the knowledge paradigm:
The NKC Working Group on Open Access and Open Courseware has strongly recommended for establishment of open courseware repositories for countrywide dissemination of quality courseware. This would facilitate easy and widespread access to high quality educational resources and drastically improve the teaching paradigm for all our students. Learning material contained in an Open Courseware provides learners an opportunity to gain knowledge beyond their routine classroom environments. These are in the digital form which can be accessed online, thus breaking the barriers of time and distance.

2. OPEN COURSEWARE INITIATIVES

The concept of open access evolved during 1991 due to the realization of the need to facilitate scholarly scientific communication. Open access to literature means online access without charge to readers or libraries. Committing to open access means dispensing with the financial, technical and legal barriers that are designed to limit access to literatures to paying customers. Open access is a cost effective way to disseminate and use of information.

2.1 Open Courseware

Courseware are free and open digital publication of high quality educational materials, organized as courses that is provided to the public without charge via the Internet i.e. open access. An Open Courseware site provides open access to the primary teaching materials for courses taught at educational institutions, enabling educators to draw on the materials for teaching purposes, and students and self-learners to use the materials for the development of their own personal knowledge. The primary characteristics of Open Courseware are that it is offered for free, does not lead to a degree, and does not grant access to faculty. The Open Courseware consists of syllabi,
online presentations, and reading recommendations, which makes it particularly handy for use by other faculty.

2.2 Open Courseware initiative

The OCW project is rooted in the MIT Faculty’s decision, stated in 1999, which regarded the use of the Internet to better carry out the MIT’s mission to advance knowledge and State-of-the-Art in Open Courseware Initiatives Worldwide 275 educate students. This decision has come to live with the proposal of the Open Courseware initiative in 2000, followed by the publication of the first proof-of-concept site in 2002, which contained 50 courses. Spanish and Portuguese translations were added in the same year as well. The official launch in 2003 was accompanied by the publication of 450 more courses, along the Chinese translation. During 2004, 400 more courses were published (reaching the level of 900 courses), and the first mirror site was established in Africa. In 2005, besides reaching the level of 1250 published courses, OCW began to update the previously published courses. The number of visitors increased dramatically, from reported 2 million in 2007, to 50 million in 2008 and 100 million in 2010 (MIT OCW Our History, 2011). Currently, more than 250 other universities and associated organizations around the world have joined MIT, and have been publishing their course materials freely and openly for more than 13,000 courses in 20 languages. Currently the OCW site reports 110 million visits from 78 million learners from almost every country.

2.3 Vision of OCW

OCW has started with the vision of matching the human potential with the opportunities rooted in having access openly to the teaching tools of the world’s top learning institutions, having therefore an enormous impact on people and communities worldwide. The envisaged goal of the decade that just started is to reach a billion minds, aiming at helping motivated people around the world to improve both their lives and the world we live in. To accomplish this daring goal, the depth and the quality of the course materials is ought to be improved, along with the site itself. Four major directions of action have been identified:
(1) **Placing OCW everywhere**, i.e., making the OCW content easy to find and distribute via ubiquitous devices, including reaching underserved populations;

(2) **Reaching key audiences** by customizing OCW materials to better meet the needs of people across a broad spectrum of backgrounds and cultures;

(3) **Creating communities of open learning**, by providing for an open learning ecosystem that enables more than access to the content, namely that boost collaborative learning;

(4) **Empowering educators worldwide** by providing them with the right tools they need to be able to share OCW content with their students.

3. OPEN COURSE WARE CONSORTIUM

The Open Course Ware Consortium (OCWC) is a collaboration of higher education institutions and associated organizations from around the world creating a broad and deep body of open educational content using a shared model. At present, The Consortium includes hundreds of universities and associated organizations that are committed to advance Open Course Ware and its impact on global education, and it acts in three main directions: (1) as a supporting resource for starting and sustaining OCW projects, (2) as a coordinator for the OCW movement globally, and (3) as a forum for exchanging ideas and planning the OCW’s future. The OCW Consortium’s vision matches the natural aspiration for learning with the opportunity to do it, everywhere in the world, by everyone; by having open access to affordable, educationally and culturally appropriate opportunities to gain whatever knowledge or training they desire (OCW Consortium About, 2011). The Consortium acts to accomplish this vision by addressing the issue of accessing of high quality educational materials, while it partners with organizations that address the related matters, which must also be tackled to fulfill this vision.

The members of the OCW Consortium come from USA (52 members), Spain (40 members), Japan (27), Taiwan (19) and South Korea (12). Each of the other 45 participating countries is represented by less than 10 members. Membership to the OCWC is valuable for both individuals and institutions, as The
Consortium provides a gateway to OCW projects and courses for the entire OCW community, being an ideal meeting place for people wanting to make structured contributions to the development of open education worldwide.

4. OPEN COURSEWARE INITIATIVES IN INDIA

4.1 National Programme on Technology Enhanced Learning (NPTEL)

This is an Open Courseware initiative by seven Indian Institutes of Technology (IIT) and the Indian Institute of Science (IISc) for creating online Web and Video course contents in engineering, science and humanities streams. The mission of NPTEL is to enhance the quality of engineering education in the country by providing free online courseware. Over 613 Indian Engineering Colleges have been provided with NPTEL content, which can be accessed through college intranet. The number of visitors on its website has shown a significant increase. While it was around 9.37 lakh in 2008, the number stood at 44.39 in December 2011.

It is funded by the Ministry of Human Resource Development (MHRD), Government of India. Six major engineering disciplines have been covered in this project so far (NPTEL Phase I) at the undergraduate (B.E./B.Tech) level. In addition, a number of core curriculum courses common to all engineering programmes such as mathematics, physics, chemistry, management, electronics, language etc. have also been included. This is a wonderful resource for engineering stream in our country.
4.2 eGyankosh

Indira Gandhi National Open University (IGNOU) is a national open university that offers distance and open education in India and other countries. IGNOU has initiated the establishment of a National Digital Repository of learning resources eGyankosh. This repository envisages to store, index, preserve, distribute and share the digital learning resources of open and distance learning (ODL) institutions of the country. The repository supports seamless aggregation and integration of learning resources in different formats such as self-instructional study materials, audio-video programmes, and archives of radio and television-based live interactive sessions.

4.3 CEC Learning object repository

Consortium for Educational Communication (CEC) is an inter-university centre on electronic media, established by the University Grants Commission (UGC). CEC's Learning Object Repository (LOR) is an Open Courseware initiative having educational resources in different subjects like Archeology, Biology, Botany, Chemistry, Commerce, Computer Science, Economics,
Education, English, Fine Arts, etc. Users have the facility to browse the LOR by using various options such as Topic, Subject, Learning Object, Keywords, etc.

4.4 NCERT Online Textbooks

NCERT is an apex resource organization set up by the Government of India to assist and advice the Central and State Governments on academic matters related to school level education. NCERT publishes school textbooks and it has initiated a step towards making school textbooks freely available on the internet for students and teachers through its website. This portal provides easy navigation to textbook chapters by title/subject of the book for a particular class. The textbooks available there are written in English, Hindi and a few in Urdu.
5. BENEFITS

Benefits of an Open Courseware are multidimensional which are discussed here under:

5.1 Institutional benefits

The qualitative learning objects can be shared by learners of different programmes within open and distance learning (ODL) institution and also can be shared by learners of different ODL institutions within or outside the country. Open Courseware improves recruitment by helping the right students find the right programs at the institution and builds global awareness of the institution's unique educational approach and curriculum.

5.2 Faculty benefits

Open Courseware builds awareness of the unique contributions to the field and duplication of efforts of preparing self-learning study materials can be minimized. And also builds global awareness of the institution's unique educational approach and curriculum.

5.3 Just in time and any time access

The Open Courseware facilitates any time access to its collections whenever and wherever the learner needs.

5.4 Eliminate travel costs

Travel has historically been the most costly aspect of corporate training. Open Courseware eliminates travel costs and the time away from the job that travel mandates.

5.5 Low cost delivery

An enterprise workforce can have access to hundreds of courses for a fraction of the cost of classroom courses.

5.6 Always up-to-date

With Web-based learning and performance support resources residing on a single Web server, updates are immediately available to all worlds wide.
6. SOFTWARE USED IN DEVELOPING OPEN COURSEWARE

Some important and free software are mentioned here-

6.1 Moodle

Moodle is a course management system (CMS). It is a free, Open Source software package designed using sound pedagogical principles, to help educators create effective online courses with opportunities for rich interaction. Modular design means that people can develop additional functionality. Anyone can download and use it on any computer. It can scale from a single-teacher site to a University with 200,000 students. It is also known as a Course Management System (CMS), or Learning Management Systems (LMS), or Virtual Learning Environment (VLE). Web Address: http://moodle.org

6.2 DSpace

DSpace is a digital library system designed to capture, store, index, preserve, and redistributes the intellectual output of a university’s research faculty in digital formats. It was developed jointly by Hewlett Packard (HP) Laboratories and Massachusetts Institute of Technology libraries (MIT). Web Address: http://www.dspace.org

6.3 E-Prints

E-Prints are also an example of open source software for institutional repositories. It was developed at the University of Southampton and was designed initially to create a pre-print institutional repository for scholarly research, but is now used for other material including reprints, technical reports, conference publications or other means of electronic communication. Web Address: http://www.eprints.org

6.4 Greenstone

Greenstone is a suite of software for building and distributing digital library collections. Greenstone is produced by the New Zealand Digital Library Project at the University of Waikato, and developed and distributed in cooperation with UNESCO and the Human Info NGO. It is open-source, multilingual software, issued under the terms of the GNU General Public License. Web Address: http://www.greenstone.org
7. CONCLUSION

Nowadays, following the demographic trends supported with the emerging universal aspiration for participating within higher education programs, there is a huge demand for high quality educational resources that are available online both freely and openly. Moreover, the lifelong personal evolution in the knowledge and information society is thoroughly supported by the opportunity that anyone have access to such resources from anywhere at any time via the Internet. Seeing the world’s knowledge as a public asset that can be accessed, shared, used and reused, etc. mediated by technology, especially ICT, is a powerful idea that may have an influential impact on teaching and learning within our society.

Indian academics can play a significant role in creating Open Courseware materials for the students to propagate the teaching and learning process diluting the limitations of traditional educational setup and begin a new culture of “Learning beyond Classroom”. This way a wide range of collection of learning objects and other scholarly materials can be developed. This repository should be made available to the learners and accessible through Intranet and Internet. A well organized Open Courseware project is essential in engineering curriculum and it can disseminate and preserve for wider audience in future also.

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