E-Information Literacy Index of University Teachers of Maharashtra, India: A Case Study

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ABSTRACT

The purpose of this paper is to propose an e-information literacy index that provides realistic values to distinguish whether university teachers are literate in regard to awareness and use of e-information resources by explaining the characteristics of e-information literate teacher. The present survey attempts to formulate e-information literacy index of university teachers by taking into consideration three components viz. awareness of e-resources, availability of ICT facilities and use of internet services and search techniques to retrieve e-information. The findings shows that 60.52 per cent teachers are e-information literate. Amongst the teachers, the index for Assistant Professors is highest followed by Professors and Associate Professors. It indicates that Assistant Professors are more e-information literate than their superiors. Amongst the universities, the index of Shivaji University, Kolhapur is highest. As far as author’s consciousness, there are several indices meant for different purposes but in the higher education sector to define the characteristics of e-information literate university teacher in terms of an index is unique and special.

Keywords: E-information literacy; University teachers; Information literacy; Indicators

1. INTRODUCTION

Today, we leave in an era surrounded by digital sea of information. Owing to the availability of vast array of unfiltered information on a given topic, the process of identifying and selecting peculiar e-information has become complex. In this circumstance E-Information literacy directs the users towards authentic and reliable sources of information available online useful for their informed judgements against the quest for information. E-Information literacy is the ability to properly use and evaluate electronic resources, tools and services and apply it for lifelong learning process. E-Information literacy among the university teachers contributes towards their learning process and brings in overall change in the way how they collect and use information.

The present study intends to define the e-information literacy rank amongst the university teachers in tech savvy environment considering their awareness, use and retrieval of e-information from e-resources in the form of an index value. E-information literacy index is a statistical measure used to determine how university teachers are making best use of e-information for their teaching and research purposes. The index values were determined against the responses given by teachers for proposed and defined clusters of components/indicators mentioned in Appendix A. The exercise helped to enlist the qualities of e-information literate teachers in the vast and changing digital sea of information. It has been found that the formulated index values differ amongst teachers and the universities under study depending upon their ability, performance in regard to the use and searching techniques applied for getting e-information.

2. LITERATURE REVIEW

Hargittai¹ recommend for the creation of an index variable as proxies for web-oriented digital literacy measures on Internet use and methodology based on verifying the validity of the measures derived from their relationship with actual skill measures. She again revisited her survey measures with new terms in order to assess the change in digital literacy measures of the respondents and found discrepancy older Internet terms and new web-based concepts thus resulting in change in the index values². Thornbush¹ suggested S-E index that provides a broader classification of weathering processes based on visible surface forms in the field of archaeogeomorphological research. Katz & others⁴ conducted a survey to measure the cumulative, holistic impact of discrete ICT (Information and Communication Technologies) and a composite digitisation. An index was developed based on six overarching components, viz. affordability, infrastructure investment, network access, capacity, usage, and human capital. The findings showed that proper ICT infrastructure and attention towards digital technology usage is required for better flow and awareness of digital literacy. Alguliyev & Others⁵ explore an index for

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evaluating the quality of research output of researchers with the 25 indices which shows that the weighted index may serve as a supplement to h-index and its variants. Sahoo propose the I-index which states that an author’s percentage shares in the total citations that his/her papers have attracted. The index is useful to know comprehensive idea of an author’s overall research performance.

3. OBJECTIVES
The core objectives of the study:
(i) To know the level of awareness of e-resources and searching techniques applied by the university teachers in retrieving e-information
(ii) To study the availability of ICT facilities for the use of internet services by the university teachers; and
(iii) To formulate an e-information literate index of university teachers.

4. METHODOLOGY
For the present study, descriptive method of research has been used. The data was collected through structured questionnaire distributed to targeted sample of 360 university teachers of 43 different departments working in the 10 state universities of Maharashtra, India in the faculties of sciences, social sciences and humanities (languages). A total of 347 teachers responded (96.38 per cent) to the survey. Their literacy levels were tested based on their self-perceived skills and skills learnt with the help of others.

4.1 Methodology Used
Keeping in mind the search for e-information, access and retrieval techniques applied by a normal user, a common strategy in terms of methodological (measuring) indicators were suggested that defines the qualities of e-information literate user with an index value against suggested cut-off value. These methodological indicators were applied for the targeted group of teachers working in the universities under study. The proposed index is based on analysis of indicators against the clusters which results in certain startling outcomes.

The suggested clusters and their indicators may also be applied to other teachers working in different disciplines / universities by changing the clustered framework in regard to the ICT advancement and its searching techniques. To formulate an e-information literacy index of university teachers a series of questions were designed which comprised of 65 indicators comprising of tick marked and five point scale questions, which were equally weighted (0.33) Table 1 and grouped in 3 clusters of components viz. Awareness of e-resources (23 indicators); Availability of ICT facilities and Use of Internet Services (14 indicators) and the search techniques to retrieve e-information (28 indicators) to measure the e-information literate characteristics of the teachers, enlisted in Appendix A. The equal weight is calculated as 1/3 = 0.33 to represent the index value as ‘0’ and ‘1’ receptively. The resulted measures depend on the aspects related to e-information awareness and use, ICT facilities and searching skills which help in assessing their e-information literacy skills.

The proposed measuring indicators were tested with responses given by the university teachers. However, before calculating the index except tick marked questions all the five point question response values were converted between 0 and 1 as 0, 0.25, 0.50, 0.75 and 1 in order to show the similarity that will be useful for calculating an index by proposing a cut-off value at 0.5.

Table 1. Weightage criteria

<table>
<thead>
<tr>
<th>Components</th>
<th>Weightage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Awareness of e-resources [23 Indicators]</td>
<td>0.33 [0.33/23 = @0.0143/ per Question]</td>
</tr>
<tr>
<td>B. Availability of ICT facilities and use of internet services [14 Indicators]</td>
<td>0.33 [0.33/14 = @0.023/ per Question]</td>
</tr>
<tr>
<td>C. Searching techniques to retrieve e-information [28 Indicators]</td>
<td>0.33 [0.33/28 = @0.011/ per Question]</td>
</tr>
</tbody>
</table>

Table 2. E-information literate index of the teacher

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G (Index)</th>
<th>H (Literate/ Illiterate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>10</td>
<td>13.25</td>
<td>0.4348</td>
<td>0.7143</td>
<td>0.4732</td>
<td>0.5408</td>
<td>*1</td>
</tr>
</tbody>
</table>

*1 = Literate and 0 = Illiterate

As a sample, the index of first teacher was calculated in the following way:

A = Sum of response value of first component
B = Sum of response value of second component
C = Sum of response value of third component
D = A/23, E = B/14, F = C/28
G = Index (Average of D, E and F)
H = The first teacher suppose to be e-information literate considering cut-off value at 0.5 value and the index is above cut-off value.

Accordingly, an index was calculated for all the teachers under study (shown in histogram) to represent whether they are e-information literate or illiterate.

It is clear from Fig. 1 and Table 3 the lowest index observed was 0.0766 and highest was 0.9167. Majority of the teachers are having e-information literacy index between 0.3 and 0.8. The index level was highest between the ranges 0.6 and 0.7. Out of 347 respondents, 23% (79) of university teachers are having e-information literacy index between 0.6 and 0.7. About

Table 3. Summary of an Index

<table>
<thead>
<tr>
<th>Statistics</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>0.5381</td>
</tr>
<tr>
<td>Standard error</td>
<td>0.0091</td>
</tr>
<tr>
<td>Median</td>
<td>0.5527</td>
</tr>
<tr>
<td>Mode</td>
<td>0.7222</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>0.1704</td>
</tr>
<tr>
<td>Sample variance</td>
<td>0.0290</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>-0.4425</td>
</tr>
<tr>
<td>Skewness</td>
<td>-0.2648</td>
</tr>
<tr>
<td>Range</td>
<td>0.8401</td>
</tr>
<tr>
<td>Minimum</td>
<td>0.0766</td>
</tr>
<tr>
<td>Maximum</td>
<td>0.9167</td>
</tr>
<tr>
<td>Sum</td>
<td>186.7232</td>
</tr>
<tr>
<td>Count</td>
<td>347.0000</td>
</tr>
</tbody>
</table>
74% (257) teachers are having e-information literacy index between 0.4 and 0.8. It has been found that the distribution of e-information literacy index is not symmetric owing to differing skill levels of teachers. Further, e-information literacy index has negatively skewed and it shows relatively flat distribution. 210 (60.52%) teachers were found to be e-information literate and remaining 137 (39.48%) were not e-information literate.

5. FINDINGS
From Tables 4 and 5, we may draw following findings;
• It is found that 210 (60.52%) teachers were e-information literate based on index value.
• When looked across the disciplines of sciences, social sciences and arts and humanities, it is proved that Science faculties (0.5835) are more e-information literate than Social Science (0.5427) and Arts and Humanities (0.4616) faculties.
• From the gender based analysis, it was found that the index is high in case of female teachers (0.5516) than the male teachers (0.5309).
• In addition, from the designation wise analysis it was found that index for Assistant Professors was highest (0.5621) followed by Professors (0.5338) and Associate Professors (0.4975).

• Regarding university wise e-information literacy index, it was observed that the e-information literate index was higher in case of Shivaji University, Kolhapur (0.6093), followed by Sant Gadge Baba Amravati University, Amravati (0.5865), Swami Ramanand Teerth Marathwada University, Nanded (0.5716), North Maharashtra University, Jalgaon (0.5645), University of Mumbai, Mumbai (0.5466), Solapur University, Solapur (0.5338), University of Pune, Pune (0.5274), SNDT (Smt. Nathibai Damodar Thackersey) Women’s University, Mumbai (0.5097), Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur (0.4978), Dr Babasaheb Ambedkar Marathwada University, Aurangabad (0.4324).

Thus from the above detailed explanations it is revealed that depending upon the ICT/self skills of university teachers in handling e-information, awareness about different e-resources, tools and techniques for searching, accessing and retrieving e-information either from the internet or from subscribed e-resources and availability of sufficient infrastructure at the universities, the e-information literacy index of teachers calculated varies from teacher to teacher amongst the faculties and universities. The awareness and use of Web 2.0 along with the internet services by the university teachers was an additional verifying criteria used to measure the e-information literacy level of the teachers in terms of an index value.

6. CONCLUSIONS
The difference in e-information literacy index among the institutions and groups may be attributed to the efforts taken by each of the universities in building the required ICT infrastructure, training teachers in the effective retrieval and use of e-information and teachers self skills. The poor index value of university teachers needs to be accounted with sufficient awareness campaigns, ICT facilities and online training about searching techniques by the universities/ university libraries. Further academic/learning and research tasks of the university teachers may be strengthened by arranging discipline specific user awareness programmes and also by allocating certain hours per week in the time-table especially for searching and seeking e-information from different sources. This also may be made as part of the continued education programme for faculty members to become independent learners.
REFERENCES

CONTRIBUTORS
Dr Prakash Bhairo Bilawar has completed his BLISc, MLISc and PhD in Library and Information Science from Shivaji University, Kolhapur. Presently working as ‘Assistant Librarian’ (Senior Scale) at B.B.K. Library (Knowledge Resource Center), Shivaji University, Kolhapur, Maharashtra. He has 20 research publications in journals, conference proceedings/books. His areas of interest are ICT, information sources and services.

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Appendix A

Measuring indicators for E-Information Literacy of the Teacher

<table>
<thead>
<tr>
<th>Components</th>
<th>Indicators</th>
<th>Type of Questions</th>
<th>Weightage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Awareness of e-resources</td>
<td>1. Citation Indexes: Web of Science [SCI, SSCI, AHCI] SCOPUS etc</td>
<td>All Tick</td>
<td>0.33</td>
</tr>
<tr>
<td></td>
<td>2. Digital Libraries/E-Print Archives/Institutional Repositories</td>
<td>[✓]</td>
<td>[0.33/23=0.0143/ per Question]</td>
</tr>
<tr>
<td></td>
<td>3. Discussion forums/ Groups</td>
<td>Marked questions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. E-Books</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>5. E-Journals (including Open Access/Fee Journals)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>6. Electronic Abstracting and Indexing Databases</td>
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<td></td>
<td>7. Electronic Theses and Dissertations</td>
<td></td>
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<tr>
<td></td>
<td>8. E-Newspapers</td>
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<td></td>
<td>9. General Search Engines</td>
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<td></td>
<td>10. Journal contents alert services</td>
<td></td>
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<tr>
<td></td>
<td>11. Scholarly Search Engines</td>
<td></td>
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<td></td>
<td>12. Subject Gateways and portals</td>
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<td></td>
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<tr>
<td></td>
<td>13. Subject Specific Search Engines</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>14. E-resources from INFLIBNET consortium</td>
<td></td>
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<tr>
<td></td>
<td>15. Open access online databases/resources</td>
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<tr>
<td></td>
<td>16. Web 2.0 tools- Blogs</td>
<td></td>
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<tr>
<td></td>
<td>17. Chatting</td>
<td></td>
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<tr>
<td></td>
<td>18. Micro-blogs [Twitter]</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>19. Phone</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>20. Reference management tools like Zotero, Mendeley etc</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>21. RSS feeds</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>22. Social Networking sites</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>23. Wikis</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
B. Availability of ICT facilities and use of internet services

1. Computer
2. Internet connection
3. Multimedia Projector
4. Photocopying Machines
5. Printer
6. Scanner/Fax
7. CD-ROM/DVD databases
8. Communication i.e. e-mail, chatting, phone etc
9. Downloading information i.e. articles, reports, forms etc
10. Links to abstract, Full Text, Citation (reference) and other useful e-resources in the field
11. Listening to music and watching videos (Ex: YouTube)
12. Reading online newspapers, newsletters, blogs etc
13. Searching information
14. Watching video lectures from academic/research organization

All Tick 0.33

[√ ]

Marked @0.023/ per question

C. Searching techniques to retrieve e-information

1. Directly going to source of information [Knowing web address from references]
2. E-Journals/Databases, websites
3. E-Resources linked through library website
4. General Search engines
5. Guided Search/FAQ/Help
6. Meta Search engines
7. Scholarly Search Engines
8. Subject Directories/Gateways
9. Subject Specific Search engines
10. Use Subject bookmarking sites
11. Just enter keywords in simple search box
12. Just enter title or author in simple search box
13. Make use of Advance search options
14. Make use of Boolean operators [and, or and not] along with keywords
15. Make use of mathematical operators [+,-,*] along with keywords
16. Make use of Phrase search by putting content in “ ”
17. Make use of proximity operators [near, between etc]
18. Make search for content within specific content [.edu, ac.in, co. in etc]
19. Make search for content within specific languages [English, Hindi, French etc]
20. Make search for content within the files [PDF, HTML, DOC, Xls etc]
21. Browsing Content from E-Print archives/Digital Library/ Institutional Repository
22. By browsing journal articles from Journal homepages
23. Search for articles using Google
24. Search for articles using Google Scholar
25. Search for articles using Journals database Search options
26. Through Abstracting and Indexing Databases
27. Through library OPAC [Article Indexing]
28. Through links provided in e-mail table of contents alerts

All 5 Point Scales

0.33

[0.33/28= @0.011/ per Question]