Access to Electronic Resources and Services among the Research Scholars: A Study

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ABSTRACT

This paper examines the access to electronic resources, services and barriers among the research scholars who are currently pursuing Ph.D programme in engineering, pure sciences, and social sciences in the educational institutions of Tamil Nadu, India. The major objectives of the study are to find the access to e-resources, e-services and also the barriers faced by the research scholars. A well structured questionnaire was used to collect the data from the respondents. It is found that majority of research scholars (82.3%) are accessed to “Google Scholars”, and OPAC/WebOPAC service is highly used among other services. It is further analyzed that "Lack of permanent access" and "discontinuation of subscriptions" are formed as major barriers in accessing of e-resources and e-services. The study recommends creating awareness, highlighting the benefits of the resources & services, development/improvement of ICT facilities in the libraries to provide the information requirements of the user community.


INTRODUCTION

The library is a part of any educational institution which supports learning, teaching, and research activities in the institutions. The users are able to collect the required information. The academic libraries play an important role for research and development activities in universities and colleges. These libraries are procuring electronic resources for their clientele to use. Information and Communication Technology (ICT) has changed the way services are provided in academic institutions. ICT helps to locate information, provides access to information, stores and disseminates information to the users in desired formats. The publication of information resources has increased tremendously in the forms of e-journals, e-books, bibliographic databases, full-text databases, etc. Therefore, users are able to access both national and international resources for their research Sivakumaren, K.S.et.al. The researchers used a variety of ICT products and services in their research as these products were very helpful in finding needed information quickly and easily. They needed proper training and guidance for use of ICT based technologies for the optimum utilization of those services by researchers Ahmad & Fatima.

LITERATURE REVIEW

Ray & Day found that 83% of students have used the electronic resources and services easily and also saved their time. However, a study of online searching of scientific information in science and technology libraries of Delhi reveals a sizeable number of users (60%) are facing numerous problems while browsing electronic information, such as lack of knowledge about the resources, lack of trained staff and inadequate terminals Ali. The use of electronic resources by teachers, students and research scholars of universities and research organizations such as UGC Infonet e-journals has created high dependency value on their research work and required current article alert services and electronic document supply services Madhusudhan. The study reveals that the time spent to search information in the electronic resources has been decreased found by 55% of respondents and also felt that the information is published in various resources and it is required to access the information in one point Tahir, Mahmood & Shafique. The students (87.80%), research scholars (84.21%) are guided by the teachers/supervisors to access e-resources Singh. The majority of the faculty members (67.14%) are familiar with accessing of e-
resources Thanuskodi & Ravì1. Waldman reported high usage of the library’s OPAC by students at City University of New York9. Gakibayo carried out a study on Internet usage by students and staff at Mbarara University of Science and Technology and the result of the study indicated low usage of electronic information resources by students and staff of the university9. Rajeswari on use of information sources in digital environment10. A case study reveals that majority of the user including faculty members, research scholars and students are using OPAC system in the library and also using INFLIBNET services for accessing thousands of e-journals. Bashorun, Isah & Akinlo 59% of users in IIT, Delhi have awareness of electronic information services provided by the library15. Chisenga found that, although most libraries had internet connectivity, very few were offering web-based information services to their users16. The study however, identifies four barriers to the effective provision of electronic resources in those libraries such as lack of strategic planning, lack of adequate or reliable funding, lack of use of Internet to provide information services to users and a lack of consistent training for users in new ICT services. H. Dilek-Kayaoglu found in the study that being unaware of e-journal service from the library (42.7%), unfamiliar with the use of e-journals (24.4%), Problems with reading text from the screen (22%), using e-journals (14.2%). Rehman & Ramzy found time constraints, lack of awareness, low level skills in the use of electronic information resources in the libraries15.

OBJECTIVES

- To analyze the accessibility to e-resources in various educational institutions among the research scholars
- To investigate the various library services accessed by the research scholars
- To find out the various search techniques used to access the e-resources and services
- To find out the various barriers in accessing the e-resources and services

HYPOTHESES

- There is a significant difference in the accessing of the library services among the research scholars based on the research domains.
- There is an association in the barriers in accessing of electronic resources and services among the research scholars.

METHODOLOGY

The study was conducted among the research scholars of engineering, pure sciences and social science in various colleges and universities of Tamil Nadu. A well structured questionnaire was designed to collect the required data from the respondents. A total of 300 questionnaires were distributed among the research scholars in various engineering, pure science and social science institutions. Out of 300 questionnaires, 189 questionnaires were received back and the response rate is 63%. The data collected were converted into SPSS for data analysis.

DATA ANALYSIS

Demographic Information

The questionnaires were distributed equally to research scholars who are currently pursuing Ph.D. programme in engineering, pure sciences and social sciences under both full-time and part-time.

<table>
<thead>
<tr>
<th>Institutions</th>
<th>Distribution of Questionnaire</th>
<th>% age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering</td>
<td>100</td>
<td>79</td>
</tr>
<tr>
<td>Pure Sciences</td>
<td>100</td>
<td>56</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>100</td>
<td>54</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>189</td>
</tr>
</tbody>
</table>

Table 1 shows that 79 (41.80%) of respondents are pursuing Ph.D. in engineering, 56 (29.63%) of the respondents are doing research in pure sciences and 54 (28.57%) of them are doing research in social sciences.

Access to Electronic Resources

The e-resource is an effective tool to collect, store and share the scholarly contents among the research scholars. It provides access to various resources in the research areas published anywhere in the world.

Access to Electronic Library Services

The libraries in the educational and research institutions have

![Fig. 1: Access to Electronic Resources](image-url)

**Table 2:** Access to Electronic Library Services

<table>
<thead>
<tr>
<th>Description</th>
<th>Never</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>e-Books</td>
<td>72</td>
<td>24</td>
<td>14</td>
<td>4</td>
<td>29.75</td>
<td>10.62</td>
</tr>
<tr>
<td>e-Journals</td>
<td>64</td>
<td>17</td>
<td>16</td>
<td>3</td>
<td>15.14</td>
<td>5.83</td>
</tr>
<tr>
<td>Web of Science</td>
<td>37</td>
<td>27</td>
<td>35</td>
<td>11</td>
<td>29.35</td>
<td>4.11</td>
</tr>
<tr>
<td>Scopus</td>
<td>4</td>
<td>9</td>
<td>22</td>
<td>69</td>
<td>29.66</td>
<td>10.68</td>
</tr>
<tr>
<td>GoogleScholars</td>
<td>34</td>
<td>23</td>
<td>42</td>
<td>21</td>
<td>33.82</td>
<td>8.21</td>
</tr>
<tr>
<td>IEEE</td>
<td>52</td>
<td>50</td>
<td>38</td>
<td>10</td>
<td>49.38</td>
<td>1.59</td>
</tr>
<tr>
<td>ScienceDirect</td>
<td>30</td>
<td>34</td>
<td>35</td>
<td>15</td>
<td>34.30</td>
<td>2.89</td>
</tr>
<tr>
<td>Indian Citation Index</td>
<td>15</td>
<td>19</td>
<td>21</td>
<td>51</td>
<td>28.47</td>
<td>6.68</td>
</tr>
<tr>
<td>Open-J-Gate</td>
<td>50</td>
<td>43</td>
<td>0</td>
<td>0</td>
<td>25.76</td>
<td>3.47</td>
</tr>
<tr>
<td>DOAJ</td>
<td>68</td>
<td>36</td>
<td>22</td>
<td>6</td>
<td>50.42</td>
<td>5.13</td>
</tr>
<tr>
<td>e-Shoudhsindhu</td>
<td>22</td>
<td>37</td>
<td>40</td>
<td>16</td>
<td>35.48</td>
<td>6.24</td>
</tr>
</tbody>
</table>

Table 2 and Fig. 1 show that 82.3% of the research scholars have accessed “Google Scholars” for collecting of research information. It is followed by e-Books (73.1%), e-Journals (69.8%) and e-Shoudhsindhu (68.8%), Science Direct (66.1%), Web of Science (64%) and Scopus (62.2%). It is analyzed that less number of the research scholars have access to the other resources like IEEE (46%), Indian Citation Index (30.2%), DOAJ (25.4%) and Open J-Gate (10.6%). It is inferred that the majority of research scholars are highly familiar and accessed usually used resources. However, it is important for the research scholars to access other resources like Scopus, Web of Science and Indian Citation Index to know the experts, publications, developments in their research areas, impact factor and h-index.
introduced a good number of new services to provide access to the scholarly contents available in the libraries or open access domain. The study revealed that the electronic library services accessed by the research scholars in the institutions.

Table 3: Access to Electronic Library Services

<table>
<thead>
<tr>
<th>Description</th>
<th>Neve</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPAC/WebOPAC</td>
<td>36</td>
<td>53</td>
<td>46</td>
<td>54</td>
</tr>
<tr>
<td>RFID Technology</td>
<td>53</td>
<td>67</td>
<td>38</td>
<td>31</td>
</tr>
<tr>
<td>Institutional Repository</td>
<td>53</td>
<td>86</td>
<td>35</td>
<td>15</td>
</tr>
<tr>
<td>Federated Search</td>
<td>48</td>
<td>100</td>
<td>34</td>
<td>7</td>
</tr>
<tr>
<td>Discovery Tool</td>
<td>67</td>
<td>87</td>
<td>19</td>
<td>56</td>
</tr>
<tr>
<td>Web 2.0</td>
<td>73</td>
<td>21</td>
<td>47</td>
<td>48</td>
</tr>
<tr>
<td>Remote Access</td>
<td>99</td>
<td>43</td>
<td>22</td>
<td>25</td>
</tr>
<tr>
<td>Publishers Alter service</td>
<td>79</td>
<td>52</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>189</td>
<td>18.96</td>
<td>6.53</td>
<td></td>
</tr>
</tbody>
</table>

It is found from table 3 that OPAC/WebOPAC (52.9%) service is accessed by the majority of research scholars, since the OPAC is the gateway to find out the resources and services available in the libraries, the result is also revealed the same in this study. The libraries have implemented Web 2.0 based service to share and disseminate the information to the users. It is investigated 50.3% of the research scholars have access to the Web 2.0 based services for research information. It is followed by RFID Technology (36.6%), Discovery tools (29.1%), Institutional Repositories (26.4%). The result shows that services are utilized by less number of the research scholars in all domains and rate of access to services ranges from 20.7% to 52.9%. In order to increase the utility of services, suitable measures are to be taken by the librarians and authority of the institutions by way of conducting programmes in the libraries.

Table 4: One Way ANOVA Test Results for Library Service Vs Research Domains

<table>
<thead>
<tr>
<th>Description</th>
<th>Experience</th>
<th>N</th>
<th>Mean</th>
<th>Std</th>
<th>F value</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to Electronic Library Services</td>
<td>Engineering</td>
<td>79</td>
<td>18.77</td>
<td>7.19</td>
<td>.096</td>
<td>.908</td>
</tr>
<tr>
<td></td>
<td>Pure Sciences</td>
<td>56</td>
<td>18.92</td>
<td>6.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Social Sciences</td>
<td>54</td>
<td>19.27</td>
<td>5.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>189</td>
<td>18.96</td>
<td>6.53</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Tables 4 and 5 show the results of the one way ANOVA test. It is found that the mean score of library service is high among the research scholars in Social Sciences (19.27) and low among research scholars of engineering (18.77). The F value is .096 and the p-value is 0.908(p=0.05), which denotes that it is not significant. Therefore, it is inferred that there is no significant difference in accessing of electronic library services among the research scholars based on their research domains, where, F=0.960 and p>0.05, as p value is greater than 0.05. Hence, the hypothesis is not proved.

**Search Techniques**

Development in ICT has changed the traditional way of searching information in the libraries. ICT helps to retrieve information from various e-resources and services easily by using various search techniques. The study has described the various search techniques adopted by the research scholars in retrieving information.

It is found from table 6 that “Keyword” is the highly used search technique by the majority of the research scholars (Mean 1.70) to access to the information in e-resources, e-services and placed in first rank. It is further revealed that “Title” is another widely used search technique by a good number of research scholars (Mean 1.63) and placed in the second rank, which is followed by “Boolean Operators” (Mean 1.58) and ranked third place. It is also ascertained that “Author” has been used as search technique by research scholars (Mean 1.45) and placed in the fourth rank. “Truncation” (Mean 1.38) and “URL” (Mean 1.16) are used only by few research scholars and placed in fifth and sixth ranks respectively.

**Barriers in Accessing the Electronic Resources and Services**

The traditional library resources and services are being slowly replaced by the digital technology in the libraries. It happens due to advancement in the technology emerged in the library and information centres. Perhaps, the publishing industries have also changed their traditional products to digital products in the form of e-books, e-journals, e-databases etc. In order to provide access to these resources, the libraries have to procure e-resources and introduce new web based services.

Table 6: Search Techniques

<table>
<thead>
<tr>
<th>Description</th>
<th>Yes</th>
<th>Mean</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author</td>
<td>87</td>
<td>46%</td>
<td>4</td>
</tr>
<tr>
<td>Keyword</td>
<td>73</td>
<td>70%</td>
<td>1</td>
</tr>
<tr>
<td>Title</td>
<td>65</td>
<td>34%</td>
<td>2</td>
</tr>
<tr>
<td>URL</td>
<td>159</td>
<td>84%</td>
<td>6</td>
</tr>
<tr>
<td>Boolean Operators</td>
<td>79</td>
<td>41%</td>
<td>3</td>
</tr>
<tr>
<td>Truncation</td>
<td>123</td>
<td>65%</td>
<td>5</td>
</tr>
</tbody>
</table>

It is found from table 7 that 65.1% of the research scholars found “Lack of permanent access to the e-resources” as major barrier in accessing e-resources. It is followed by “Discontinuation of subscription (64.5%), “Lack ICT facilities” in the libraries is another major barrier found by 55% of the research scholars. A good number of research scholars (53.9%) experienced problems in accessing the e-resources and services due to “Network Connectivity”. It is further analyzed that 40.8% of the research scholars found problems with “Search Techniques”. It is also found that less number of the research scholars found the barriers in “URL” (38.1%), and “Lack of Orientation/Awareness (36.5%)”.

Table 5: Summary of ANOVA Results

<table>
<thead>
<tr>
<th>Description</th>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F value</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to Electronic Library Services</td>
<td>Between Groups</td>
<td>8.29</td>
<td>2</td>
<td>4.147</td>
<td>.096</td>
<td>.908</td>
</tr>
<tr>
<td></td>
<td>Within Groups</td>
<td>8020.44</td>
<td>187</td>
<td>43.121</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>8028.73</td>
<td>189</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Chi-square test has been applied to test the hypothesis that “there is an association in the barriers in accessing the electronic resources and services among the research scholars”. The results of the test show that the calculated value of (20.737) for parameter is more than table value of (15.507). Hence, the hypothesis is not proved.

CONCLUSION

From the results of the study, it is found that research scholars irrespective of their research domains are extensively using the electronic resources to collect the required information. However, access to the electronic services (Discovery tools, Remote Access, Federated Search and Publishers Alter service) are found less among the research scholars. These services will provide access to the scholarly contents published recently in a single platform e.g. federated search/discovery tool and remote access. The permanent access and discontinuation of subscriptions were found as the major barriers in accessing the resources and services among the research scholars.

RECOMMENDATIONS

The following are recommended to implement in the Libraries to increase the utility of the electronic resources and services:

- The librarians are required to create awareness, highlight the benefits, the importance of the resources and services among the research scholars.
- The library and information centres are required to upload the information about the existing services and when new services are introduced periodically. Hence, access to resources and services can be increased among the users.
- The publishers need to organize the training programmes about their products, services, search techniques, and features among the users.
- The authorities of the institutions have to develop/improve the ICT facilities available in the libraries to provide information to the users.

REFERENCES