Developing a Standardised Tool for Impact Assessment of INFLIBNET

S. Ramesh* and T. Yuvaraj**

*Manonmaniam Sundaranar, University, Tirunelveli–627 012
E-mail: ramesh_msul@yahoo.co.in

**Department of Psychology, Manonmaniam, Sundaranar University, Tirunelveli–627 012
E-mail: yuvarajpsychologist@gmail.com

ABSTRACT

This paper aims to develop a standardised tool to measure the impact of INFLIBNET services.The methodology involves validation of the impact assessment scale by establishing reliability and validity. Construct validity was established initially, based on previous research findings on impact assessment. This was followed by content validity by asking opinion from three experts, who rated the scale to be highly valid, along with certain modifications. Later, Test Retest reliability was established using data from 21 respondents with an interval 75 days. 'r' value ranges from 0.46 – 0.49 for different subscales. Alpha co-efficiency was also calculated χ value range between 0.54 and 0.80, Thus, the scale was found to be stable and valid and ready for identifying impact of INFLIBNET services. The paper involves application of Psychometry in the field of Library Science, emphasizing the importance of standardisation in assessment of any new resources/ service.

Keywords: INFLIBNET, impact, impact assessment, standardisation, validity, reliability, RAINI scale

1. INTRODUCTION

1.1 INFLIBNET

University Grants Commission (UGC) has created an autonomous body for digitalisation of library resources of all academic and research institutes, which is now called Information and Library Network (INFLIBNET). INFLIBNET is an autonomous Inter-University Centre (IUC) of University Grants Commission (UGC). It is involved in creating the infrastructure for the sharing of library and information resources and services among academic and research institutions in India. INFLIBNET works jointly with Indian University Libraries to shape the future of academic libraries in the formation of information environment[1]. It is a multiple service network that offers catalogue-based services, database services, document supply services, collection and development and communications based services[2]. INFLIBNET has a website of its own where it offers all these services under separate classification categories[3].

Researchers in the field of library and information services have explored the impact created by INFLIBNET among the research community in India. However, most of them have attempted only on looking at very specific services of INLIFBNET, especially on e-journals. A major reason is that most of the end users of INFLIBNET are found to be using e-journals alone for their research purpose and not many of them are aware of other valuable services of INFLIBNET.

To understand the impact of INFLIBNET, it is essential to take into consideration, all of the services rendered by INFLIBNET. But it has so far been carried out by very few researchers in the field of library science. But, to do this, a well-structured form of assessment is required. Hence, a necessity for developing a standard tool to assess the impact of INFLIBNET is initially felt.

2. CONSTRUCT VALIDITY

To understand the impact of a service, the users must continuously use the service and it must have crossed a limited period of time. If the investigators have to calculate the impact of a particular service, then the service must be accessed by a number of users. Through these regular users, the real impact can be found.

The impact of any service must be compulsorily analysed by its provider. Only then, an investigator can understand why the user uses this service and whether this service fulfills the needs of the users. It also confirms whether the needs of the users are satisfied or if there are any other services which are more useful to the users. If the needs of the users are not fulfilled, the investigator must find out

the reasons. If the investigator has understood the nature of this impact, then the value of the services can be understood easily. Hence, to understand the impact of a service, impact assessment shows the real value of that service[4].

Devi & Murthy[5] had done a study on issues in UGC-INFONET e-journal consortium where, they concluded that the impact analysis could be done after INFLIBNET programme has achieved a level of stability. The inception of INFLIBNET has now crossed over 10 years. Many research scholars and faculty members have used this service to their entire satisfaction in gathering information in their respective disciplines. Therefore, it was decided to conduct this study to explore the overall impact of INFLIBNET, through development of a standardised scale of impact assessment.

The construct variable in this research paper is 'impact' Theories that state the parameters of impact tend to look it from a physical science perspective, where impact simply means collision of two particles. Whereas, the term impact does not seem to have conceptual background from the perspective of library science. In spite of this, there are studies that have focused on impact assessment of library resources.

Articles were reviewed in search of a strong theory that supports the impact of library resources in general and INFLIBNET and e-resources in particular. However, the definition of impact relates predominantly to physical or a chemical sciences where, impact is considered as the collision of particles and no theory refers to the impact as viewed by the authors in the present study.

In one of the reviews, Hess & Klekotka[6] defined impact as "the extent to which the program makes a difference compared to either having no program or having an alternative program". This was considered for the present study as conceptually strong and having appropriateness for the present study. Thus, keeping this as conceptual definition, the authors started searching for various constructs underlying the variable 'impact' from previous literature on digital libraries and e-resources. This is elaborated as follows:

3. LITERATURE SURVEY

Bradley[5] presented various studies about the impact of International Federation of Library Associations and Institutions (IFLA) upon setting up of educational activities for librarians, from cataloging to internet access and has quoted a definition of impact assessment by Markless & Streatfield[7] in which they state that "impact assessment is, a process that aims to identify the consequences of an action. Action can take many forms".

Ramaiah & Moorthy[8], studied the impact of Continuing Education Programmes (CEP) on Library and Information Science (LIS) professionals where they viewed impact to be something that fills up the gaps in university learning and keeps up-to-date with the technology and helps in getting promotions.

Banks & Dellavalle[9] explained the impact factor of the scholarly communication system. There were five categories of alternatives to the impact factor: Measures that build upon the same data that informed the impact factor; Measures that refine impact factor data with 'page rank' indicating weight electronic resources or web sites through the number of resources that link to them; measures of article downloads and other usage factors; recommended systems, in which individual scholars rate the value of articles and a group's evaluations pooled together collectively; and ambitious measures that attempt to encompass the interactions and influences of all inputs in the scholarly communications system.

Bonorino & Molteni[10] describe the impact that the emergence of e-journals had exerted on the different services and areas making up information units in Argentine private universities. Regarding impact assessment in the library cooperation and publishing area, the following topics were addressed: the degree of cooperation in relation to inter-library loan; libraries publishing electronic journals; and the role of librarians in publishing the approved articles and also in posting the articles in the web.

Elam[11] conducted a survey to find out the impact of e-resources and digital image databases on the research methodologies of Art History field. In this, she contacted, to Pratt Art History Professor, Dr. Mary Edwards, who praised the convenience of electronic databases, explaining, "I use JSTOR to print out articles to save time and prevent harm to journals caused by Xeroxing," while other art historians were still unsure about electronic resources. Dr. Coolleen Sheehy, Curator and Director of Education at the Weisman Museum of Art, used online databases to obtain citations. Mary Ellyn Johnson of the San Francisco Art Institute, said, "I like the simplicity – keyword searches and advanced searches".

Yi & Herlihy[12] measured the impact of deploying an open-URL link resolver, on students and faculty for the use of electronic scholarly resources. For this, the California State University, San Marcos Master Level Institution was chosen. They measured two open-URL links: (1) EbscoHost and JSTOR access number and (2) SFX access number. EbscoHost and JSTOR access data were analysed by the amounts and type of access. SFX data was analysed by the number of sessions fulfilled in both EbscoHost and JSTOR. Two levels of impact were studied. Direct impact was defined as any usage that can be directly attributed to SFX. Indirect impact was defined as usage changes that coincide with implementation of SFX. A two-tier timeline was conducted so as

to study both short and long term influence of an Open-URL link resolver. The number of services, or in other words, the usage of EbscoHost & JSTOR service have increased. Open URL-link serves as a short-term direct impact, after the implementation of SFX at California State University, San Marcos in 2002. SFX has a positive short-term impact on the usage of these services. On a long-term indirect impact, the implementation of SFX has provided easy access to scholarly resources.

Oduwole & Sowole[13] studied the effect of a database called 'The Essential Electronic Agricultural Database (TEEAL) upon library services in a Nigerian University of Agriculture. The impact of TEEAL was reported as very easy to use and the library users were very satisfied with TEEAL because they can review information very fast. It concluded that the CD-ROM database technology has enabled users, especially researchers, to locate relevant information at a fast rate, with less effort and at less cost when compared to hard copy journals.

The researchers have inferred simultaneously from many authors who had studied about impact assessment. They are as follows: Libraries have to acquire a large number and variety of database in CD-ROM format. For example easy-to-use workstations with appropriate search software, which would give users help in finding and loading the appropriate CD-ROM discs and in using the search software[14]. User's accessibility to electronic databases has increased the awareness of the value of information and has assisted the nation in scientific and technological advancement[15]. Quick information provision, cost effectiveness and saving of space are the benefits of CD-ROM[16]. Users can access CD-ROM quickly and easily. This has even positively affected library users, staff service policies and budgets[17].

Borgman[18], *et al*. have pointed out that scientific digital libraries can support both research and teaching applications. They provide an existing opportunity to assess the usefulness of personal digital libraries in instruction and learning. Madle[19], et al. proposed a methodology for evaluating the impact of the National Electronic Library for Communicable Disease (NeLCD) on users' knowledge, attitude and behaviour. Nicholas[20], *et al*. noted that while evaluating the users' knowledge, attitude and behaviour, a small number of users always give a clear picture about the individual user's behaviour. Sumner & Marlino[21] proposed three approaches–cognitive tools, component repositories, and knowledge networks with specific examples drawn from the Digital Library for Earth System Education (DLESE) and the NSDL for educational digital libraries.

Appleton[22] reported upon the design, implementation and findings of a research study investigating the perceptions of electronic library resources within the UK's further education sector.

Appleton had stated the views of various authors regarding impact assessment. They are: Academics working within the Higher Education (HE) sector regarding Electronic Library Resources (ELR) as having more use and impact upon their teaching and learning, than their further education contemporaries do[23].

Payne[24] explained how there was an increasing interest in looking at the impact of value of libraries, and that this must go beyond just looking at the use of and satisfaction with library services, but must assess what contribution a library and information service makes to its host organisation.

In case of academic libraries, this relates to how much impact the library service has on the learning, teaching and research activities of the institutions. Select higher education libraries strategically measured their performance in a particular area of provision, in order to standardise good practice in academic library performance measurement.

One of the strands of this project was the impact of investment in electronic resources. The objectives of the research were to measure the impact of Electronic Library Resources (ELR) on learning, teaching and research, to evaluate the 'usefulness' of ELR, and to increase the perceived value of ELR within the user community. This was achieved through measuring ELR usage statistics, user attendance at ELR workshops, library expenditure on ELR, citations of ELR in bibliographies and reading lists and the library survey[25]. It would be more difficult to obtain real qualitative evidence that the use of ELR in these contexts have a positive or beneficial impact in the actual teaching and learning activity of the institution.

Jay & Webber[26] examined the Use of Internet in English Public Libraries. The study revealed that users were satisfied with their search results. It was pointed out that difficulty, time-consumption, competitiveness, cost effectiveness, efficiency and the effectiveness of reference works and accessibility of resources were the components of impact on internet based resources. The authors have quoted Jane's[27] definition of impact as "a profession in rapid and profound transition, struggling to understand what best to do as the information environment continues to change". They have also given views on impact assessment gathered from many authors. They are as follows: Berube[28] had found in his research on the impact of Library Systems and Services and Virtual Reference Toolkit, Used in the British Library, that majority of users had reacted positively to the service. It also had an impact on the users' satisfaction and the issue of web accessibility. Tenopir & Ennis[29] reported that the electronic resources have increased job satisfaction.

Janes[27] stated that public librarians are more likely to be more positive than academic librarians, and in particular, that the public librarians are more likely to agree that internet resources have made reference work more effective. Janes had also commented that the survey carried out was aimed at reference librarians for whom the impact of digital reference is likely to be positive and optimistic. Spacey[30] *et al.* found that the majority of the UK public staff surveyed, had positive attitudes towards the internet, particularly highlighting the increased availability of information to help them answer enquiries.

4. INFERENCES FROM LITERATURE

From reviewing innumerous literatures, the authors opine, from the directions of various researchers, that while measuring the impact of a particular service, certain factors mentioned below must be taken into account.

- Access to user based information must be made easy.

- Guidelines regarding this service must be easy to understand.

- To create an infrastructure and to fulfill the user's need in gathering information must be the librarian's first task.

- Users must know how to access these services.

- If this is the case, then time and energy can be saved.

The authors are also of the opinion that, if all these services were brought under a single domain, the impact would be very good. After all these reviews, the authors thus come out with the operational definition of 'impact assessment' of a particular digital resource, which will include the following: saving time, number of citations presented, availability of advanced searches, availability of print resources, provision of training programmes, availability of new and latest services, availability of a variety of databases, easy-to-use workstations, awareness of value of information, scientific and technological advancements, quick information provision, cost effectiveness, saving of space, easy and rapid access, less effort, easy to search database, competitiveness, efficiency and effectiveness of reference works, accessibility of e-resources, Virtual Reference Toolkit, users' satisfaction, web accessibility, positive attitudes, increased availability of information, presence of a mode of answering enquiries, number of times an article has been downloaded, positive or beneficial to teaching and learning, new technology, less storage costs, better cooperation in relation to inter-library loan and keeping up-to-date with the technology related to library science.

Based upon these qualities, the authors thus, developed a scale, which included 42 statements. This 42 item instrument was then divided into 5 subscales, such as, Attitude on INFLIBNET, Impact of JCCC, Impact of e-journals, Impact of Union Catalogue and the Overall Impact of INFLIBNET.

For every statement a 5-point Likert scale of response was provided. The 5 points were Strongly Agree, Agree, Uncertain, Disagree, and Strongly Disagree. These responses were ranked accordingly. 5 marks were awarded for Strongly Agree and 1 mark for Strongly Disagree. The authors framed 32 statements as positive and 10 statements as negative statements. Negative statements were included to reduce the bias in response

5. CONTENT VALIDITY

The scale was given to three experts. Among these three experts, the first expert was an Associate Professor from the Department of Sociology. This Associate Professor frequently used INFLIBNET and was hence selected by the authors as one of the experts. The second expert was a Research Scientist in Psychology. As the tool development involved Psychometric application, the authors decided to make use of her expertise in the rating of this scale. Thirdly, the authors selected a college librarian for his expertise in research in Library Science. As the thrust areas of this research were centered on library service, this librarian was selected as the third expert. The 42 item scale was rated for its clarity, relevance and usefulness by the experts.

5.1 Clarity

The experts suggested certain changes based on clarity. These changes were made accordingly, which are elaborated in Table 1.

5.2 Relevance

The importance of relevance were analysed and the authors were asked to include only relevant statements and to exclude the irrelevant statements. The authors removed the irrelevant statements according to the suggestion of the experts and then asked the experts to place all the statements in appropriate order (Table 2).

Following this, certain changes were made in the addition of relevant statements and the scale was altered accordingly (Table 3).

5.3 Rearrangement

The statements mentioned below were also rearranged according to INFLIBNET related programmes (Item no.17.1 to 17.14) (Table 4).

Table 1. Revised statement

Item No.	Original statements	Revised statements
	Impact of JCCC subscale	
14.2	It takes a lot of steps to get JCCC	It takes a lot of mental energy to get into JCCC
14.7	I am able to select journals of my My Journal option	My Journal option allows me to interest from select journal of my own interest
	Impact of e-journals subscale	
15.1	With the help of e-journals I am able to access research articles from anywhere in the world	I am able to access research articles world wide
15.2	I quote these research articles as citation in my paper presentation	I have quoted e-consortium journal in citation for my paper presentation
	Impact of union catalogue subscale	
16.1	I can access books available in Union Catalogue even through State-wise search	I can access books even through state-wise search
	Overall impact of INFLIBNET subscale	
17.4	INFLIBNET helps to identify Experts related to my area of Research also with their profile	I am able to identify experts related to my area of research along with their profile

Table 2. Irrelevant statements

S. No.	Sub-scale	Statement
1.	JCCC	Through JCCC, I am able to select topics of my research area and access articles specifically
2.	Union Catalogue	With the help of union catalogue, I am able to gather information related to my field of interest.
3.	Union Catalogue	With the help of bibliographic details I am able to gather information about Universities/ Institutions where the research materials are available so that I can go there and gather the research material.

Table 3. Addition of relevant statements

S. No.	Sub-scale	Statement
16.5	Union Catalogue	It is easier for me to know the location of bibliographic data in union catalogue
17.13	Overall Impact of INFLIBNET	I use Really Simple Syndication (RSS) program in INFLIBNET to access current issues in my research area
17.4	Overall Impact of INFLIBNET	RSS provides multiple options for accessing program current issues.

5.4 Usefulness Rating

The following statements were removed as they were not considered useful by any of the 3 experts (Table 5). Overall, the experts rated the scale to be of high relevance and almost all of the statements are clear and specific to the purpose of the present study. Thus, the revised 42 item scale was then distributed to a group of scholars and faculty members for further standardisation.

6. ESTABLISHING RELIABILITY

After the Content Validity was established, the authors distributed the questionnaire to research scholars and faculty members ast manonmaniam Sundaranar University, Tirunelveli. 78 scales were distributed among those scholars and faculty, who have been using INFLIBNET. Among these, 75 scales were returned duly filled. Three scales were only partially filled and hence rejected by the investigator. Thus, using these 75 scales, further tests of standardisation were carried out by the authors.

Table 4. Rearrangement of the sub-scale: Overall impact of INFLIBNET programme

S. No.	Statements	Original location	After rearrangement
1.	I update my knowledge on INFLIBNET by reading latest reports available in the Institutional Repository	17.1	17.1
2.	I am able to access information about research from Universities anywhere in India.	17.2	17.2
3.	I make use of utilities (anti-virus, messaging, audio-video, software etc) available in INFLIBNET, which I can download free of cost	17.3	17.5
4.	I am able to identify experts related to my area of research along with their profile	17.4	17.4
5.	I am able to identify previous research works done in my field of interest	17.5	17.3
6.	Using INFLIBNET program is cost effective than any other traditional method of collecting reviews	17.6	17.12
7.	I chat online regarding my doubts in accessing INFLIBNET	17.7	17.6
8.	My request for searching research material is satisfied	17.8	17.7
9.	I send queries and receive feedback related to my research	17.9	17.10
10 .	I do not have to move to places in search of research material hereafter	17.10	17.8
11.	My knowledge in accessing INFLIBNET is less	17.11	17.9
12.	Time to search for research material is saved	17.12	17.11
13.	I use RSS (Really Simple Syndication) in INFLIBNET to access current issues in my research area	17.13	17.13
14 .	RSS provides multiple options for accessing current issues	17.14	17.14

Table 5. Removing the statements

S. No.	Statement
1.	You receive requested articles in JCCC service by post
2.	You get duplicate records in Union Catalogue Database
3.	Abstracts are not available in Theses Database

6.1 Test-Retest Method

The reliability of the 42 statements was analysed using the Test-Retest method. The scale was given to 21 respondents of Manonmaniam Sundaranar University, Tirunelveli, initially they include MPhil scholars, PhD scholars and Faculty Members who are using INFLIBNET. After a gap of 75 days the scale was distributed again to the same group of persons and they were asked to fill them. Their two sets of data were then compared using Pearson's Product Moment Correlation. The results were tabulated (Table 6).

The 'r' values of Attitude on INFLIBNET sub scale was (0.46) the Impact of e-journals (0.46) and the Overall Impact of INFLIBNET (0.49) was significant at 0.05 levels. Thus, the 3 subscales are found to be consistent. Although, the r value

Table 6. 'r' value showing test-retest reliability for the sub-scales of the impact of INFLIBNET scale

Sub Scales	Value	N	Mean	Std. Dev.	r
Attitude on INFLIBNET	Test Value	21	25.48	2.38	
	Re-Test Value	21	36.40	4.59	0.46*
Impact of e-journals	Test Value	20	32.71	4.90	
	Re-Test Value	20	36.40	4.59	0.46*
Overall Impact of INFLIBNET	Test Value	21	46.57	5.47	
	Re-Test Value	19	51.10	7.39	0.46*

* Correlation is significant at 0.05 level (2-tailed)

shows a moderate relationship on all these 3 subscales, it can be stability appreciable value since the time interval between the two phases of measurement is relatively large (75 days). The test-retest reliability for the subscales measuring JCCC and Union Catalogue services could not be found, because most of the users did not respond to the questions related to JCCC and Union Catalogue. The respondents reported that they were not aware of the above services and hence, not used them frequently.

7. INTERNAL CONSISTENCY RELIABILITY

Internal stability of the scale was assessed using Internal Consistency Reliability. Cronboch Alpha coefficient was used to establish internal consistency.

7.1 Attitude on INFLIBNET Statement Sub-scale

The authors had framed 7 statements for measuring Attitude on INFLIBNET. The Alpha value was found to be 0.35 for this subscale. This value is too low to prove Internal Consistency. The Corrected Item-Total Correlation's (CITC) lowest value was shown through every statement which was removed step by step so as to increase the Alpha value. In the CITC test, the lowest value that is shown is as follows:

by INFLIBNET. The original scale consisted of 8 items. This had an Alpha Value of 0.63. 3 items were removed which resulted in an Alpha Value of 0.80 for the remaining 5 items (Table 8).

7.3 Impact of E-journals Sub-scale

In this sub-scale 8 statements were prepared. The Alpha value of these 8 statements showed 0.53. One statement which had a low CITC value was removed. The statement is shown (Table 9).

This statement was excluded and the remaining 7 statements were analysed again and the resultant Alpha value was 0.54. On further purification, the Alpha tends to decrease. Hence, further purification was stopped and thereby retaining the 7 statements under impact of e-journal subscale.

7.4 Impact of Union Catalogue Sub-scale

The Alpha value for impact of Union Catalogue subscale with 5 items is 0.80. This is highly consistence. Hence all of the items were retained (Table 10).

7.5 Overall Impact of INFLIBNET Sub-scale

In this sub-scale, 14 statements were framed by the authors and the Alpha value was found to be 0.72. No statement was deleted from this sub-scale. All the statements were internally consistent.

Table 7. Alpha value of impact of e-journals' sub-scale

Item no.	Statement	CITC value	Alpha if item Deleted
11.2	INFLIBNET is simply another medium in searching for reviews	0.01	0.41
11.7	Using other web resources (such as Google, Yahoo, etc.) is easy to access articles than using INFLIBNET	0.06	0.47
11.4	Traditional methods (such as going to libraries and Universities) for searching research reviews are easier than INFLIBNET search.	0.11	0.61

Table 8. Alpha value of JCCC sub-scale

Item No	Statement	CITC value	Alpha if item deleted
14.5	I am not able to know the status of my ILL (Inter-Library Loan on request for a research article	0.11	0.65
14.2	It takes a lot of mental energy to get into JCCC	0.03	0.71
14.4	ILL service takes time to send the Requested Article	0.00	0.80

These 3 statements were removed one by one and every time the Alpha was checked. Thus, through the remaining 4 statements, the Alpha value was found to be 0.61. These 4 statements were found to be Internally Consistent and hence retained under this sub-scale (Table 7).

7.2 Impact of JCCC Sub-scale

JCCC subscale was developed to know users awareness and usage of the JCCC service provided

Table 9. Alpha value of impact of e-journals' sub-scale

Item No.	Statement	CITC Value	Alpha If item deleted
15.4	Some of the important research articles in the e-consortium are not available in full-text	0.01	0.41

8. DISCUSSIONS

The present study was aimed at developing a standard tool for impact assessment of INFLIBNET

Table 10. Alpha value of all the sub-scales of impact of INFLIBNET

Sub-scale	Alpha co-efficient
Attitude on INFLIBNET	0.61
Impact of JCCC	0.80
Impact of e-journals	0.54
Impact of Union Catalogue	0.80
Overall Impact of INFLIBNET	0.72

tool. The items were pooled from various researchers done earlier on impact assessment of digital libraries and e-resources across the world. These items were then arranged in 5 categories. They are 'Attitude on INFLIBNET', 'impact of JCCC', 'impact of e-journals, 'impact of Union Catalogue', and the 'Overall Impact' of INFLIBNET'. The scale was validated with the help of experts and then set for reliability. Test-Reset method was carried out, with an interval or 75 days from which, the scale found to be stable. Internal stability was also established using Alpha co-efficiency.

The present scale satisfies the authors in carrying out their further exploration of analysing the impact of INFLIBNET upon the research scholars and faculty members.

9. CONCLUSIONS

Thus the tool developed for the purpose of defining the impact of INFLIBNET is highly valid and reliable. This standardised scale was named by the authors as RAINI scale and with this the authors decided to go about evaluating the impact of INFLIBNET services in their future research.

REFERENCES

1. INFLIBNET Information and Library Network, 2010. http://www.infibnet.ac.in (accessed 25 July 2012).
2. Subba Rao, Siriginidi. Networking scenario in India. New Library World, 1999, **100**(1149), 160-64.
3. Arora, Jagdish & Trivedi, Kruti. UGC-INFONET digital library consortium: Present services and future endeavours. *DESIDOC J. Lib. Inf. Tech.*, 2010, **30**(2), 15-25.
4. Bradley, F. IFLA, sustainability and impact assessment. *Performance Measurement and Metrics*, 2009, **10**(3), 167-171.
5. Devi, Thiyam Satyabati & Murthy, T.A.V. Issues in UGC-INFONET e-journals consortium. *In* PLANNER-05. Paper presented at Third Convention, 10-11 November, Silchar, Information and Library Network Centre, (INFLIBNET), Ahmedabad, pp. 347-54.
6. Hess, Frederick M., & Klekotka, Amy L. Impact/ out come evaluation. *In* Encyclopedia of Social Measurement, Vol. 2, edited by Kempf-Leonard, Kimberly Elsevier Academic Press, Oxford, 2005, 271-76.
7. Markless, S. & Streadfield, D. Supported self-evaluation in assessing the impact of HE libraries. *Performance Measurement & Metrics*, 2008, **9**(1), 38-47.
8. Ramaiah, C.K. & Lakshman Moorthy, A. The impact of continuing education programmes on library and information science professionals. *Library Review,* 2009, **51**(1), 24-31.
9. Banks, M.A., & Dellavalle, R. Emerging alternatives to the impact factor. *OCLC Sys. & Serv.: Intern. Digi. lib. perspe.*, 2006, **21**(3) 167-73.
10. Bonorino, A.G. & Molteni, V.E. Electronic journals collections in Argentine Private academic libraries, *The Electronic Library*, 2007, **25**(1), 65-79.
11. Elam, B. Readiness or avoidance: E-resources and the art historian. *Collection Building*, 2007, **26**(1), 4-6.
12. Yi, H. & Herlihy, C.S. Assessment of the impact of on Open-URL link resolver, *New Library world*, 2007, **108**(7/8), 317-31.
13. Oduwole, A.A., & Sowole, A.O. Utilisation and impact of the essential electronic agricultural database (TEEAL) on library services in a Nigerian University of agriculture. *Program Electronic Library and Information Systems*, 2006, **40**(2), 157-67.
14. Bolin, R.I. The challenge of CD-ROMs for libraries. *Reference Librarian*, 1994, **43**, 117-30.
15. Oduwole, A.A., & Akpati, C.B. Accessibility and retrieval of electronic information at the University of Agriculture Library Abeokuta. *Library Review*, 2003, **52**(5), 228-33.
16. Singh, P. & Mehla, R.D. Agricultural databases on CD-ROMs: their relevance for libraries in developing countries. *Quart. Bull. Intern. Asso. Agri. Inf. Speci.*, 1995, **40**(4), 114-20.
17. Ye, C.F. Using Chinese biomedical disc produced by the institute of medical information of the Chinese academy of medical science. *Online Kensaku*, 1995, **16**(3), 11-5.
18. Borgman, C.L *et al*. How Geography professors select materials for classroom lecturers: Implications for the design of digital libraries. Paper presented at the Fourth ACM/IEEE-CS Joint conference on Digital Libraries, 2004 tucson, Arizona, pp. 179-85.
19. Madle, G. Kostkova, P., Mani-Saads, J. & Weinberg, J. Development of a methodology to evaluate the impact of a medical digital library on user knowledge, attitude and behaviour. 2003. available at: www.hon.ch/Mednet2003/absrtracts/491753869.html/ (accessed on 25 July 2012).

20. Nicholas, D., Huntington, P. & Williams, P. Micro-mining log files: A method for enriching the data yield from internet log files. *Journals of Information Science*, 2003, **29**, 391-404.

21. Sumner, T. & Marlino, M. Digital libraries and educational Practice: A case for new models. Proceedings of JCDL'04, TUCSON, Arizona, 2004, June 7-11, 170-8.

22. Appleton, L. Perceptions of electronic library resources in further education. *The Electronic Library*, 2006, **24**(5), 619-634.

23. Hewitson, A. Use and awareness of electronic information services by academic staff at Leeds Metropolitan University–a qualitative study. *Journals of Librarianship and Information Science*, 2002, **34**(1), 43-52.

24. Payne, P. Guest editorial. *Library and Information Research*, 2005, **29**(91).

25. Peters, L. & Fiander, W. University College Chester: the impact of investment in electronic resources. *Library and Information Research*, 2005, **29**(91), 27-9.

26. Jay, M. & Webber, S. Impact of the internet on delivery of reference services in English public libraries. *Program: electronic library and information systems*, 2005, **39**(1), 25-38.

27. Janes, J. Digital reference: Reference librarians' experiences and attitudes. *Journal of the American Society for Information Science and Technology*, 2002, **53**(7), 549-66.

28. Berube, L. Ask Live! UK Public Libraries and Virtual Collaboration. *Library and nformation Research*, 2003, **I27**(86), 43-50.

29. Tenopir, C. & Ennis, L. The impact of digital reference on librarians and library users. Online, 1998, **22**(6), 84-86, 88.

30. Spacey, R., Murray, I. & Goulding, A. Staff with attitude. *Public Library Journal*, 2004, **19**(2), 5-7.

About the Authors

Dr S. Ramesh is working as Library Assistant (SG) at Manonmaniam Sundaranar University, Tirunelveli, TamilNadu, India, since 1997. He has completed MA in Sociology and MLIS, at Annamalai University. In 2011 he has completed his PhD in Library and Information Science. His area of research includes e-resources and its impact on researcher. He has 15 years of experience in classification and cataloguing.

T. Yuvaraj is working as Assistant Professor & Head i/c, Department of Psychology at Manonmaniam Sundaranar University, Tirunelveli, TamilNadu, India. He has completed MSc, and MPhil in Psychology at University of Madras, Chennai, India. His area of specialisation includes Human Relations and Youth empowerment. He teaches counseling, Behaviour Modification and Psychometry. He is a lifetime member of Indian Association of Applied Psychology and South Asian Society for Criminology and Victimology. He is involved with the research works of Dr S.Ramesh, where he contributed on the Psychological Assessment of INFLIBNET.