CHAPTER - 8
FINDINGS AND SUGGESTIONS

The present study is sought to examine the nature of periodicals collection, methods of acquiring them and utilization of periodical services in libraries of IIT Delhi, IIT Kanpur and Delhi University. The study reveals that moderate percentage of respondents is satisfied with periodicals services available in libraries of IIT Delhi, IIT Kanpur and Delhi University. International periodicals are mostly consulted by users as compared to national periodicals. Journals are basically used for study, preparing notes, making presentations, class room lectures, and publishing papers. The study also reveals that respondents are informed about the latest arrivals by displaying them on bulletin boards in the libraries. As regards to e-journals, majority of the respondents use it. The highest percentage corresponds to faculty members and research scholars than PG students. From the study investigator has been able to find out that majority of respondents in IIT Delhi, IIT Kanpur and Delhi University are consulting e-journals from their concerned departmental labs and computer centre not only for building and updating their knowledge but also for collecting relevant material for their study and research purpose as information can be acquired expeditiously through e-journals. Most of the respondents from IIT Delhi, IIT Kanpur and Delhi University prefer reading full text articles in PDF format by taking printouts. Users of all three libraries face problems of retrieving full text articles due to snail speed of web and lack of system speed. However, it is common feeling that print journals are equally important and e-journals will not replace the traditional print format but rather, compliment it as a new medium of communication.

8.1 Part A: Major Findings: Librarian’s Perspective

This part contains the inferences, which have been made after analysis of the questionnaire received from the chief librarians of IIT Delhi, IIT Kanpur and Delhi University libraries.
1. The total budget allocated to periodicals in IIT Kanpur is higher than that of IIT Delhi and Delhi University. However the growth in periodical budget is maximum in Delhi University (52.22%) since last five years, followed by IIT Delhi (46.43%) and IIT Kanpur (7.47%). There is no separate budget for E-Journals subscription in participating libraries. (Table-5)

2. Pamphlets, microfilms/microfiche, audio-video cassettes, CDs/ DVDs are the specialty of collection in IIT Delhi. IIT Kanpur library bears a good collection of cartographic material, machine readable databases, conference proceedings and technical reports. Delhi University library is versatile among three libraries with a special collection of manuscripts, which is not found in both IIT libraries. (Table-6)

3. The growth of print periodicals has decreased in IIT Delhi and IIT Kanpur during 2000- 2008. In IIT Delhi periodical growth has come down from 910 to 680 (25.27%) from the year 2000 to 2008. Similarly in IIT Kanpur the growth of the same has decreased from 1304 to 1227 (5.90%) during 2000-2008. However, in Delhi University the growth of print periodicals shows an increase from 1105 to 1480 (23.93%) during the above mentioned years. (Table-7)

4. Libraries of IIT Delhi and IIT Kanpur receive funds from Ministry of Human Resources and Development (MHRD) whereas Delhi University library is largely funded by the University Grants Commission (UGC).

5. Regarding adequacy of budget, data reveals that in IIT Delhi library the budget is adequate and additional budget is not required for enhancing its periodical collection, however the case is contrary with libraries of IIT Kanpur and Delhi University. Librarian’s response reveals that present budget is insufficient for subscribing appropriate periodical collection to meet information needs of the users. In IIT Kanpur an additional amount of Rs. 30 lakhs is required to bear the fruits by getting online access to back files of journals. Librarian at Delhi University
need a substantial amount of Rs. 50 lakhs more for subscribing print journals.

6. As regards to the display of current periodicals, it is observed that all three libraries organise regular display of periodicals. The library users are informed about the arrival of recent issues of journals by displaying them on the display boards.

7. As far as provision of printing facility regarding online articles is concerned, heads of IIT Delhi, IIT Kanpur and Delhi University libraries are of negative remarks. They elaborated that they possess access provision to online articles. Users can store articles in CDs, pen drives or by other means of storage and later can retrieve hard copies of the same from somewhere else.

8. Library of IIT Delhi currently subscribed 680 print journals whereas the number of print journals subscribed by IIT Kanpur and Delhi University is 1227 and 1477 respectively. Periodicals are reshelved once in a day in IITs and once in a week in Delhi University library. On an average 100-120 current periodicals and 150-200 back volumes are reshelved on daily basis in libraries of IIT Delhi and IIT Kanpur whereas 600-650 periodicals including current and back volumes are reshelved in a week in Delhi University.

9. In all three libraries periodicals are subscribed on the basis of recommendation given by various departments of studies. It is evident that user's demand and annual budget are the most preferred consideration at the time of selection of periodicals.

10. IIT Delhi and IIT Kanpur librarians unveiled quality, currency, authenticity, completeness and relevance of subject material for curriculum as their criteria for selecting a particular journal. Qualitativeness on the basis of citations, user needs and subject relevance are used for selecting journals in Delhi University library.
11. In libraries of IIT Delhi, IIT Kanpur and Delhi University periodicals are procured through subscription agents.

12. Various reasons for subscribing journals through subscription agencies as identified by both IITs librarians are that reminders can be mailed to the agency only, renewal and record keeping becomes convenient. Librarian of Delhi University in this regard replied that procedural complexities of foreign exchange are not involved.

13. The problems associated with the procurement of periodicals reveal that libraries of IIT Delhi and IIT Kanpur face problem of missing issues related to periodicals. However, in library of IIT Delhi there is no provision of supplying back issues and simultaneously there is no response to the reminders sent to subscription agencies. Delhi University librarian narrates that price hike, devaluation of rupee and hike in foreign exchange are the major problems faced while subscribing journals.

14. IIT Delhi, IIT Kanpur and Delhi University libraries subscribe to e-journals. Libraries of IIT Delhi and IIT Kanpur are subscribing packages of Science Online, Elsevier Science, Kluwer Online, Springer Link, Nature, American Institute of Physics whereas Delhi University library is subscribing J-Gate, Science Direct, Ebscohost, Sage Online and Emerald Journals etc.

15. Librarians of IIT Delhi, IIT Kanpur and Delhi University favoured to e-journals as they are user-friendly, easily accessible, available 24 hours at users desktop irrespective of time limitation, provide universal accessibility, support multimedia content, network facility, and simultaneously used by a number of users for various purposes.

16. The response sought by librarians shows that e-journals were first commenced in IIT Delhi in the year 1997, followed by IIT Kanpur in the year 2003 and in Delhi University in 2004 (Table-8).
17. Chief librarians of all three libraries indicate that for providing current and back issues of e-journals, they archive e-journal text in main computer (Server) and provide its access on request.

18. Users at IIT Delhi and IIT Kanpur are informed about new e-journal issues via e-mails whereas Delhi University library is yet to facilitate this service to its users.

19. Periodical section in IIT Delhi, IIT Kanpur and Delhi University is responsible for subscribing and distributing e-journals including their archiving facilities.

20. All the three libraries are providing Interlibrary Loan facility by sending photocopy of articles on request. The periodical articles are also supplied to non-member institutions on demand.

21. Interlibrary loan-In was remarkable among participating libraries during the year 2005-2006 bearing 66.25 percent in IIT Delhi, 61.11 percent in IIT Kanpur and 50 percent in Delhi University. However, a small increase in Interlibrary loan-In is found at Delhi University in preceding years i.e. 2006-2008. Contrary to this in the preceding years, i.e. from 2006-2008 there is consistent inclination in the number of requests received by IIT Delhi & Kanpur libraries. (Table-9)

22. A drop in the number of titles requested through interlibrary loan-In in IITs may suggest that users are finding the journals needed in their library whether in print or electronic. An increase in interlibrary loan-In requests in Delhi University suggest that the current collection is not sufficient to meet user needs.

23. Interlibrary loan-Out was at its peak in the year 2005-2006 bearing 74.66 percent, 68.48 percent and 51.11 percent respectively in IIT Delhi, IIT Kanpur and Delhi University. Succeeding this, there is a sudden drop in the number of requests answered by the year 2006-08. (Table-9)

24. The low Interlibrary loan-Out response rate from IITs and Delhi
University might be due to the fact that they handled a large number of transactions made to several libraries, covering a variety of subjects.

25. Registered students, employees and external borrowers use ILL in all three libraries. It is also found that none of the library charge for providing Inter Library Loan rather they charge for xerox and postage.

26. IIT Delhi and IIT Kanpur libraries are member of INDEST-AICTE Consortium. Delhi University library is a member of UGC-INFONET Digital Library Consortium. The subscription to e-journals in IIT Delhi and IIT Kanpur libraries is through INDEST-AICTE Consortium. In Delhi University it is through UGC-INFONET Digital Library Consortium. INDEST and UGC- INFONET provide online access to foreign journals to the member libraries, is highly praiseworthy.

27. IIT Delhi and IIT Kanpur libraries are providing 20 and 15 terminals respectively for accessing e-journals to their respective users. In Delhi University library there are 25 nodes provided for searching the same. (Table-10)

28. Central Library, IIT Delhi is using LIBSYS (a commercial software package), PK Kelkar Library IIT Kanpur is using IITKLAS (IIT Kanpur Library Automation Software) and Central Library, Delhi University is using, Troodon for automation of library activities.

29. Libraries of IIT Delhi and Delhi University are members of DELNET and its users can access databases hosted by DELNET. However, IIT Kanpur library does not have access to DELNET databases. All three libraries use CD-ROM databases followed by online databases.

30. The methods adopted to promote use of e-journals by IIT libraries show that libraries circulate specific user guide (hardcopy) and subject list of e-journals on library website. Delhi University library has also developed a well advanced web page with links to e-journals available in its jurisdiction.

31. Libraries of IIT Delhi and IIT Kanpur provide both library-wide IP
filtering and campus-wide IP filtering for accessing e-journals. Delhi University provides library-wide IP filtering only for accessing the same.

32. The time lag in downloading is the major hindrance faced by the librarians of IIT Delhi, IIT Kanpur and Delhi University while providing access to e-journals.

33. In IIT Delhi and IIT Kanpur both orientation programme is being provided by vendors to the library staff for facilitating better e-journal services. Whereas in Delhi University library e-resources orientation is given to users in the class room environment.

34. Librarians at IIT Delhi and IIT Kanpur opined that heavy impact is visible on users due to effective use of e-journals. Use of e-journals is fast picking up. Delhi University librarian answered that the quality of research and student’s status has improved because e-journals are time saving, provide current knowledge and access to information on desktop.

35. Regarding the impact of consortia on users, response from IITs and Delhi University librarians indicates that the availability of e-journals through e-journal consortia made users able to access more online journals which proved to be extremely useful especially for research scholars and faculty members.
PART B: Findings Part I: Response from Periodical Users

The findings given below have been made after the analysis of questionnaire received from users.

8.2.1 Printed Periodicals

1. A good number of PG students (40 percent) in IIT Delhi, IIT Kanpur (33.33 percent) and Delhi University (32.5 percent) read periodicals fortnightly whereas the research scholars (44.77 percent in IIT Delhi, 40.62 in IIT Kanpur and 37.25 percent in Delhi University) and faculty members (60 percent in IIT Delhi, 40 percent in IIT Kanpur and 43.33 percent in Delhi University) are quite frequent users of periodicals using them weekly. (Table 12). The findings report crystal clear that majority of periodical usage comes from faculty members and research scholars as reported by Biradar and Kumar.(2000)

2. A high percentage of respondents in IIT Delhi (78.77 percent), IIT Kanpur (80.82 percent) and Delhi University (65.66 percent) consult international periodicals in comparison to national periodicals. About 10.38 percent users in IIT Delhi, 4.14 percent in IIT Kanpur and 14.16 percent of them in Delhi University use both national and international journals. On applying Chi-Square statistics, it is amply clear that use of national and international periodicals among users at p ≤ 0.05 differed significantly. The variation is confirmed. Use of International periodicals is more in IITs Delhi and Kanpur as compared to Delhi University library. (Table-13)

3. Periodicals in both IITs (61.48 percent) and Delhi University (55.72 percent) are basically used for research. The literature review in chapter 2 also shows that the focal point of periodical usage is for research. (Table- 14)

4. It is identified that more than 41.23 percent of respondents in both IITs and 38.55 percent of them in Delhi University library are initialised towards access and use of journals through indexing and abstracting
periodicals, followed by direct browsing (26.94 percent in IITs and 30.72 percent in Delhi University) (Table-15)

5. More than half percent of users in IITs, i.e., 54.71 percent respondents in IIT Delhi, 66.32 percent in IIT Kanpur, and 46.38 in Delhi University account that the arrangement of current and back volumes of periodicals on shelves is 'helpful'. The arrangement is more helpful to IIT Kanpur library users as compared to IIT Delhi and Delhi University library users. (Table 16)

6. Large number of users in IIT Delhi (49.06 percent), IIT Kanpur (54.40 percent), and Delhi University (50.90 percent) are informed about the latest arrivals of periodicals by displaying them on display board. Few IITs users are also informed about the current arrivals through e-mail. Delhi University does not provide this facility to its users. (Table-17)

7. More than 70 percent users in IIT libraries and 69 percent of them in Delhi University library are jumping towards primary journals to keep them abreast, up-to-date with unfiltered and authentic information. They are not using secondary journals much. (Table-18)

8. More than 75 percent of users in both IITs (Delhi and Kanpur) and 69.27 percent of them in Delhi University avail xerox facility available within the library premises. (Table-19)

9. Impact factor of periodicals is considered as an important aspect by majority of respondents in IITs (75.06 percent) and Delhi University (55.72 percent) for measuring the quality of a particular periodical while selecting the same for reading. (Table-20)

10. Greater number of users in IITs (76.69 percent) and Delhi University (74.39 percent) experience lots of problems due to late arrival of periodicals, changes in their periodicity and title, splitting and merging of titles within due course of time. (Table-21)

11. Periodicals acquired in both IITs (77.78 percent) comprehensively outnumber Delhi University (61.74 percent) in terms of relevance.

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These are more relevant in IIT Kanpur followed by IIT Delhi and Delhi University. (Table 22)

12. More than 45 percent of IIT Delhi, Kanpur and Delhi University users are ‘satisfied’ with available periodical collection. IIT Kanpur users are more satisfied with periodical collection as compared to IIT Delhi and Delhi University library users. (Table 23)

13. It is observed that users in all three libraries (89.12 in IIT libraries and 78.92 percent in Delhi University) need more print journals. (Table 24)

Kumbar (2007) also revealed that majority of respondents in the University of Agricultural Sciences, Dharwad preferred and identified their need for printed version of articles.

14. Use of online newspapers is very high in IIT Kanpur and IIT Delhi as infrastructure in IITs is well equipped in comparison to Delhi University. Delhi University shows high use of print newspapers as compared to IIT Delhi and IIT Kanpur. (Table 25)

8.2.2 Findings from E-Journal Users

Major findings of the study are:

1. The response on awareness of e-journals shows that in libraries of IIT Delhi (89.62 percent), IIT Kanpur (96.89 percent) users are more aware than Delhi University (76.80 percent) library users (Table- 26)

2. More than 90 percent of respondents in IITs (Delhi and Kanpur) and 76.80 percent of them in Delhi University use e-journals. The outcomes of the survey reflect a growing interest in electronic journals among users in IITs and Delhi University. In all the three categories Faculty Members (100 percent) use e-journals most as compared to PG students and Research Scholars. Use of e-journals in IITs is more as compared to Delhi University. (Table- 27)

3. More than 45 percent of respondents in both IITs use e-journals weekly followed by fortnightly (34.56 percent). A good percentage of users in Delhi University use them fortnightly (46.98 percent) followed by weekly (30.12 percent). PG Students in both IITs and Delhi University
use e-journals on a fortnightly basis, however research scholars and faculty members use them weekly. Percentage of users using e-journals weekly is more in IIT Delhi in comparison to IIT Kanpur and Delhi University library. (Table- 28)

4. More than 40 percent of respondents in IITs (Delhi and Kanpur) and Delhi University libraries came across about e- journals through search engines followed by self study (23.70 percent in IITs and 13.55 in Delhi University). (Table- 29)

5. E-Journals are basically used for research purpose in IIT Delhi (45.37 percent), IIT Kanpur (41.45 percent) and Delhi University (38.95 percent) followed by completion of assignments and seminar presentations (25.93 percent in IITs and 30.72 percent in Delhi University). (Table- 30)

6. A handsome percentage of users, i.e., 47.90 percent in both IITs and 48.79 percent in Delhi University access e-journals from Computer Centre. In all these three libraries very limited percentage of users access e-journals from Central Libraries. It is clear that access rate to e-journals from hostels in Delhi University is very less (8.43 percent) as compared to both IITs (29.53 percent). (Table- 31)

7. The use of different components of e-journals reveal that “full text” of e-journals is mostly used by IITs (56.6 percent in IIT Delhi,53.46 percent in IIT Kanpur) and Delhi University users (48.28 percent) followed by “abstracts”. The “alerting services” are the least used component. (Table-32)

8. Regarding the various sources of electronic journals, in order to find their location, IIT Delhi, IIT Kanpur, and Delhi University library users are basically linked to e-journals through search engines followed by e-databases. (Table- 33)

9. It is quite encouraging that majority of respondents in IITs and Delhi University libraries include more than 50 percent of e-journal contents in composing their work. (Table- 34)
10. It is found that more than 70 percent of respondents in IIT Delhi and Kanpur and 66.87 percent of them in Delhi University are more concerned about reading full-text articles by obtaining hard copies as IIT library users are availing printout facility from their respective departments free of charge. However, users in Delhi University lack this provision. (Table-35)

11. The findings regarding the format preferences are also highly encouraging. PDF format is recognized most useful by more than half of the users in IITs and Delhi University in comparison to HTML as the graphics and tables in PDF are legible and lucid. (Table-35) Savori and Jeffrey (2002) also found that 42 percent of their respondents prefer handling PDF articles. Brennan, Herd, Blecic & Weller (2002) found that majority of medical researchers preferred PDF versions of articles for printing. (Table-36)

12. The search methods reveal that more than 50 percent of respondents in both IITs (Delhi and Kanpur) and 46.98 percent of them in Delhi University laid strongest support to searching through 'keyword' whereas the 'date of publication' carrying the least favour among the respondents. Respondents in IITs and Delhi University are more inclined towards searching through keywords and author. (Table-37). This strategy in searching correspond with other studies which shows that because of the increasing level of searching competency users are searching the online journals more. (Tenopir, King, Boyce & Zhang., 2003, Stanford E-Journal user study, 2002a, b)

13. A moderate percentage of respondents in both IITs (54.16 percent) and Delhi University (48.49 percent) are of the opinion that "Boolean Searching" is the most favourable advanced search technique followed by "Phrase Search". 'Wild Cards' is carrying small percentage among respondents in IIT Delhi, IIT Kanpur and Delhi University. On applying Chi-square test, it is found that use of advance search strategies among
14. A fairly favourable percentage of users in IITs Delhi and Kanpur (70.12 percent) and Delhi University (59.64 percent) are aware about e-journal consortia available in their respective libraries. Highest response (72.17 percent) is received from IIT Delhi. (Table- 39)

15. Majority of respondents in libraries of IIT Delhi (63.67 percent), IIT Kanpur (64.76 percent) and Delhi University (56.02 percent) are satisfied with the e-journals made available in their respective fields whereas more than 25 per cent users in these libraries did not hesitate to state that they are dissatisfied with the service. Chi-Square test shows that satisfaction regarding e-journals among IITs and Delhi University library users does not differ significantly. It is almost same. (Table 40)

16. The major barrier in using e-journals is ‘retrieval’ related to downloading of full text articles as revealed by more than 40 percent of IITs (44.04 percent in IIT Delhi and 41.51 percent in IIT Kanpur) and Delhi University (43.67 percent) users. The problem is maximum in IIT Kanpur followed by Delhi University and IIT Delhi. This finding clearly indicates that current online access to e-journals does not meet the expectations of the respondents. Chi Square test shows that barriers while using e-journals in IITs and Delhi University libraries have significant difference among them. (Table 41)

17. More than 60 percent respondents in both IITs strongly attest to the fact that they do not need proper training for searching e-journals. However more than 60 percent of them in Delhi University are of the view that training is needed for searching e-journals. On applying chi-square test it is found that necessity of training for e-journals by the institutes’ users is having significant difference among them, which means that needs of users are not same. (Table- 42)

18. More than 40 percent of respondents in both IITs required cooperation from staff for searching e-journals. Delhi University
respondents' narrate that training programmes (37.90 percent) and uninterrupted power supply (37.65 percent) would increase e-journals use. (Table- 43)

19. It is surprising to note that more print journals are needed besides electronic journals. More than 50 percent of respondents in IITs and Delhi University opined that they require more print journals in addition to e-journals. This means despite e-journals gaining fame, print journals still are dominant and preferred by the respondents. Majority of users are pleased having e-journals with their print counterparts. It is worth mentioning that remarkable percentage of respondents believe that portability, the ability to browse and annotate articles favoured the print version. This finding is supported by recent studies conducted by number of Indian Scholars, (such as Raza & Upadhyay, 2006; Kumbar, Hadagali & S.P.; 2006). (Table- 44)

8.3 Part C Findings: Citation Analysis

1. More than 70 percent citations in PhD Theses in IITs (i.e. 75 percent in IIT Delhi & 72 percent in IIT Kanpur) and 81.04 percent of them in Delhi University are reported from print sources, whereas the remaining are produced from electronic sources i.e. 24.66 percent in IIT Delhi, 26.65 percent in IIT Kanpur and 18.96 percent in Delhi University. (Table- 45, 46 & 47).

2. Out of the total citations cited in PhD theses more than 50 percent in both IITs & Delhi University pertain to print journals. This is followed by e-journals (16.41 percent in IIT Delhi, 18.46 percent in IIT Kanpur) in IITs, and books (12.03 percent) in Delhi University. (Table- 45, 46 & 47).

3. More than 70 percent of citations cited in Faculty Publications in both IITs and about 80 percent citations in Delhi University are crystallised out from print sources, whereas the residual percentage corresponds to e-resources i.e. 28.89 percent in IIT Delhi, 20.98 percent in IIT Kanpur and 20.51 percent in Delhi University. (Table- 45, 46 & 47).
4. Among the total citations received from Faculty Publications highest percentage is retrieved from print journals (56.25 percent in IIT Delhi, 65.11 percent in IIT Kanpur and 61.71 percent in Delhi University) followed by e-journals (11.76 percent, and 9.04 percent and 10.63 percent) in IIT Delhi, IIT Kanpur and Delhi University. (Table- 48).

5. The following are the core journals in Computer Science cited in theses and faculty publications during 2005-2007 in IIT Delhi, Kanpur and Delhi University libraries.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>IIT Delhi</th>
<th>IIT Kanpur</th>
<th>Delhi University</th>
</tr>
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<tbody>
<tr>
<td>1.</td>
<td>Journal of the Association for Computing Machinery</td>
<td>IEEE Journal on Selected Areas in Communication</td>
<td>Communication of ACM</td>
</tr>
<tr>
<td>2.</td>
<td>ACM Transactions on Databases System</td>
<td>IEEE Software</td>
<td>Journal of Parallel &amp; Distributed Computing</td>
</tr>
</tbody>
</table>

6. The following journals i.e. SIAM Journal on Computing, Information Processing Letters, Mathematics of Computation and Journal of ACM are found common in IIT Delhi & Kanpur. (Table-49)

7. There is significant difference among core journals cited by IIT Delhi, IIT Kanpur and Delhi University library users. Only one journal cited by Delhi University users matches with citations reported in IIT Delhi i.e. Communication of ACM. The journal has top position in Delhi University but it is placed 7th in IIT Delhi. (Table-49)

8. Core journals with highest citations cited in PhD theses and faculty publications during 2005-2007 in Mathematics discipline identified by IIT Delhi, IIT Kanpur and Delhi University users are as follows:
9. Analysis highlights that *Journal of Mathematical Analysis and Application*, *SIAM Journal on Numerical Analysis*, *Transactions of American Mathematical Society* and *Naval Research Logistics* are common journals among IITs and Delhi University users but they are occupying different positions. *Journal of Mathematical Analysis and Application* is ranked first in IIT Kanpur, but it is placed on 5th position in IIT Delhi, and 6th at Delhi University. (Table- 50)

10. The core journals in Physics cited by IIT Delhi, IIT Kanpur and Delhi University users in theses and faculty publications during 2005-2007 are as follows-

<table>
<thead>
<tr>
<th>S. No.</th>
<th>IIT Delhi</th>
<th>IIT Kanpur</th>
<th>Delhi University</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td><em>Applied Physics Letters</em></td>
<td><em>Physics. Review B</em></td>
<td><em>Sensors &amp; Actuators</em></td>
</tr>
<tr>
<td>2.</td>
<td><em>Journal of Applied Physics</em></td>
<td><em>Physics Review Letters</em></td>
<td><em>Physics Review Letters</em></td>
</tr>
</tbody>
</table>

Review Letters and Physics Review are found common among three library users with different rankings. (Table-51)

12. IIT Delhi and IIT Kanpur share another journal in common i.e. Journal of Magnetism and Magnetic Matter, which is placed 3rd in IIT Delhi and 5th at IIT Kanpur. (Table-51)

It is therefore discerned from the findings that print journals carry the highest percentage of citations in PhD Theses and Faculty Publications. Use of e-journals by users in case of citations in PhD Theses is low as compared to print journals and books. They occupy third position after print journals and books because of low use. However, print journals again dominate e-journals when it comes to the citations use in Faculty Publications among Delhi University library users. Low use of e-journals means that users are not much aware about them or they are not citing them due to their non-authenticity and printing facility. Awareness programmes and workshops on various aspects of e-journals at regular intervals would be beneficial for enhancing their use.

The findings also clearly reveal that there is a major difference in user’s preference while using journals. It is further indication that core journals are different in computer science, physics and mathematics.

8.4 SUGGESTIONS

1. More funds should be made available for subscribing electronic journals in IIT Delhi, Kanpur and Delhi University without deducting from print periodical fund as no separate fund is available in these libraries to subscribe e-journals.

2. Libraries should encourage their users to use open access journals.

3. Users of IIT Delhi, Kanpur and Delhi University Libraries suggested that libraries should provide more print journals in Science and Technology fields because subscription of print periodicals in these libraries is quite discouraging due to implementation of e-journals consortia.
4. While purchasing new journal titles, libraries of IIT Delhi, IIT Kanpur and Delhi University should be cautious about buying backfile volumes.

5. An additional amount should be provided for subscribing the backfiles of e-journals to IIT Kanpur library as the present budget is inadequate to get online access to back files of e-journals.

6. As suggested by users of IIT Delhi, Kanpur and Delhi University libraries should provide photocopy of articles at free of cost.

7. Users in IIT libraries suggested that current journals should be issued for overnight.

8. Delhi University library should notify its users about current arrivals via e-mails.

9. Libraries should create digital database of e-journals subscribed by them through Digital Library Software to enable users to search full text journal articles of various publishers by subject, keywords and topic.

10. Users of IIT Delhi, and Kanpur complained that they are facing problems of missing issues of journals. It is suggested, while subscribing journals librarians have to kept in mind whether supply agency has its branch in foreign, so that delay in periodicals could be reported to the publisher directly.

11. More journals with high impact factor should be subscribed by all three libraries as per users needs.

12. For rendering effective periodical services in Delhi University it is suggested that current content pages of journals should e-mailed to the researchers.

13. Libraries of IIT Delhi, Kanpur and Delhi University should continue to monitor its collections with regard to print/electronic balance and not ignore its paper copy provision.

14. Libraries of IIT Delhi, Kanpur and Delhi University should provide more print journals discipline -wise in order to improve quality and
efficiency of research. A ranked list of periodicals will be useful as a guide in selecting and acquiring periodicals among library users.

15. Since IIT Delhi and IIT Kanpur provide 24 hours accessibility to e-journals, users can access e-journals from their respective hostels anytime. However, Delhi University lacks this facility. It is suggested that access to e-journals should be provided in their respective hostels so that acceptance and use of scholarly electronic journals can be maximized.

16. Translation services should be provided on request to translate journal articles in the libraries of IIT Delhi, Kanpur and Delhi University.

17. Increased availability of computer systems may increase the use of electronic journals in three libraries. More high-configured computer terminals should be installed in the Departmental Computer labs, Central Library and Delhi University Computer Centre.

18. It is also suggested that users in IIT Delhi, Kanpur and Delhi University must learn that searching by 'keywords' rather than by subjects will increase amount of relevant information obtained, and using keywords alone will not produce the correct level of specificity. They should be equally familiar to the other search option.

19. Users of three libraries should be taught about the advanced search strategies to make e-journals easily accessible and must learn to use to wild card characters to perform an all inclusive search.

20. The problem of retrieval in IITs and Delhi University can be overcome by procuring federated search engine software for fast downloading e-journals and increase in the use of e-journals access.

21. Bandwidths should be sought by three libraries so as to provide faster access that will save much of the users’ time and be a source of motivation to use e-journals. This will also solve the problem of slow downloading.
22. Delhi University Librarian should take care of lab providing uninterrupted power supply to e-journal use.

23. There is a need for all three libraries to manage the journal archive carefully. An electronic archive should be provided wherever possible. When this can not be achieved, the physical archive needs to be retained.

24. There is a need to evaluate the INDEST-AICTE & UGC-INFONET Digital Library Consortium and necessary arrangements be made to access full text of more journals in consortium taking in account user perception of the same.

25. In IIT Delhi & IIT Kanpur library users are required cooperation from staff for the better use of e-journals whereas in Delhi University library, users are required proper training programmes for proper exploitation of e-journals.

26. Need for more qualified staff with better exposure to modern technological devices has been stressed in all three libraries.

27. In service training should be given to those library professionals who are already working, so that they may have a better understanding. Staff training programme can be carried out by different methods such as holding formal courses, workshops, seminars, lectures, discussion groups etc. The training should be practical oriented instead of theory based.

28. In order to increase use of e-journals by students, the faculty should give more assignments on latest topics so that students may force to exploit e-journal services more efficiently.

29. A Course Work on proper use of information resources may be introduced in IITs and Delhi University as part of M.Phil and PhD programme.

30. Citation analysis of PhD Theses and Faculty Publications in IIT Delhi, Kanpur and Delhi University exhibits a low percentage of e-journals
citations cited by users. It is suggested that awareness programmes on e-
journal use should be provided for their better utilisation.

31. Due to high cost involved in journal subscription, it is suggested that participating libraries should consider setting aside funds for purchasing selected articles/titles as per request from users.

32. Limitations of IP addressing as authentication used by libraries needs to be overcome, and access to e-journals in IITs and Delhi University should be provided through passwords so that e-journals can be accessed by the users from anywhere in the world- at home or when at a conference.

8.5 RECOMMENDATION FOR FURTHER RESEARCH

The present study brings into light on several topics on which further research can be directed. Based on the findings of the present study the following suggestions have been made for further research as:

1. The study can be extended to all Science and Technology and academic libraries.

2. The study can also be conducted to find out collection, acquisition and use of periodicals in highly funded libraries such as IITs and Central University Libraries in the country.

3. A study can also be undertaken to understand use of periodicals separately by male and female users of academic libraries.

8.6 TENABILITY OF HYPOTHESIS

Chi square test has been used to check the tenability of the hypothesis.

1. There exists significant variation in use of national and international periodicals among IITs and Delhi University library users.

   It is evident from table-13 that around 80 percent of users in IITs and 65.66 percent in Delhi University use international journals. However 20 percent use in IITs and 34.33 percent in Delhi University read research articles from national journals. About 10.38 percent users in IIT Delhi, 4.14 percent in
IIT Kanpur and 14.16 percent in Delhi University use both national and international periodicals.

Chi-square test displays that calculated value (16.43) is higher than its table value (1.386) at 5% level of significance. Significant differences are observed in the usage of national and international periodicals among users in selected libraries. This difference is confirmed.

Hence hypothesis is thus accepted.

2. Users of IITs are better conversant with advance search strategies in comparison to Delhi University library users.

The response regarding the use of advance search strategy in table 38 shows that calculated value (1.60) is less than the chi-square table value (9.488), which reveals that the use of advance search strategies in both IITs and Delhi University has insignificant difference.

So, the hypothesis proved to be rejected.

3. There exists ample difference in satisfaction level of e-journals availability between IITs and Delhi University library users.

According to the results of the study, the total percentage regarding the satisfaction level in both IITs and Delhi University is 45.68 percent and 33.73 percent respectively. Majority of users are satisfied with the available e-journals, whereas the total percentage of respondents who are dissatisfied is found to be 34.32 percent and 36.45 percent in IITs and Delhi University respectively. However, percentage of those who did not responded to this question in IITs and Delhi University is 20 percent and 29.82 percent respectively.

As shown from table 40, the Chi-Square calculated value (5.14) is less than the table value (5.991) at 5% level of significance, which means that there is insignificant difference between IITs and Delhi University users regarding satisfaction of e-journals.

Hypothesis 3 is thus disproved.

4. Majority of users in participating libraries came across various difficulties while browsing e-journals.
As cleared from table – 41 in chapter 7, the calculated value (19.04) of Chi - Square is higher than its table value (15.50). This means that problems in e-journal usage among library users of IITs and Delhi University have highly significant difference among them.

Hypothesis 4 is thus proved.

5. Significant preference is being given to print journal citations over electronic citations by researchers and faculty members of IITs and Delhi University library.

As clear from the table- 45, 46 and 47, references cited in theses and faculty publications among all forms of documents in libraries of IIT Delhi, IIT Kanpur and Delhi University reveals that maximum citation counts are acknowledged from print journals (56.65 percent from PhD theses and 56.25 percent from faculty publications in IIT Delhi, 52.90 percent from PhD theses and 65.11 percent from faculty publications in IIT Kanpur, and 58.72 percent from PhD theses and 61.71 percent from faculty publications in Delhi University), whereas rest of them are attributed to electronic journals (16.41 percent from PhD theses and 11.76 percent from faculty publications in IIT Delhi, 18.46 percent from PhD theses and 9.04 percent from faculty publications in IIT Kanpur and 11.31 percent from PhD theses and 10.63 percent from faculty publications in Delhi University).

So, it is very clear from the tables that significant preference is being given to print journal citations as compared to electronic journals. There found a significant difference in the use of both citations, i.e., print and electronic.

Hence, Hypothesis 5 considered to be accepted.
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