Use of Electronic Resources in Indian Academic Institutions

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Abstract- Today the libraries have transformed into digital and virtual libraries. Traditional books, journals and magazines have changed into e-books, e-journals, and e-magazines. There has been a considerable increase in awareness among the users about the library e-resources and e-services. This has increased the global dissemination of information. An attempt has been made in this article to review briefly the important published and unpublished literature and studies on use of electronic resources in academic institutions of India.

Keywords – Electronic resources-e-journals-consortiums

I. INTRODUCTION

The review of literature is an essential component of any research investigation, which gives necessary input to the investigator to frame the research study on the chosen topic. As far as the field of "Use of Electronic Resources" and identifying the information needs of a group in a particular field is concerned, a large number of studies have been conducted and it continues to grow. A number of research reports, articles, books and conference volumes on the subject of "Use of E-Resources" have been published. Since 1996 three International Conferenceshave conducted research in information needs, seeking and use, held at Tampere (Finland), Sheffield (UK) and Gothenburg (Sweden) respectively. These seminar volumes presented a collection of papers, which represents a variety of research conducted in this area. In view of the vast amount of literature available in this field, in this article, an attempt has been made to review only the significant studies and recent literature on the various aspects of use of e-journals under the following sub-headings:

- Impact of e-journals
- Impact of online journals
- Library consortiums
- Use of e-journals
- Usability
- User attitude on e-journals
- Pattern of e-journals use

II. ELECTRONIC RESOURCES

Electronic resources are easily accessible in remote areas. Convenience of accessing articles any time from their desktop computer; ease of skimming and searching, the possibility of downloading or printing the desired document or segment, the currency of information, the speed of access, and the ability to send articles to their colleagues instantly are the few advantages experienced by the users in the use of e-resources. Both faculty and researchers use the electronic resources and most readily adopt them since the e-resources are perceived as convenient, relevant, and time saving to their natural workflow.

2.1. Impact of e-journals-

Kanniyappan et al.[1] have conducted a survey at Anna University Chennai to find out the use and impact of different types of e-resources and services. Findings of the survey revealed that majority of the faculty members feel that library activities have improved during past two years due to computerization. Majority of respondents used e-journals and Internet or WWW for their research and study purpose. Majority of the respondents used the e-journals rather than the printed journals and 32%used both electronic and printed journals equally. Most of the faculty members are aware of the availability of e-resources which they used frequently for their teaching purposes. Chowdappa et al.[2]survey deals with the impact of digital technology on information users of higher education in Mysore. It reveals that 83.3% of the subject experts of the opinion that there is high impact on IT on library resources and services. They told that the electronic resources will supplement the conventional printed media in getting precise, relevant, and timely information. The users in the age group of 50 to 70 years are rather reluctant to use ICT facilities. Kaur and Rama Verma [3] describe the use of electronic resources and services provided at the central library of Indian Institute of Technology, Delhi. Results found that usage of e-journals is increasing; this is due to awareness among the users about the library e-resources and services. Owing to an easy access available at various places in the institute, users are accessing these resources at hostels and departments more as compared to the library.

Sudharma and Khan[4] report that faculty and research scholars are aware of the e-resources such as such as e-books, e-journals, e-encyclopedias, e-theses, CD-ROM databases, e-mail and internet. Large number of research scholars and faculty members are using these e-resources for their research work. Many faculty members strongly agreed with the necessity for computer and internet literacy to access information. Majority of the users were satisfied with the e-resources available at the NASSDOC library. Ram Gopal Garg and Amit Kumar Tamraka(2016) have conducted a survey to evaluate the use of Electronic resources (E-resources) by the library users of Indian Institute of Technology, Kharagpur, India, with a view to examine the exposure of users to e-resources. It reveals that majority of the respondents 260 (63.10%) have stated that they knows very well about what number of E-journals/database are available in the library concerned to their subject/discipline. Regarding information need of the user's while selection of e-journals, 217 (52.66%) users responded that library mostly ask their information requirement related to different categories of subject/discipline before selection of E-journals for the library. Whereas, 85 (20.63%) respondents reported that library rarely or never ask about their information needs before selection of E-journals. On the other hand, a large number of users as 110 (26.69%) don't know about such this type of act happened or not in the library. User's response regarding overall quality of the e-services,167 (40.53%) users have responded that e-services offered by the library are helpful for their work. Besides this 121 (29.36%) respondents replied that services of the library are very helpful for their work. Apart from this, 88 (21.35%) users are responded that overall qualities of library services are extremely helpful for their study/research/teaching. The study reveals that the all the three categories of the users of IIT, Kharagpur, are using the available E-resources satisfactorily. Simultaneously, the Central Library of IIT, Kharagpur is playing an important role in promotion, assistance and guidance in accessing the E-resources[5].

A total of 507 were responded out of 575 distributed and the response rate works out to 88.18%. Out of 507 respondents, 384 (75.74%) were from VIT University, Vellore campus and the remaining 123 (24.26%) from Chennai campus. Further 267 (52.68%) belongs to faculty and 240 (47.32%) belongs to research scholars. The study was carried out with the primary objectives of "To identify the Views on e-resources among faculty and research scholars"; "To identify the respondents' perception on e-resources among faculty and research scholars" and "To identify the opinion on electronic resources among the users". The Information was collected from researcher and faculty through questionnaire on three broad concepts such as "Usage on Electronic Resources", "Perception on Electronic Resources" and "Opinion on Electronic Resources". The usage of electronic resources were ascertained based on Format of Document Preferred; Type of Materials and Format Preferred; Criteria used for selection of e-resource materials; Use e-resources; Criteria used for selection of e-resource materials and E-resource Environment. The "Perception on Electronic Resources" were identified based on Use of e-sources; Opinion on Information Sources; Digital tool used to get information; Important E-Resources one usually use to get information; Purpose of using E-Resources; Advantages and dependency of Electronic Services; Frequently used Electronic resources; Preference, advantage and disadvantages of E-resources.The Opinion on Electronic Resources were ascertained based on Method of Enhancing Knowledge; Specific Opinion; Access to E-Journals; Motivation to use the E-resources; Legal issues; Constraints, Barriers, Suggestions and Web based library services.The study indicates that there exists significant difference in the Views on e-resources among faculty and research scholars. It is surprise to note that there exist uniformity in the Format of e-resource and Documents Preferred by the faculty and research

scholars. Similarly there is no significant difference in Type of Materials and Format Preferred by the faculty and research scholars. However there exist significant differences in the Criteria used for selection of e-resource materials and sources; whereas synchronised opinion on the available e-resources environment in the University foruse of E-resource by the faculty and research scholars. Uniform perceptions, synchronised views on use and opinion on information resources, and uniformity in used of digital tool in getting information were some of the attributes on e-resources among faculty and research scholars. There exist uniformity in the Purpose, Dependency, Preferences and frequency on Electronic Resources by the faculty and research scholars. Method of Enhancing Knowledge and Motivating the faculties and research scholars in use the E-resources were the expectations among the faculty and research scholars. There exist uniform opinion on the Constraints, Barriers and Legal issues in using the Electronic e- resources among the faculty. The study further paved way for a frame work in maximising the e-resources[6-8]. Veeramani andVinayagamoorthy [9] have made an attempt to study the impact of online journals. They found that 58 percent of respondents browse e-journals through search engines. 77% of the respondents prefer to access e-journals for preparing lecture note. It is important to mention that 88% of the respondents use e-journals.

A study by Siridevi and Ramamurthy[10] emphasizes on evaluation of the use of e-resources and services among the faculty in autonomous Engineering Colleges in Chittoor District. Out of 175 respondents 42 (24%) of them are using e-resource for the purpose of giving lecture and preparing Notes, 33(18.86%) of them are using e-resources for Career development (ie. Attending conferences, Seminar, and Workshop), 32(18.28%) of them are using e-resources for publishing Research articles, 31(17.72%) of them are using e-resources for knowing the current information(i.e. general awareness) , and the least of the respondents 15(8.57%) use e-resources for updating knowledge. The Faculty's priority for teaching purpose is 57(32.58%), career development 31(17.73%), e-mail30(17.15%), finding relevant information 23(1315%),19(10.81%) and least priority is given to any other ie. 2(2.28%). It was found from the data analysis that almost of all institution Faculty top priority is given to teaching purpose and followed by career development.

2.2.Impact of online journals-

Nazim and Devi[11]have usedacase study method to know the trends of open access publishing in India. Results found that among the top 25 open access publishing countries, India ranks 12th for the overall number of journals, but drops to 18th for journals with online content. Although, its occupied 5th position in the list of open access journals. At present India ranks 12th in the list of countries with registered interoperable archives in the registry of open access repositories. (ROAR).Bollen et al.[12] have compared the resulting journal impact rankings to the Institute of Scientific Information's Impact Factor (ISI IF). Results indicate the although social network metrics and ISI IF rankings deviate moderately for citation- based journal networks, they differ considerably for journal networks derived from download data. We believe the results represent a unique aspect of general journal impact that is not captured by the ISI IF. These results furthermore raise questions regarding the validity of the ISI IF as the sole assessment of journal impact, and suggest the possibility of devising impact metrics based on usage information in general.Bhata and Kumarb[13] stated the results of citation analysis of research articles from scholarly electronic journals in the field of library and information science published during the years 2000 to 2006. Results showed that 81.49% of articles published during the period had web references. Out of 25,730 references, 56.54% of references were print journal references and 43.52% of them were web references.

Vinod Kumar Singh[14] investigated the resources and services provided to the users (research scholars and faculty members) by the Central Library of JamiaMilliaIslamia, University of Delhi, Jawaharlal Nehru University, JamiaHamdard and Guru Gobind Singh Indraprastha University for research work in the present electronic environment. The survey revealed that the majority of the respondents used print resources (98.86%), e-journals (94.89%) and online databases (61.93%) in their research work. E-books (35.79%) and audio-visual materials (9.66%) are less used by them in their research work. The majority of the respondents (98.29%) have been using Google search engine to retrieve information related to their research work. The majority of the respondents (90.91%) stated that Information and Communication Technology (ICT) enhances the quality of their research work.

2.3. Library consortium-

Chauhan and PremChand[15] observed that there is great need to more to publicize the UGC Info net Programme. Most of the participants have not used e-contents that are subscribed by UGC-Info net Consortium. They concluded that user statistics are a vital part of evaluating. The usefulness of any product, use statistics for each university will be distributed periodically.Satija and SarbrinderKaur[16] have concluded that consortia subscriptions are the most common channel of resource sharing in Technological Institute of North India. INDEST – AICTE and UGC-INFORNET, both open-ended consortia, have brought about revolution in the field of resource sharing.

Walmiki et al.[17] have conducted survey on digital library consortium by the faculty members of Karnataka state universities. They found that 39.79% of faculty members are aware and use the UGC-Infonet Digital Library Consortium resources whereas 35.99% are aware but do not use and 24.22% are not at all aware the resources. Majority of non-users belong to social science and humanities and those who have not undergone formal computer training. Major problems faced by the users are lack of knowledge to use, insufficient internet nodes, slow bandwidth and lack of relevant information sources. About 37% of the faculty members were aware of and participated in user education programs conducted by their university library.

2.4. Use of e-journals-

Kalbande and Chavan[18] have conducted a survey to investigate the use of internet, e mails, CDROMS etc. by the faculty members in the engineering colleges affiliated to University of Pune (M.S). They suggested that to improve the quality of education as well as the individual faculty member, there is a need of some improvement in the dealing with the digital resources. With the increasing influx of electronic resources into libraries the user orientation programs should be implemented in regard to digital resources. More computer terminals should be installed in libraries for facilitating easy and quicker access to digital resources. To facilitate the internet use directory of websites should be prepared and updated frequently. The college should be use electronic bulletin board in library for inform to faculty members about new arrivals and library information & services. Awareness levels should be increased for maximizing the usage of online journals for procuring the current and required information.

A study by Makkini Anil Kumar and V Pulla Reddy{19} aimed to find out the use of e-journals by the research scholars in the libraries of Sri Venkateswara University (SVU), Andhra University (AU) and University of Hyderabad (UH). 29.72% of research scholars use print journals frequently for their research work. The majority of the research scholars (54.61%) replied that the print journals are very important, and 39.30% of them replied that the print journals are moderately important despite the presence of e-journals. Nearly one-fourth of research scholars (23.87%) are dissatisfied with the print journals subscribed by their respective libraries. The study also reveals that 35.48% of research scholars prefer print format of journals. Printjournals are important for the research scholars to collect the required information for their research work. The study shows that 32.10% of the research scholars did not participate in training programmes conducted by their libraries with regard to the use of e-journals. The study shows that 40.88% of the research scholars spent only three hours, 20.95% of them two hours and 6.30% of them one hour per week in their libraries in using e-journals.

NaushadAli[20] has examined the use of electronic information services (EIS) among the users of the Indian Institute of Technology (IIT) Library in Delhi, India. Both questionnaire and Observational method were used for data collection where 300 valid samples were collected. The analysis of the data collected covered awareness of EIS Services, use of e-journals, advanced search facilities, acquaintance with electronic information sources, the purpose of using e-information, problems faced by the users while using EIS, infrastructure facility available and satisfaction level of users. The study found that Boolean logic and truncation are the most often used search facilities by IIT users. Lack of printing facilities, terminals and trained staff are the major reasons that would discourage users from accessing the e-resources. The survey also reveals that some 60 percent of the users faced difficulties while browsing e-information.

Mishra and ReshmiRekha[21] have revealed that the use of e-resources among the students of the library under study is primarily to update knowledge. The teachers of the university under study use UGC-Infonet and INDEST Consortium to find the latest information in their own subject and constitute the highest percentage for using the e-journals. It is also surprising to note that a good number of respondents are not used to e-resources of the library due to the lack of their awareness.Natarajan et al.[22] have analyzed the effectiveness of e-resources provided by Annamalai University for its faculty members and research scholars in eight different faculties. Results reveal that despite the availability of wide range of e-resources the frequency of their use was low. The reasons identified for this are lack of time, lack of awareness, lack of subject coverage and slow downloading. More than fifty percent of the users were opinion that the relevance of the e-resources covered by e-journals consortium of Annamalai University was satisfactory. Majority of the users agreed that training would lead to better utilization of e-resources.Syed et. Al[23] attempted to study the issues like use of electronic information resources, its impact on the collection of print and electronic sources its awareness among the users, and the places where the users are accessing these resources. The findings show that users were using e-resources; the awareness about eresources encourages users to use such resources to the maximum; and the users are using Department and home more for accessing the information. The impact of e-resources was visible from the decrease in number of printed documents in comparison to the increase in number of electronic resources. The use of e-resources has increased manifold. The printed material is being quickly replaced by the electronic resources.

Kumar and Shukla[24] in their study titled "Use of Internet among the research scholars of the faculty of science, University of Allahabad: A case study" it shows that a majority of the research scholars mainly use the Internet for research purpose and the least number of research scholars use the Internet for entertainment purposes. E-journals are the most preferred resources used by all the research scholars. It is followed by the use of e-articles. All the research scholars browse the desired information from the Internet by using the search engine and Google is the must favorite search engine. It has been showed that only 38.33% respondents fully satisfied with the Internet services, 31.67% partially satisfied and 30% least satisfied.Jamali et al.[25] in their article provide a review of the log analysis studies of use and users of scholarly electronic journals. Log analysis provides little in the way of explanation, satisfaction and impacts, and rather raises the questions that really need to be asked, a survey or qualitative study needs to be done to find the answers to the questions. Log analysis is clearly useful for certain kinds of analyses, like shedding light on the format of the articles scientists read (PDF or HTML), the age of the articles (obsolescence), and the way scientists navigate to the required material (searching and browsing behaviour). But log analysis is not all that helpful at discovering the value and use of the articles retrieved, or about what lies behind expressed information seeking Behaviour.

Vakkari and Talja[26] discussed keyword searching in journal and reference databases were clearly the most important access methods in all disciplines compared to browsing, chaining or obtaining material from colleagues. Academic status and discipline influenced the patterning of search methods used. Keyword searching in databases was more common in natural sciences, engineering and medicine than in other disciplines. Semi-directed searching comprised of browsing, chaining and colleagues as sources of access. It was significantly more common in humanities than in other disciplines. Anitha[27] in her survey concluded that the collection and service infrastructure of the libraries in the Bangalore regions are not up to the mark. They are struggling in building digital collection and disseminate the same due to the lack of various factors such as, ICT infrastructure, IT Trained manpower, awareness, user demand, finance, knowledge and training of digital resources.

Nikam and Pramodini[28] in their study examined the utilization and satisfaction levels of users in respect to the e-resources and present the use of internet by the users of University of Mysore. The survey indicates that the use is marginal and the scientists in the Mysore University campus need constant guidance and training to maximize the use of the e-resources. Deshpande and Pathak[29] carried out the survey in astronomy and astrophysics libraries and information centers in India. The study tried to create a substantial body of knowledge about the factors that influence the success of electronic journals, and do share this knowledge with that in the fields of astronomy and astrophysics in order to help facilitate change. Structured questionnaires for users (Academic Members, Post-Doctoral Fellows and Research Scholars) containing 40 different questions were used. The purpose was to identify the basic minimum infrastructure necessary to provide users access to electronic journals and to facilitate easy response in all major A&A organizations in India. Findings showed that the increasing use of the electronic information-seeking environment had produced change in the practice of science.

Nicholas et al.[30] purpose of this paper is to demonstrate a novel form of deep log analysis by linking questionnaire data with transactional server log data generated by the same users; and to provide a richer understanding of the information-seeking behaviour of a strategic community of virtual scholars. Usage statistics were obtained from logs for an 18-month period: 16,865 sessions were covered and 110,029 pages were viewed. Searching behaviour was studied in regard to number of returned hits and number of searches in a session. A questionnaire survey was also conducted to identify Science Direct users according to the subject/discipline to which they belonged and attitude towards some scholarly communication issues. The answers of more than 750 Science Direct users to the questionnaire were linked to the usage logs of the same users through matching internet protocol (IP) addresses. The study reveals large differences between scholars in different subjects in terms of information-seeking behaviour and their interaction with electronic journal systems.

Galyani and Talawar[31] studied the scholarly electronic journals at the Indian Institute of Science. The survey method was questionnaire. The results showed a growing interest in electronic journals among the users at IISc. Electronic journals were mostly used for research needs and PDF was the most preferred format. The fact that users had free access to electronic journals at all hours from their own computers seems to be the most appealing feature. Sivasubramanian and Nikam[32] in their findings of their comparative study of universities of Karnataka and Tamilnadu revealed that all libraries are having well developed internet browsing centers. Professionals from medical universities in both states are well trained for offering internet based services to users compared to other universities.

Abdul Mannan Khan and NavedAhmed[33] in their study aim to find out the level of awareness and use of e-journals by the researchers of the Aligarh Muslim University and Banaras Hindu University. Results reveal that the most of the research scholars are aware of the availability of e-journals and largely use them for reference purpose. Respondents fully agree that with the usage of e-journal the quality of research work improves with

enrichment of contents and materials leading to high quality manuscript. Also found that lack of training is the obstacle in proper and full utilization of e-journals.Victor et al.[34] in this research investigates the adoption of electronic journals by business academicians as a medium for disseminating academic research. It present a theoretical framework based on the body of literature in the area of adoption and diffusion of innovation, and the Technology Acceptance Model. Four hypotheses proposing that age, tenure status, gender and whether an institution is accredited affect perceptions of electronic journals are tested using a sample of 141 business professors. Age and gender were found to be correlated with propensity to regard electronic journals as equivalent to print journals. Younger respondents and women were found to be more likely to regard electronic journals favorably than older and male respondents. No tenure or accreditation effects were found.

2.5.Usability-

The research study by Kailash Chandra Das and JeoshnamayeeAchary[35] state the various aspects relating to information needs, information seeking behaviour and use of electronic resources by research scholars and faculties in the university and research libraries of Odisha. The data were collected from faculties and research scholars of 9 traditional universities and 3 research institutions. A total of 600 questionnaires were distributed randomly in the different departments of universities and research institutions, as well as among the users who visited the library, over a period of eight months during the January to August of the year 2014. Out of 600 questionnaires, 464 questionnaires duly filled up were returned to the researchers resulting to 77.33% response rate. It is found that maximum number of respondents uses University libraries, followed by research libraries. However, very less users prefers to use other libraries than their parent institutions' libraries. Regarding internet proficiency, it was found that majority have internet proficiency, whereas, very less percentage have expressed they have limited knowledge in retrieving relevant information from internet. Majority (26.64%) of the respondents adopted Methods for seeking information by using internet/online resources, followed by using the library catalogue (25.74%) number of users.

An attempt has been made by Krishna dass and Jayaraman[36] to describe a survey of the utilization of information e resources by the faculty members and research scholars as the users of various management institutions affiliated to Bharathiar University. The result indicates that out of 50 faculty members, 22% faculty members visited daily; 13% visited three times in a week; and 10% visited once in a week. Whereas out of 50 research scholars 24% visited daily; 10% three times in a week 9% visited twice in a week; 5% one in a week and 2% visited as and when required the library. Regarding e-resources 23% of the faculty members said good and 12% were said average. It is also opinion regarding the research scholars 22% said good and 18%said average. The result indicated that CD ROM database collection available in the library. 23% of the faculty members said average and 14% were said poor. It is also observed 23% of the research scholar said average and 16% were said poor. 21% percent of the faculty members' opinion regarding the online database said good; 14% were said average. It is also observed 23% of the research scholar said good and 19% were said average. Majority of the faculty members 14% were use EBSCO,16% Emerald 20 %, Proquest, 20% J-Gate 15% Capitaline 18% Elsevier and 15% and use DOAJ. It is also observed that the majority of the research scholars 15 % were use EBSCO, 16 % Emerald, 15 % Proquest, 13 % J-Gate 15 % Capitaline 14 % Elsevier and 17% use DOAJ.

Kalbande and Chavan [37] found that the basic concept of library and its use has got a new aspect. Now as the library is nothing but the centre for information, the same has not been closed in the traditional so called "library room or library building." The journey of library has now reached to the computer lab as well as to the cabin of the individuals. The researcher was try to investigate the use of internet, e mails, CDROMSetc. by the faculty members in the engineering colleges affiliated to University of Pune(M.S). With the increasing influx of electronic resources into libraries the user orientation programs should be implemented in regard to digital resources. More computer terminals should be installed in libraries for facilitating easy and quicker access to digital resources. To facilitate the internet use directory of websites should be prepared and updated frequently. The college should be use electronic bulletin board in library for inform to facultymembers about new arrivals and library information & services. There is a need to increase the internet access facility and speed of internet for improving the use of digital resources. Awareness levels should be increased for maximizing the usage of online journals for procuring the current and required information.

A survey was conducted by SaduRanganadham[38] in SV University, Tirupati among Arts and Science students to describe the use of electronic resources in University Digital Library. The study shows that the usage of e-resources by students is increasing by day by day. Majority of the students (40%) are getting information required by them from e-journals, followed by e-books (28%) e-thesis/dissertation (25%) and conference/seminar proceedings (7%). Further majority of the respondents (76) are assessing e-resources in library and remaining of

them (24%) in other modes/places. As a conclusion the author suggested to add more computers in digital library and update more e-resources like e-books, e-journals and databases.

Priyanka Nagar and ShamimAktarMunshi[39]examine the information seeking behaviour of femaleresearch scholars of faculties of social science and arts in Aligarh Muslim University. The present study selected survey method to complete the study and conducted on a sample of 120 female research scholars of social science and arts faculties. A total number of 120 questionnaires were distributed among the female research scholars of social science and arts faculties of Aligarh Muslim University, Aligarh. A total number of 120 filled questionnaires were returned back by the users. The investigator selected complete 120 questionnaires for the analysis of data. Survey result shows that the Information Seeking is very essential part of researches. Most of the research scholars are satisfied with the sources and collection, web-services, and behaviour of Library staff of the University Library while some are not so much satisfied but overall results are satisfied.

A report by Gardner and Inger[40] is the output of a large-scale survey of readers of scholarly publications and their behaviour in the discovery of journal articles and online books. People working in most subjects say that academic search engines such as Google Scholar are more important than general search engines for their subjects. People working in Engineering & Technology rate general web search engines, such as Google, as slightly more important. For people working in Social and Political Science, academic search engines are the most important resource by some margin. People working in the corporate sector rely on free search engines more than anything else, and rate general search engines higher than academic search engines. People working in Chemistry rated abstracting and indexing services as the most important discovery resource, closely followed by the publisher website. Their use of general search engines and academic search engines is comparable. Library web pages and journal aggregations are far less important to people in Chemistry and Computer Science. People working in Business and Economics favour search engines significantly more than all other resources.

2.6. User attitude on e-journals-

Rosa Laltanmawii and Manoj Kumar Verma[41] have attempted to investigate the information seeking behaviour of faculties and research scholars in school of physical sciences in Mizoram University. They observed that the faculties and research scholars of school of physical sciences, Mizoram University are not visited library regularly and visited weekly or occasionally. Majority of them (75%) find out information from Internet when they are not visiting library. They visited library mainly for barrowing the book, study, read Periodicals preparing the lectures etc. Faculties and research scholars referred to use both formal and informal sources of information. Journal, books library catalogue and thesis and dissertation is most usable formal information sources while seminar/conferences/workshops, Social networking sites (SNSs), online forum discussion and personnel contact with professional are most useable informal source to satisfy the information needs. Faculties and research scholars seek information mainly for teaching, research, write a research paper and update themselves with latest information.

Santhi and Radhakrishnan[42] examine the usage pattern of electronic resources by the research scholars from Engineering Institutions affiliated to Anna University of Technology, Coimbatore. It is observed that 432 (86.6%) research scholars are using e-books for their research. Majority (98%) of the respondents use e-journals for their research, 162 (32.5%) browse e-dictionaries for their research, 228 (45.7%) research scholars are using e-theses for their research, 278 (55.7%) research scholars are using e-magazines for their research,78 (15.6%) browse e-catalogs for their research, 261 (52.3%) research scholars are using e-databases for their research. 104 (20.84%) respondents are using the e-resources at their campus, and 26 (5.21%) research scholars replied that they are using e-resources outside campus like computer centers, and home. Majority of the respondents 369 (73.95%) access e-resources both on campus and off campus location. 131 (26.25%) respondents prefer to use print formats when they access the e-resources, 45 (9.02%) of them prefer to use electronic formats and 323 (64.73%) respondents browse both print as well as electronic formats.

Prangya Das and GopabandhuSahu[43] observed that the research scholars of Utkal University are using E-resources for getting relevant information. The purposes of using the E-resources are communication, search up-to-date knowledge, quick access and database search. It has been found that for communication purpose the response of research scholars is 15(17%),32(36%) research scholars are using the E-resources for Up-to-date knowledge, for quick access 11(12%) and 20(23%) research scholars are using E-resources for database search. The findings of the satisfaction of existing library resources extended to the research scholars, are not satisfied with the Digital library, OPAC/Web-OPAC, Networked based Information and CD-ROM services. Among the level of satisfaction most users are partially satisfied with CD-ROM Database, E-Books, E-Journals, and Online databases.The study by Kandasamy and Vinitha[44] is confined to awareness and use of online databases in all university research scholars and students in M.S University. From the finding of their study and the personal

observation and knowledge of researchers, several major conclusions can be drawn. In order to strengthen the research activity in the university, it is suggested that more online databases need to be subscribed these are also the research scholars expectations. Feedback should be sought from the research scholars and the services need to be evaluated to decide their utility. University should invest more in online databases.

2.7. Patterns of e-journal use-

Davis[45] analyzed annual electronic journal usage data for the North East Research Library (NERL) consortium for 2000 and 2001 for the Academic Press IDEAL aggregate package. Patterns indicated a high degree of skew in use of the journal collection a small number of journals formed the majority of total use. Each institution illustrated a unique usage pattern, with some institutions using (proportionally) more or less of the collection. No institution used every title, and some titles were used very infrequently by the consortium as a whole. Title ranking showed high congruence between 2000 and 2001. Titles not subscribed in print received about ten times less use than locally subscribed titles.Vasishta, Seema[46] examines the present scenario of access management of e-journals in seven technical universities in North India namely Dr B R Ambedkar National Institute of Technology, Jalandhar (NITJ); National Institute of Technology, Kurukshetra (NITK); National Institute of Technology, Hamirpur (NITH); Punjab university of technology, Chandigarh (PEC); Thapar University, Patiala (TUP); National Institute of Technology, Srinagar (NITS) and SantLongowal Institute of Engineering and Technology, Longowal (SLIET). The study indicates that even after more than ten years of inception of e-journal service in technical university libraries, these libraries are merely functioning as a platform to receive the e-journals from the consortia and delivering them to the users. The number of e-journals accessed by institutions varied considerably. Thapar University, Patiala has the highest collection of e-journals amongst the libraries under study followed by NIT Hamirpur. A total of 7314 e-journals are accessible to Thapar University, Patiala whereas only 2680 e-journals are accessible to SantLongowal Institute of Engineering and Technology. Most of the libraries have scanty user education programs, which can eventually affect users' ability in searching and extracting relevant information from the ejournals. Only 2 libraries, NIT Kurukshetra and Thapar University, are providing user education on regular basis. Hands-on training is most feasible method used for providing user education by most of the technical university libraries.

Dattatraya T. Kalbande ,P.A.Shinde and Ingle R.N.[47] attempt to study the issues like use of electronic information resources, its impact on the collection of print and electronic sources its awareness among the users, and the places where the users are accessing these resources. A survey was conducted in the academic year 2010-11 at the Mahatma Phule Agricultural University, Rahuri (M.S). A total number of 108 faculty members were selected and their response was obtained with the help of questionnaire. The findings show that users were using e-resources; the awareness about e-resources encourages users to use such resources to the maximum; and the users are using Department and home more for accessing the information. The impact of e-resources was visible from the decrease in number of printed documents in comparison to the increase in number of electronic resources. The use of e-resources has increased manifold. The printed material is being quickly replaced by the electronic resources.Madhusudan[48] in his article titled "Use of electronic resources by Research scholars of Kurukshetra University" concluded that electronic resources had become an integral part of information needs of research scholars there. Further, he found that e-resources can be good substitute for conventional resources, if the access is fast, and more computer terminals are installed to provide fast access to e-resources.

A study by Parameshwar and Patil[49] revealed that all the faculty members and the research scholars use the books as a major source of information and majority of the faculty members and the research scholars search for printed journals and electronic resources. It is surprising to note that print journals are alsoneeded in addition to electronic journals as expressed by a majority 73.51% (197) of the research scholars and only 26.49% (71) of the research scholars have stated that print format of journals is not needed. About 54.97% (83) of the faculty members covered under the study have stated that there is need for printed journals along with the electronic copies of the same and the remaining 45.03% (68) of the faculty members have responded that there is no need for printed journals. There is a need to train the faculty members and the research scholars how to use the electronic resources. Further, there is a need to include more number of journals in the Consortium. Users also expected other kinds of services from the Gulbarga University Library with UGC-INFONET consortium.A survey conducted by Chandran[50] revealed that the highest frequency of using the electronic resources in the library was "twice a week" by 53.65% of the respondents. The lowest frequency of using the electronic resources in the library was "rarely" by 4.88% of the respondents. The purpose of using electronic resources most by the respondents (34.14%) was "to prepare for projects". The purpose of using electronic resources lest by the respondents (6.51%) was "to write book reviews". Most of the respondents (60.16%) spent "one hour" to access the electronic resources. Only 14.64% of the respondents spent "more than two hours" to access the electronic resources. The

majority of the respondents (68.29%) were satisfied with the relevance of electronic resources in the library. Only 13.82 % of the respondents were not satisfied.

Thanuskodi[51] examines the usage of electronic resources at Dr T.P. M. Library, Madurai Kamaraj University and reveal s that M.Phil students undertake more searching of e-resources followed by postgraduate students and PhD Scholars the least. It al so indicates that users are aware of the e-resources and their various types but recommends the improvement in the access facilities with high internet speed and increasing subscription base of the electronic information resources.Elavazhagan and Udayakumar[52] examined the exposure and measure the extent use of eresources by the faculty members and research scholars of BITS, Pilani - Hyderabad Campus" and confirmed that "the e-resources are time saving, easy to use and handle, more informative, preferred, flexible and effective". KiranKumar and MallinathKumbar[53] conducted a survey to study the use of electronic resources among the faculty in five autonomous Engineering Colleges in Bengaluru. It evaluates the purpose, benefits, preference of web browsers, search engines, file formats, problem faced, and search patterns as the key parameters. It highlights some problems, constraints and forward suggestions for better use of electronic resources. Further it assesses the faculty awareness and use of electronic resources in their academic and research needs. Besides, familiarity about search patterns for effective retrieval.

Tenopir et al.[54] examined how faculty members locate, obtain, read and use scholarly articles. Data were gathered using questionnaire periodically since 1977. Many questions used the critical incident of the last article reading to allow analysis of the members of readings per year per science faculty member continued to increase, while the average time spent per reading was decreasing. Electronic articles accounted for the majority of reading though most readings were still printed on paper for final reading. Scientists reported reading higher proportion of older articles from a wider range of journal titles and more articles from library e-collections. Articles were read for many purposes and readings were valuable to the purposes.

III. INFERENCES

In summary, we have identified four major limitations in current approaches to e-journal use:

- Studies are often limited to single institutions, but do not take institutional context into account, such as local information communication technology (ICT) policies. Neither are differences in the social organization of disciplines taken into account.
- Studies are often limited to a single discipline. Such studies enable an in-depth understanding of the patterns of and reasons for e-journal uptake in individual fields, but are over ambitious in their claims for generalizability across other disciplines.
- Comparative studies tend to be based on broad disciplinary groupings, such as the physical sciences, health sciences, social sciences, and humanities. Studies of this nature provide a broad picture of current usage patterns. However, they produce idiosyncratic results that do not adequately reflect epistemological activities within the knowledge producing communities that they attempt to represent.
- Studies focus on use, rather than non-use, which skews patterns, observed within and across disciplines and makes it difficult to develop comprehensive descriptive or explanatory frameworks.

IV.CONCLUSION

Traditional print journals are being replaced by electronic journals with benefits for libraries and users apparent in many ways. Users can access, download and print out papers quite easily. Therefore the usage of e – journals has increased. Further there has been a considerable increase in awareness among the users about the library e – resources and e-services. Use of electronic journals improves the quality of research by providing enriched contents on different subjects of study. A number of studies have been conducted to measure the use and impact of

electronic journals.Electronic information sources are becoming more and more important for the academic community University academics as well as the researchers are a unique population and rely on recent and timely information. Electronic resources are now used more often that print resources. There is a great need to study the use of electronic resources and investigate the level of satisfaction among academics and researchers.

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