Chapter 1
1.1 INTRODUCTION:

A journal is a publication issued in successive parts bearing numeric or chronological designations and intended to be continued indefinitely, where each number contains a variety of original articles by different authors, devoted either to general literature or some branch of learning. It implies a continuity of literary character, a connection between different numbers of the series in the nature of the articles appearing in them. The Harrods Librarians’ Glossary defines a journal as a “publication with a distinctive title which appears at stated or regular intervals, without prior decision as to when the last issue shall appear. It contains articles, stories or other writings, by several contributors”. Journals are considered the vital sources of information about the new ideas and are main sources of communication through which the flow of information takes place.

The origin of the modern scientific periodical lies in the development of the newspaper and the establishment of the scientific society. The earliest periodicals appeared in 1665 when the *Journal des scavans* and the *Philosophical transactions* of the Royal Society of London were published. At the time when *Journal des scavans* was being established in France, plans were under way in England to publish a scientific periodical. The first issue of the *Philosophical Transactions* appeared on March 6, 1665 consisting of 16 pages and contained a dedication to the Royal Society. The *Philosophical Transactions* has survived for over three centuries. The *Journal des scavans* and *Philosophical Transactions* served as models for all subsequent scientific periodicals. One of the earliest journals that followed this model was a Latin journal *Acta Eruditorium* (1682) published from Leipzig. Papers reporting original research in physics, chemistry, biology and medicine began to appear in specialized primary journals in the last quarter of the 18th century.

1.2 ROLE OF JOURNALS IN HIGHER EDUCATION:

A journal may be looked upon as an information shell in a subject. For more than three centuries, print journals have occupied a central role in information creation and dissemination. Besides being a formal channel of scholarly communication, print journals hold crucial significance in higher education. While studies observe that journals are used for various reasons including research, current awareness, continuing education, teaching and external communication, journal articles have been regarded as the principal source of information with respect to higher education.

Journals, whether in print or in digital format, constitute an important part of a library collection as these are the most important vehicle for global scholarly communication. The importance of scientific journals lies in the relative speed at which they communicate information on the results of the current research. Lambert has summarized the functions of a journal as (i) to make public the original results (ii) archive of research, (iii) assignment of priority for researchers (iv) to ensure a guaranteed quality in the paper which may help in higher education and in the work of research.\(^2\)

Collins and Berge also indicated "reason for communication" and "criteria in the evaluation" as the function of journal publication in higher education. Researchers and authors write articles for making their research work public, which establishes their priority and leads to their promotion. Researchers as readers, utilize the published articles as reliable information sources for their work.\(^3\) Hence, a journal is an important resource for up-to-date information in all disciplines and is seen as the final repository of knowledge within the academic disciplines.

1.3 E-JOURNAL: DEFINITIONS

Electronic journals or e-journals may be described broadly as journals, magazines, e-zine, web-zine, newsletter or type of electronic serial publications


available over the Internet and can be accessed using different technologies such as WWW, gopher, ftp, telnet, e-mail, or listservs. These are available online or offline and contain research papers, review articles, scholarly communications, etc.

- According to Harrods's Librarians Glossary, an e-journal is "a journal which is available in electronic format; a physical printed version may also be available".
- Amjed Ali has defined e-journal as "a publication often scholarly that is made accessible in a computerized format and distributed over the Internet. An electronic or e-journal may have traditional paper counterpart or historical antecedent."
- Gail Macmillan has defined e-journal as "any serial produced, published and distributed nationally and internationally via electronic networks such as Bitnet and Internet."
- According to Jones, "E-journals are available electronically via a computer or a computer network, that they may or may not be published in some other physical medium but that are not CD-ROM's."
- African Digital Library Glossary has defined e-journal as "an article or complete journal available fully electronically via a web-site on the Internet. It could be available free or as part of a paid for service. This trend is older and more established than the trend of providing e-book content via the Internet."
- David Pullinger and Brain Shakil has defined e-journals as "those whose text materials are directly entered by file transfer from a computer or by

other transfer in a machine-readable form, whose editorial processes are facilitated by computer and whose articles are available in electronic form to the reader” 9.

- Wikipedia has defined e-journals as those “that can be accessed via electronic transmission. They are specialized form of electronic documents, they have the purpose of providing material for academic research and study, they are formatted approximately like printed journals articles, the metadata is entered into specialized databases, such as DOAJ or OACI as well as the databases for the discipline, and they are predominately available through academic libraries and special libraries” 10.

- According to Rustad, “an electronic journal is a periodical – regular or irregular – and moderated unit made available in an electronic format, either on a static medium or via computer networks” 11.

E-journal, hence, is a term used to describe a journal that is published in digital form to be displayed on a computer screen. The concept of the e-journal does democratize journal publishing, since anyone with access to a computer equipped with a modem and suitable software can produce and distribute an e-journal through a computer network.

1.4 GROWTH OF THE ELECTRONIC JOURNALS:

The electronic journal’s historical evolution has been traced to 1960’s when a UNESCO report advocated the use of computer technology to help solve the problems of traditional journal publishing12. Technological developments in the areas of personal computing hardware and software and

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network communication over the past few years have resulted in the electronic publication of academic journals becoming an increasingly viable proposition. ‘Mental workload’ dealing with human machine interactions in complex systems has been identified as the full-fledged electronic journal. It was issued in 1980 at the New Jersey Institute of Technology and was funded by National Science Foundation. It was refereed, edited and copyrighted in the same manner as a print journal. Three more electronic journals that came in existence during 1980’s include ‘Computer Human Factors’, ‘Electronic Social Psychology (ESP)’, and ‘New Horizons in Adult Education’.

Several electronic journals, some of which are now quite well known, began publishing in 1990’s, thus trigging a revolution in the scholarly communication process. These early generation e-journals often used e-mail or listserv to send issues to subscribers. The first issue of the ‘Journal of the International Academy of Hospitality Research’, a peer-reviewed journal in the field of Hotel and Institutional Management and Tourism, was released via listserv over BITNET and the Internet on November 26, 1990. Perhaps the best known electronic journal within the discipline of Library and Information Science is the ‘Newsletter on Serial Pricing Issue,’ which was first issued on February 27, 1989 in both paper and electronic format. At the same time, many commercial publishers of scholarly journals, especially those in the scientific, technical and medical fields, announced plans to make their existing titles available in the electronic form for a fee. OJCCT (Outline Journals of Current Clinical Trials) by OCLC was the first electronic-only journal, with full

14. ibid.
To find solutions to the preservation problems associated with storing paper volumes of the journals, William G. Bowen laid the foundation of JSTOR. The basic idea was to convert the back issues of paper journals into electronic format that not only saved space, but also improved access to the journal’s contents. JSTOR was officially launched on January 1, 1997, with the objectives to create a “reliable and comprehensive” archive of scholarly journal literature and fill the gaps in existing library journal collections. Multimedia magazines started appearing in CD-ROM format by mid 1990’s. First issued in 1994 was ‘Medico Magazine’, a monthly that included movie clips, children’s games, audio CD reviews and associated press dispatches. A significant trend during the last half of 1990’s was the creation of web based electronic journals, based on HTML, for distribution on WWW rather than on ASCII text. They had more complex file structures and required more storage space and are called the second-generation of electronic journals. With the emergence of the Internet, image objects like photographs and charts as link files could also be included. Now-a-days, the e-journals are generally in the form of a PDF image and an exact look alike of the print with the text as a searchable file. Number of electronic journals has grown in a dramatic way from less than 10 in 1989 to more than 8500 in April 2000.

The 37th edition of Ulrich's International periodical directory (1999) reported that out of a total of 1,57,173 serials listed in the directory, 10,332 are available exclusively online or in addition to its paper counterparts and 3,451 on CD-ROM. In the year 2004, Ulrich's listed over 34,500 online, active periodicals having both online and print versions. CD-ROM is far behind, with only 6500 titles having active CD-ROM versions. As expected, there is some overlap, hence the total number of digital periodicals in Ulrich's (either CD-ROM or online and also active) is nearly 37,500. According to Ulrich's knowledge database, as on June 2007, there are 59,549 active online serials from which the largest number (1,656 titles) are published only on an irregular basis while 1,198 of these online-only serials are published on a monthly basis (fig. 1.1). Out of 7,089 titles, from all disciplines, Academic/Scholarly publications make up the largest segment (i.e., 2354) by serial subtype (fig. 1.2). Whereas fig. 1.3 showing special features of online only publications,

Fig. 1.1 Online-Only Titles Analysis by Publication Frequency
(active publications)

![Bar Chart](http://www.libraryjournal.com/article/CA374956.html)

almost 18% of these titles (1,262 titles) are Refereed and over 16% (1,120 titles) are covered by an Abstracting & Indexing service\textsuperscript{24}.

\textbf{Fig. 1.2 Online-Only Titles Analysis by Serials Subtype (active publication)}

\textbf{Fig. 1.3 Online-Only Titles With Special Features (active publications)}

\textsuperscript{24} Ulrich's international periodicals directory. Retrieved March 8, 2009. Website: http://www.ulrichsweb.com/uirichsweb/
Table 1.1

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<th>Period</th>
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<td>32967</td>
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Table 1.1 gives a view of growth in total ISSN assigned for print as well as online journals during the years 2001-2008. Table reveals that there is a gradual growth in both types of journals. According to NewJour, (accessed on 15-07-09), the New Journal and Newsletter Announcement List, currently 23,831 electronic journals are registered on the Internet.

1.5 TYPES OF E-JOURNALS:

Meshram has suggested the following types of electronic journals:

1.5.1. Classic electronic journals: Some of the electronic journals are available through the Internet application, which are also called classic e-journals. Originally, they were distributed via e-mail but are now available on the web and only alerts of new issues are distributed through e-mail. Access to this category of e-journals is free of cost.

1.5.2. Parallel electronic journals or Electronic version of print journals: Such journals are available both in print and electronic format. Sometimes the electronic version may differ from the print journal, e.g., article may appear electronically before they are printed or the electronic version may have supplementary material as well. The website offers previews and expert view on various issues. The online version may include the full text of journal or only

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the Table of Content or selected articles from the print version\textsuperscript{28}.

1.5.3. **Database model and software model:** Under the database model of e-journals, articles reside in a centralized database maintained by the publisher and the subscribers are given permission to access the database to locate and download the articles for a particular period of time.

1.5.4 **CD-ROM journals:** Commercial publishers also have journal titles which are available on CD-ROMs. The full text of journal is made available on CD-ROM. In many cases, such titles duplicate print titles that are already available in the libraries. Libraries often subscribe to journals both in print and in CD-ROMs\textsuperscript{29}.

1.5.5. **Full text:** Such e-journals encompass complete articles available electronically rather than just the summaries or abstracts. Usually, whole of the journal is available online\textsuperscript{30}.

1.5.6. **Electronic only journals:** Such journals are available only electronically, no counterpart like print or CD-ROM is available of such journals.

E-journals are available in myriad forms allowing greater flexibility in its online versions whereas printed journals have limited space and capacity. All type of e-journals complimented each other, online for current material and CD-ROM for the archiving. E-journals in networked form allow greater scope, whereas CD-ROMs are easier for publishers and librarians to handle.

1.6. **ADVANTAGES OF ELECTRONIC JOURNALS:** E-journals have numerous advantages which printed journals can not offer. These include:-

1.6.1. **Customization:** Only the articles of interest are “delivered” and the user

\textsuperscript{28} Policy on collecting only electronic versions of journals. Retrieved September 2, 2008. Website: http://www.lib.umd.edu/CLMD/e-verpol.html


has some control over the appearance of the article both in print and on the screen.

1.6.2. Full text searching or navigation: Navigation and search are two of the most attractive features that an online journal offers. The retrieval capabilities of journals in electronic form are far better than those in paper31.

1.6.3. Speed of access: Much less time is required to browse through e-journals than the print journals as it takes few minutes or even seconds rather than hours or days to access.

1.6.4. Speed and cost of publication: Machine readable text from author is gradually lowering the cost and reducing time as authoring and publishing system has become more integrated and also the electronic transmission is used more in the review process32.

1.6.5 Integration with other work: The ability to refer to more than one article at the same time on the same machine as other tasks are being performed simultaneously has become an invaluable advantage of e-journals.

1.6.6. Economical: E-journal could be distributed more economically than the print journals, because the main cost of preparing the text, the review process and such other procedures are not as capital intensive as the cost of printing and mailing the print copies.

1.6.7. Hyper text links: Useful links in the electronic version are provided where a simple click on a reference will either lead on to where it was cited, to an abstract of it, or to the article itself33.

1.6.8. Can be saved digitally: Saving the article in e-journal as text, html, or PDF files is extremely easy and can be accessed any number of times.


1.6.9. **No physical processing:** Activities like accessioning, classification and cataloguing required in case of the print journal are completely avoided, thereby saving the time of the library staff.

1.6.10. **Multimedia facility:** Print journals have text and two dimensional pictures only. E-journals, on the other hand, include text, audio and video images as well which helps in understanding the text in a better way.34

1.6.11. **Save physical storage:** Generally an electronic journal has no space restrictions. Hence, an e-journal can publish a greater number of articles and lengthy articles as compared to a print journal. Moreover, no shelve space is required to store them.

1.6.12. **Search capabilities are tremendous:** Search based on title, keyword, author, subject, abstract, article, full text can be executed to identify the e-journals as well as the articles of interest by the user.

1.6.13. **Multiple simultaneous access:** E-journals can be simultaneously used by more than one user, which is not possible in print journals.

1.6.14. **Availability:** E-journals provide 24X7 accessibility and remote access to the user 35.

It is clear that advantages of an electronic journal over the equivalent printed journal are several. Quicker publication, search capabilities, hyper links and multimedia are the key features of e-journals, which make the text easy to access, search and understand. In the present day libraries, e-journals are considered as blood without which flow of information is quite difficult, if not impossible.

1.7. **DISADVANTAGES OF E-JOURNALS:**

The disadvantages of e-journals include:

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1.7.1. Difficulty in reading on computer screens: The main disadvantage of electronic journal is that reading from computer screen may cause eyestrain to the readers.36

1.7.2. Reliance on equipments: With print journals, one is assured that once it is in hand, one can read it indefinitely without any other equipment. An electronic journal will not only require computer hardware, but one must have to know the format of the journal to display it. 37

1.7.3. Less permanent: Electronic version of the journal is easy to lose and their reliance on software and hardware makes them impermanent. This is a problem both for the institutional libraries that might like to preserve them and for individuals who wish to maintain their own collections.38

1.7.4. Higher cost: The system needed to display and the networks needed to retrieve the electronic articles impose additional cost to the end user.

1.7.5. Inferior quality: Although recent e-journals may rival a photocopy of an article, few rival the original print publication, especially on computer screens. The screens have lower resolution than paper and are usually smaller than two pages of journals.

1.7.6 Requirement to log on: Requiring a password also raises a barrier to use since it requires remembering the same. There are also privacy issues; electronic access is only private when designed to be so and publishers are obviously interested in what and how much material is being used and to some extent by whom.

1.7.7. Maintenance: E-journals provide many facilities but it requires more expertise in staff to maintain the e-journal finders, records in OPAC, etc.


1.7.8. **Incompatible software:** Different systems tend to require different software interfaces, each of which requires some effort to develop proficiency of use.

Portability is a valuable aspect, which printed journals certainly possess over the e-journals. 24X7 access without the boundaries of libraries is the main beauty of e-journals because of which these are gaining acceptance and becoming a basic component of the library’s collections.

1.8. **ACCESS MODELS TO E-JOURNALS:** As more and more journals are available in the electronic format, three models have emerged for their usage:-

1.8.1. **Remote Access:** - In this model, vendors/publishers host their journals at their websites. When an institution or a library subscribes to such e-journals, they are provided the rights to access. Depending on how this right is defined, the patrons of the library can have access from set of IP addresses or through library’s LAN or even both. Publishers grant the right to subscribing library/institution through one of the following methods:-

1.8.1.1 **User-ID and password:** The subscriber gets a user-ID and password, which can be used from any user terminal in the library. It is largely restricted to one user at a time. This is suitable for dial up access users. 39

1.8.1.2 **IP enabled (Intranet):** This method can be used by the libraries which have intranet based LAN in their libraries or campus. In such a case, publisher’s server site recognizes and validates the IP address of subscriber’s Intranet server whenever a user logs onto the publisher’s website for a subscribed journal. This is a controlled method of accessing the e-journal. Reputed publishers like ACS (American Chemical Society) and Elsevier find this method more secure 40.

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1.8.1.3 **Combined:** - Some publishers offer a combination of both the models.

This issue is largely decided by the publisher’s policy of how much access is to be provided.

1.8.2. **On Site Access:** - In this model, the library can host the e-journals within its LAN. Publishers deliver the e-journals to the subscribers through CD-ROM or through their website or by FTP option. It is more secure to maintain and offers wider and better bandwidth for access.  

1.8.3. **Access through Database:** - Some publishers have been producing their contents in an electronic format for years. Access models offered by publishers’ limit the access to their journals, but the users often find articles of their interest through the databases. Over the years, the bibliographical database has been considered as a user’s favourite option for searching and locating the information.

Whatever the access model, the e-journals are being used to a great extent as can be noted from the review of literature.

1.9. **REVIEW OF LITERATURE:**

In order to find out the existing literature related to the research problem in hand, a search was carried out by consulting various information sources such as encyclopedias, library and information science abstracts, theses, books, journals, etc. The related studies have been listed below in the chronological order:

Hey (1997) in her paper entitled ‘E-journals for research: the user perspective’ remarked that the academic community is enthusiastic about using or sharing e-journals particularly as multimedia or additional data enhances the understanding of the original research. She concluded that the publishers

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should try to make maximum use of the technology to enable work to be published more widely, quickly and cheaply.

Meadows, Yates-Mercer and McVey (1997)\textsuperscript{44} in their paper entitled ‘Training of library and information staff in the handling of online electronic journals’ stated that the libraries are playing the role of intermediaries between the publishers and readers for providing access to electronic journals. Their study was undertaken at the Loughborough University as well as the City University, London to analyse the initial use of the 'InfoTrain'. They reported that without proper training of the library staff, they face problems in handling the contents of e-journals as well as have difficulties in terms of navigating through e-journals. Two main points noted by them include that the students do not have problem in assessing the contents of an electronic journal with in their own areas of interest. However, they get confused only when complex facilities are provided through interface. Secondly, the students preferred electronic journals which combined text and graphics in a sophisticated way.

Wheary, Wild, Schutz and Weyher (1997)\textsuperscript{45} in their paper entitled ‘Living review in relativity: thinking and developing electronically’ are of the view that e-journals can act as a forum for the scholars to satisfy their information needs. Users can communicate with others to share their ideas by evaluating and contextualizing e-journal articles. They stated that the e-journals provide hyperlinks and discussion of other information resources as ways to understand a field. They opined that when a document is prepared, stored, and presented electronically, the potential for integrating, categorizing and offering the data it contains, are greatly enriched.


Mckay (1998)\textsuperscript{46} in his article entitled ‘Partnering in a changing medium: the challenges of managing and delivering E-journals: The subscription agents point of view’ discussed the challenges involved in managing and delivering electronic journals including software, interface design and search functions. He defined aggregator as intermediaries providing access to electronic journals such as subscription agents, publishers, libraries and organizations connected to libraries. Aggregators integrate many publishers' title into a single access point and can assist with license negotiations or offer technical support.

Tomney and Burton (1998)\textsuperscript{47} in their study entitled 'Electronic journals: a study of usage and attitudes among academics' in a British University assessed the attitudes and the current level of use of electronic journals by university academics in five faculties. The results showed that there are more users among academics in the Science and Engineering faculties than in the Arts or Business, while the results from the Law Department, where some staff are involved in an electronic journal project, indicated influential atmosphere within a department, can affect the level of usage. The study revealed that even the literature survey points to issues such as costs, peer review and copyright as the main factors in low development of e-journals. Their survey closely pointed towards obstacles such as time constraints and lack of technical 'know-how' on the part of the academics. They noted that although the actual number of academics using electronic journals at present may be low, yet they are willing to try this new medium. Academics initially needed time to come to terms with new technology and to locate electronic journals. It appeared that publishing electronically will not hinder promotion through the academic ranks. The principal limiting factor is the lack of time to find the electronic journals.


Zhang (1998)\textsuperscript{48} in his study entitled ‘Impact of Internet based electronic resources on formal scholarly communication in the area of Library and Information Science: a citation analysis’ pointed out that the Internet based e-resources are growing dramatically. In comparison with the impact of print sources, the impact of e-sources on formal scholarly communication is small. He noted that journal format is related to the rate of citing e-sources, i.e., electronic journal articles are more likely to cite e-sources than the print journal articles. However, once the authors cite e-sources, there is no significant difference in the number of e-references per article by journal format or by year. His finding suggested that citing e-sources may depend on authors rather than the journal format in which the authors choose to publish.

Johnston (1998)\textsuperscript{49} in his paper entitled ‘electronic technology and its impact on libraries’ critically assessed the value of the Internet in libraries and information centres. His study concluded that the Internet is quite useful in the publication and distribution of scholarly e-journals. He, however, opined that the screen layout and display features need to be improved and the hypertext linking facilities should be retained, so that a major breakthrough in readability can be achieved.

Weintraub (1998)\textsuperscript{50} in her paper entitled ‘The development and use of a genre statement for electronic journals in the sciences’ argued that when periodicals exist in both print and electronic formats, pressure is exerted on the library’s collection development function to arrange for finances to pay for electronic subscriptions even when the print periodicals are also being subscribed simultaneously. He opined that many academic libraries are still developing strategies for organizing and providing access to electronic resources to assist the research activities of their patrons. The genre


statement, a new form of collection policy, was designed to aid the library organization as a whole in coping with the shift to digital publishing. He described four components of the genre statement. These include guiding principles, selection criteria, selection strategy, and future plans for the collection of electronic journals.

Pullinger (1998) in his paper entitled ‘Academics and the new information environment: the impact of local factors on use electronic journals’ opined that academic use of journal is influenced by many factors, including users’ subject disciplines, their roles or level within the university, their local information environment of print and electronic resources, awareness of those resources, and their information needs on a particular day. In his study, he focused on articulating the factors within an institution that may affect the usage of English-journals. His study revealed that promoting a general awareness and more specific task of informing the user about the online availability of a journal, may help to increase the usage of English- journals. According to him, one of the major problems for the users is awareness of English-journals and recalling how to access it when it is firewalled by passwords.

According to Cesarone (1999), English-journals provide the author as well as the publisher an opportunity for wider dissemination of knowledge that was previously not possible through print publications. Besides this, electronic journals can incorporate features that can give more advantage than what is traditionally available in print publications. Electronic journals in scholarly or professional settings continue the tradition of fostering the creation and transmission of scientific and other knowledge that began long ago through print journals. He also discussed the issues involved in writing for electronic journals, including hypertext links, graphics, audio and video, post-publication comments and discussions (for example, via Chat rooms), access to downloadable data files, electronic review, and correction of errors. He also discussed features of electronic journals—such as provision in other formats,

full-text searching, and constant access—and ways to find electronic journals on topics of interest.

Chan (1999) in her article entitled ‘electronic journals and academic libraries’ reflected on the fast development of the electronic journals. She observed that e-journals opened up many opportunities including multimedia capabilities and speed involved in their production, distribution and accessibility. She also highlighted some disadvantages related to technological, socio-cultural and economic barriers while accessing the e-journals. She reviewed the crucial issues such as refereeing, copyright licensing, longevity and storage issues related to the electronic journals, which librarians need to be aware of as well as understand before finalizing any subscription contract. She opined that both the library staff and the users should be provided with adequate training and support for the better usage of e-journals.

Liew, Foo and Chennupati (2000) in their study entitled ‘A study of graduate student end user’s use and perception of electronic journals’ highlighted the future of e-journals in the light of the perception of graduate students enrolled in the Masters of Information Studies programme at the Division of Information studies and Nanyang Technological University of Singapore and their expectations from future e-journals. Their results indicated a significantly strong acceptance and enthusiasm for future e-journals by the users. They revealed that the growth and diversity of electronic journals in the past five years has led many to predict the extinction of print journals and that a new paradigm is sweeping scholarship. They also opined that the future electronic journals will be different from their print antecedents with the characteristics of homogeneity, related and interconnected contextual


display/mapping of linked items and malleable items. They concluded that because of the proliferation of informal electronic scholarly communication in the form of e-mails and digital discussions, the volume of scholarly publication in electronic format is increasing. This scenario calls for the need of enhanced organisation of e-journals.

According to Lee and Morris (2000)\textsuperscript{55}, although many e-journals are still available without charge to the subscribers along with the printed versions, yet the increasing services requiring payments are becoming an option. They opined that a library can offer access to electronic journals in two ways—via the website links and through OPAC. According to them, if the electronic journal is not free, the library must use the Table of Contents for current awareness purpose, so that at least the users can come to know of their publications. They stated that the aggregators' are offering many titles of e-journals on a single platform, from where the users can select one or more e-journals according to their personal needs.

Mashram (2000)\textsuperscript{56} in his article “Electronic journals: perspective and issues” highlighted some issues like format, intellectual quality, high subscription rates, legitimacy, archival and cataloguing, etc. of the electronic journals. On the basis of the distribution methods, he identified four types of electronic journals including Classic e-journals, Parallel e-journals, Databases and CD-ROM journals. According to him, e-journals include graphics, multimedia and link to other Internet resources, which make text easy to understand. While discussing the disadvantages of e-journals, he opined that e-journals require special infrastructure for their use which restricts their use at any place, at anytime and by anybody and almost everyone finds it more difficult to read e-journal articles from the computer screen.


Sathyanarayana (2000)\textsuperscript{57} in his paper entitled 'Electronic journals: Access and delivery models' discussed the technological history of e-journals, access models, archiving and pricing of e-journals. He opined that the compulsions and advantages of the emerging worldwide digital library scenario and the imperatives of the Internet economy are unlikely to leave the libraries with any choice. Managing the complexities and decision choices thrown up by the new paradigms caused by e-journals, particularly the archiving and copyright issues had proved to be a major challenge to the libraries, publishers and all others involved. According to him, e-journals have created new aspects for archiving journals resulting in controversial debates and throwing in new technological complexities.

Chu (2000)\textsuperscript{58} in his study entitled 'Promises and challenges of electronic journals: academic libraries surveyed' revealed that the feature of remote access as the main reason for e-journals being useful to the academic libraries, closely followed by the feature of 'can be used simultaneously by more than one user'. The advantages of saving storage space and the availability of multimedia information also seem to be non-negligible factors in the usage of e-journals. 'Need special equipment' and 'lack of compatibility among different publishers were affirmed as some of the challenging factors in mounting e-journals. He observed that e-journal archiving needed serious considerations, as the life span of the digital information is shorter than that of print journal. For most of the libraries surveyed, the figure for e-journals appeared modest, although some institutions claimed to have more than 1,100 titles in their e-journal collections. Questions relating to 'access' were consistently ranked high in explaining why librarians in major academic libraries think e-journals are valuable, yet 'cost' seems to be a critical factor in determining e-journal adoption.


Mahe, Andrys and Chartron (2000)\textsuperscript{59} in their study of the usage pattern of e-journals by the French research scientists revealed that majority of them used e-journals available through their university's website. They valued the speed and the highly targeted or general search facilities. Finally, lack of available equipment often restricted the use of e-journals. The study highlighted a number of points including researchers' practice that is influenced by a whole range of intertwined factors namely communication habits in the discipline, sharing of information, status, working environment and context and various more subjective factors, such as personal or inherited working habits, greater or lesser individual motivation or reluctance, etc. They further concluded that presently libraries are watching a shift towards more usage of e-journals but users are still lacking sufficient knowledge to use this medium.

Rogers (2001)\textsuperscript{60} in his study on electronic journal usage at Ohio state University noted the increased use of e-journals and decreased use of printed journals by the faculty and the graduate students during 1998 to 2000. His study revealed that 41\% of the faculty and 25\% of graduate students found 24 hour availability and easy access as the major advantages of e-journals. Both the faculty and the graduate students noted that switching to e-journals would save space in the library and it would also be easier to incorporate e-journals into electronic presentations. Moreover, it was noted that during 1998-2000, the frequency of e-journal usage increased as the number of titles available also increased and the frequency of printed journal use decreased, but at a slower rate. Use of printed journals decreased from 74.3\% to 65.6\% during this period. The study also showed that improvements in the design, delivery, and archiving of e-journals are still needed to achieve full acceptance of e-journals.

Kar and Jayamalini (2001) in their study entitled ‘Electronic journal: a new way to get information’ opined that evolution of Information Technology has brought major modifications in scholarly communications. While characterizing e-journals, they opined that e-journals can be produced and disseminated rapidly, can be updated and corrected with same immediacy. They are user-friendly and can be easily sent through e-mail and the web. They are compatible with search engines of recent times. According to them, navigation, interactivity with related issues and refereeing are also some of the advantages of the e-journals. They indicated that the online journals also provide flexibility, ease of access, searches, portability and ecological benefits.

Keller (2001) in her paper entitled ‘Future development of electronic journals: a Delphi Survey’ covered five areas of interest of e-journals including future role of scholarly journals; scenario for the journals of the future; serial crisis; archiving of e-journals; and new pricing and access models. Her study revealed that the electronic journals alone will not solve the serial crisis. The practice of holding printed versions of e-journals as archival copies will be discontinued in the coming years. She reported that the journals had never been faced with as many changes during the last 300 years as it is expected in the near future.

According to Flecker (2001), e-journals have become the largest and the fastest growing segment of the digital collections for most of the libraries in the past 2 or 3 years and in many ways, archiving and preserving e-journals will be dramatically different from what has been done for paper based journals. He opined that e-journals can contain a wide range of technical

formats, particularly because these accept digital files created during the process of research (statistical datasets, instrument produced datasets, visualizations, models, video and audio files) that help validate, supplement, or further explain the basic content of the article. It has also been suggested that the archived process of e-journals could be supported with the fees from users to access the same. He also discussed the archiving of e-journals and highlighted that the process must be funded by the governments through the national libraries or similar bodies, particularly for materials subject to copyright deposit.

Mcknight, Yu, Harker and Phillips (2001) in their paper entitled 'Librarians in the delivery of electronic journals: roles revisited' discussed the role of librarians in the delivery of electronic periodicals to their users. They focused their attention on four issues namely the role played by librarians in delivering e-journals to users; how they react when they face a problem related to electronic journal; the rating of their use of Super Journal in relation to their role as information deliverers and whether the role played by them had any effect on the end users. They found that the librarians view the electronic periodical as a challenge to the library profession. They opined that there existed a considerable gap between librarians' espoused roles and their practiced roles. They are enhancing new skills in providing pointers in OPAC, monitoring the availability of electronic journals, organizing regular training on how to use electronic journal services, and showing users how to use electronic journals, but the problems that the librarians are facing include technical problems, conducting mediated searches, disseminating the output of original research and maintaining archives for local e-journals.

Ashcroft and McIvor (2001) carried out a research project at Liverpool

John Moores University focusing on the evaluation and promotion of electronic journals in academic libraries in UK and North America. The aim was to highlight any significant differences in the way electronic journals were managed and to identify success in order to establish "best practice" in managing e-journals. In their article entitled 'Electronic journal: managing and educating for a changing culture in academic libraries' they opined that e-journals are becoming an established component of academic life but their management can not yet be considered trouble free. According to them, e-journals have an impact on the working practices and staffing requirements, as these require more technical skills and competencies. The whole process of electronic journal development requires effective management of change.

Kubota (2001)\textsuperscript{66} in his paper entitled 'how are electronic journals and CD-ROMs being accepted in Japan' described critically as to how the Japanese market has been flooded by e-journal publishers and distributors for the past few years. As a result, print subscriptions are continued to be cut in libraries and online journals are preferred. He, however, concluded that the users tend to read e-journals in the same manner as the print versions and search techniques basically remain the same as used with print journals. According to him, a robust communications link is the primary requirement to guarantee the comfortable and speedy flow of information on the Internet, and is imperative for e-journals to be accepted by users. E-journal readership is growing to a level that offset the cuts and users are becoming more familiar with the techniques required to gain maximum benefit from the new media.

Rao (2001)\textsuperscript{67} in his research paper entitled 'Scholarly communication and electronic journals: issues and prospects for academic and research libraries' indicated that publishing in e-journals is gaining recognition and

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momentum because of inclusion of the referee system and peer reviews by major publishers. Even academic institutions have started to accept electronic publications by their faculty for promotion purposes. He examined how the electronic journals could be enhanced to make them more valuable to the end users. He opined that the top ranked features of e-journals include querying, navigation and visualization that contributed to enhanced access, advanced interaction and value added contents. The study also explored the need for adopting electronic media because of their advantages such as accessibility, speed, cost and acceptance, the e-journals are increasingly being accepted by the academic and research community. He also provided general guidance to authors, publishers and libraries to develop mechanisms for mutual benefit and foster the scholarly communication process in the new environment.

Groote and Dorsch (2001)\(^{68}\) reported in their article entitled ‘On line journals: impact on print journal usage’ that usage of print journals at the University of Illinois, Chicago has decreased significantly after the introduction of online journals. The result of their statistical analysis also revealed that the decrease is apparent regardless of the fact whether a journal was available only in print or both online as well as in print. Their result also supported the trends that have been observed in other studies examining the impact of remote database access. They noted that whenever possible, patrons preferred to access databases online and remotely. The same appears to be true of online journals.

According to Swarna and others (2002)\(^{69}\), there are several high quality, free electronic journals existing currently. These journals are, however, being underused due to lack of publicity and unaccustomed user to the electronic media. They also reported that the publishers are striving to improve the quality of their electronic journals. They opined that the libraries should do well to


publicise those journals which they find scholarly enough and within the subject scope of their institute. They must also provide user orientation facilities and try to identify and match users need profiles to satisfy their information needs. Librarians may provide access to them through their home page and even take the responsibility of archiving them.

According to Kumar (2002)\textsuperscript{70}, electronic journals come in a variety of styles and formats much like their print counterparts. Earlier e-journals usually had unattractive layouts and were difficult to read. They frequently lacked page numbers, making it difficult to navigate the text or to refer to portions of it and now they are available with full-color web pages with an attractive and easy to use layout. He opined that users in India still prefer the hard copies of articles than reading from computer screen, despite the fact that layout of e-journals have greatly improved.

Tenopir and King (2002)\textsuperscript{71} in their article entitled 'Reading behaviour and electronic journals' reported that the scientists always value journal articles more than any other information source. Most scientists, now-a-days, use electronic journals more despite of considerable variations in their academic disciplines. However, they also continue to rely on traditional print journals. In fact, readers currently use a combination of print as well as the electronic journals to satisfy their information needs and requirements. Their study revealed that the basic purpose of obtaining information from electronic articles include primary research, background research, current awareness and continuing education. Their results revealed that 20% of the scientists found their required articles by browsing through personal subscriptions, 20% found articles while browsing electronic copies of journals and only 4% of the scientists found articles by browsing the print collections in the libraries.


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Kebede (2002)\textsuperscript{72} in his article entitled ‘The changing information needs of users in electronic information environments’ examined the information needs of the users that are changing as a result of changes in the availability of information content in electronic form. Users still desire that the content is made available to them within the domain of their skills and technological capabilities, so that it is possible to access and use the required information in a proper way. Such situation may lead to direction of the possible strategies to be considered while creating the different forms in which electronic resources are provided to the users.

Herring (2002)\textsuperscript{73} in his article entitled ‘Electronic journals: a citation analysis’ described the citation analysis of research articles from scholarly electronic journals published during 1999-2000. The results indicated a growing reliance on e-journals by scholars and researchers as they have become more comfortable and familiar with resources available on the web. The present study unveils that more than half of the articles studied include electronic references and 16% of the total references were from electronic resources. Thus, they concluded that online resources act as both alternative and expansion of traditional research sources and tools. Library professionals can provide enhanced information services to their users by analyzing the needs of users for present online resources.

Curtis and Yue (2002)\textsuperscript{74} in their paper entitled ‘Acquiring and Managing Electronic Journals’ discussed the problems of acquiring and managing the e–journals. They are of the view that enthusiasm of staff is essential for solving

the technical problems of workflow in managing the e-journals. They also highlighted some of the qualities of e-journals including 24x7 availability, supportive for distance education as it allows library to reach remote users, etc. They further suggested that the problem of shrinking budget of libraries can be dealt with by just compiling the URLs of journals available in free domain.

Dillon and Hahn (2002)\textsuperscript{75} in their study entitled ‘Are researchers ready for the electronic only journal collection? : Results of a survey at the university of Maryland’ noted the frequency of using scholarly journals (both print and electronic), and other electronic format for accessing information at the University of Maryland. The study revealed an increased level of adoption of e-journals among the faculty, giving support to multiple formats for core disciplinary journals, and the different perceptions of various constituencies among the respondents. They reported that 51% of faculty used electronic versions of print journals at least once a month, along with a regular use of a wide range of other sources including use of the websites of professional organizations by 36% of respondents, conference proceedings by 28% respondents and author’s websites were used by 21% of respondents. Their study suggested that the faculty is more interested in retaining print access to core literature as compared to the graduate students. Faculty members from sci-tech departments agreed with the need to retain print access to core collections but are moving towards their e-versions. Graduate students from all the departments are more willing to use electronic journals only, but currently prefer to maintain access to print in core collections. Their results provide collection managers with a better understanding of which journals make good candidates for initial adaption to electronic only if archiving concerns can be addressed.

Brennan, Hurd, Blecic and Weller (2002)\textsuperscript{76} in their study at the University:


of Illinois, Chicago entitled ‘A snapshot of early adopters of e-journals Challenges to the library’ revealed that all the faculty members, read electronic journals at least weekly and many used them on daily basis. Majority of the respondents used e-journals to obtain articles for which they had a citation. E-journal providers who did not offer PDF versions of articles were criticized. Their study also found that the enthusiastic acceptance of e-journals has changed the participants’ habits. They stated that the users of e-journals accepted them because they see more advantages of e-journals including time saving, ease of use and powerful searching capabilities.

Kushwah, Jambhekar and Gautam (2003)77 in their paper entitled ‘Consortia initiative for access to electronic publication in Indian Libraries’ highlighted different consortia initiatives in India including FORSA, CSIR, UGC-INFLIBNET and INDEST –CONSORTIUM as major efforts being undertaken to overcome the shrinking budget problem of the libraries in India and to simplify management of access to e-journals. They also proposed a framework of the National Consortium, whose aim would be to simplify licensing arrangements, improve cost benefits for member libraries and to explore opportunities for making electronic products easily accessible to all.

Robertson (2003)78 in her study entitled ‘Impact of electronic journals on academic libraries: the changing relationship between journals, acquisitions and inter-library loans department roles and functions’ looked at the impact of e-journals on the relationship between acquisitions, inter-library loans and journal departments in St.George’s Hospital Medical School Library, U.K. The study highlighted that there were still some areas for growth in the use of

e-journals. The number of e-journals available is dependent on the library budget and the IT equipment available in the libraries. Their study also revealed that taking printing of the electronic journal articles can be more economical than photocopying print journals, as most of the libraries tend to charge more for photocopying due to the overload costs. The study noted that most of the librarians feel that the electronic journals will continue to have great impact on the journals’ department in terms of interlibrary loans.

Marcum (2003)\(^79\) in his article entitled ‘Visions: the academic library in 2012’ visualized the academic libraries of 2012. He opined that the facilities going to be provided by the academic libraries in future will include integrated library system based on computer access and built through consortia approach. Library consortia will be deeply involved in collaborating to create and publish academic journals and resources particularly e-journals, e-books and collection of visual resources in various media.

According to Raza and Eqbal (2003)\(^80\), there has been a rapid rise in the number of e-journals and management of these journals needed urgent attention. According to them, people versed with latest developments in technology, should be appointed in library and existing staff should be trained so that the users will get proper assistance to find relevant information in the digital environment.

Bonthorn et al (2003)\(^81\) in their paper entitled ‘Trends in use of electronic journals in higher education in U.K.: views of academic staff and students’ examined the disciplinary differences in the use of electronic journals by academic staff and students in U.K. Their results indicated that academic staff

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incorporates electronic journal usage into their working patterns and this in turn affects the users' attitude towards such journals. The study revealed less usage of library's electronic journal Web page in the University by academic staff in sciences. They preferred to find articles through electronic bibliographic databases. The study also revealed that the students' awareness about the e-journals is increasing day by day.

Talja and Maula (2003)\(^2\) noted major differences in the search methods used in different disciplines in their article 'Reasons for the use and non-use of electronic journals and databases'. Domain size, degree of scatter, professional orientation and primary relevance type are various e-journal usage patterns. Their finding also indicated that the subject fields in which directed search is the dominant search method, e-journals and databases are likely to be used more heavily and in the subject fields where browsing and chaining are dominant search methods, e-journals are likely to be used less.

Singh (2003)\(^3\) in his article entitled 'E-journal portals: a web retrieval tool for scholarly communication in digital area' discussed the gradual acceptance of e-journals for retrieving scholarly information any time and anywhere. He opined that access to e-journals is provided either by e-journal portals or through publishers themselves. E-journal portal is a fast and easy mechanism that integrates and manages various e-journals published through various publishers at various places on a single web portal. There are many e-journal portals including Emerald, Science Direct, J-gate and Ideal, etc, which provide access to e-journals ranging from bibliographic data to full text retrieval.

Biswas and Ghosh (2004)\(^4\) in their article entitled 'Managing of electronic publishing by library and information profession: some problems and

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prospects in digital age' discussed the problems related to the management of e-journals including their high cost, availability of print media over the electronic journals, archiving problems and advantages like flexibility, cheaper medium of distribution, instant gratification over print publication, etc.

According to Johnson (2004)\textsuperscript{85}, the introduction of e-journals has made serial collection management more complex. Libraries may want to offer a journal in both print and electronic format, but it is often not financially feasible, which makes the procedure more complicated. The study at the Universities of Chicago revealed that the users in Humanities seemed to be more comfortable with the print versions, but their usage of the electronic versions was on the rise. She opined that maintaining most of the humanities journal in print form is most effective in these libraries.

Bhattacharya and Siddiqui (2004)\textsuperscript{86} in their article entitled 'Developments in e-publishing: an overview' discussed the pricing model of e-journals. They opined that spending for books has been hard hit while spending on e-journals is showing a steady increase. According to them, there are three access models to e-journals, i.e., Remote access, Onsite access and Access through database.

Maxymuk (2004)\textsuperscript{87} in his paper entitled 'Electronic journals redux' highlighted the advantages of electronic journals including no physical space required, 24/7 access and accessibility from almost any workstation that can be connected remotely to the institution's network. But e-journals do require a computer network infrastructure that may has space and cost implications.


Singh, Singh and Singh (2004)\(^8\) assessed the attitude of the users towards INFLIBNET services at Manipur University Library. Their study revealed that very few users use the e-journal databases. They noted that the overall awareness about INFLIBNET services amongst the users is very encouraging. Postgraduate students and teachers feel the lack of infrastructure in the library as the major problem for less use of e-journals. Majority of the users depend on the INFLIBNET services to meet their information needs and are partially satisfied with the services.

Dulaymi, Marghalani, McDonald and Tail (2004)\(^9\) in their study investigated the changes in collection and acquisition of electronic journal and printed journals’ in terms of number of titles, acquisition budgets and costs during 1995-2000 in Saudi Arabia. The study revealed that the electronic journal titles increased by 97.9% in the year 1996, which corresponds to the extreme increase in the budget of e-journals that is 125%. The study showed simultaneous increase in e-journal titles by 10.35% in the year 1999. 61% of available e-journals were in the discipline of applied science and technology. It is evident from their study that there were a lot of fluctuations in electronic journal budget allocations and a reduction in print journal titles since 1997.

Olaf (2004)\(^9\) in his paper ‘an international student’ opined that nowadays students are more dependent on online journals for their research work and for satisfying their information needs. While sharing his own experience of accessing e-journals at primary stage, he highlighted some technical difficulties including the need for a special browser or plug-in software and the problem in viewing foreign language characters, as it is to be supplemented by change in the browser in order to view them properly. In order to help this situation,

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he suggested that web needs to be much more structured and rigorous, so as to provide right direction to the researchers.

Ball (2004)\textsuperscript{91} in his paper entitled 'What's the "big deal" and why is it a bad deal for universities?' opined that in spite of many advantages, information in electronic form is difficult to control as it is being published in vast quantities, thus posing a threat for the libraries to choose and shape their collections in a desirable manner. He opined that libraries should form and support consortia.

Kumbar, Kumar, Raj and Praveen (2005)\textsuperscript{92} in their study entitled 'Use of electronic resources by Research Scholars in CFTRI, Mysore: A study' revealed that 58.57\% of research scholars of the institute use electronic journals more than other electronic resources including online databases, e-books, CD-ROMs, etc. Their study also revealed that 21.43\% research scholars use e-journals once a week. 38.57\% of research scholars found using electronic resources time consuming in comparison to print resources. On the other hand, 68.57\% users found it easy to access electronic resources of information.

Bhatt (2005)\textsuperscript{93} in his article “E-journals and libraries: Vexing issues” described the evolution of e-journals, their advantages, disadvantages and their evaluation criteria. He opined that the developments in Information Technology have developed e-journals as a basic information source to research community. E-journals can be accessed through various models including free access, exclusive subscription, selective access, fee based access and consortium access. Keeping in view the archival problems, he suggested various methods to archive e-journals like providing print copies of journals to the nodal agency and emphasized on a foolproof archival mode at the agreement stage.


Angrosh (2005)\textsuperscript{94} in his article entitled ‘Electronic and print journals: a value chain analysis’ explored the concept of providing cost-effective means of information to the information seeking community in the form of e-journals. He also compared the role of print journals and on-line full text journals in fulfilling the users’ demands. He indicated that e-journal is more viable and cost-effective medium for information creation and dissemination. In his view, central and state governments should take initiations in providing information to larger sections of user community in form of e-journals and help in effectively bridging the ‘digital divide’ between rural and urban users. By observing the crucial issues of authenticity, validity of articles and thereby publishing valuable peer-reviewed scholarly articles, e-journals are made to play a major role in meeting the increased information needs of the users.

Naushad Ali (2005)\textsuperscript{95} in his article entitled ‘The use of electronic resources at IIT Delhi library: a study of search behaviors’ laid emphasis on the training of library staff, who play a major role in encouraging the use of electronic resources. He found that Boolean logic and truncation are most used search facilities. However, the users feel difficulty because of the lack of printing facilities and inadequate number of terminals, which discourages them from accessing electronic journals. His study revealed that 63% users utilize the facility of electronic journal and 45% of users were aware about the list of online journals subscribed by the library. 46% users of the library consult 2 to 5 journals and databases in a week, 17% use one e-journal, whereas 10% of users browse more than six e-journals in a week. 43% users were satisfied with the terminals provided for accessing e-journals, whereas 57% users found them to be inadequate.


Mounissamy, Kaliammal and Swaroop (2005)\textsuperscript{96} in their article entitled 'User's attitude towards electronic journal' stated that the e-journals bring great change in the higher education due to revolution in Information and Communication Technology. They opined that use of e-journals usually require a considerable amount of training. Their study revealed that 45.5\% respondents' access e-journals once a week, 47.7\% of the respondents use the college Computer lab to access electronic journals. 58\% of the respondents did not experience any problem while accessing e-journals. They stated that younger generations in India have accepted the digital reading culture early.

Koovakki & Noor KV (2006)\textsuperscript{97} surveyed 50 university teachers and indicated that majority of the science teachers' access journals by Springer and comparatively larger percentage of the non science teachers also access the same for various purposes. Majority of science and non-science teachers are somewhat satisfied with the available e-journals. Higher percentage of science and non-science teachers use e-journals for research, teaching and for updating their knowledge. It is evident from their study that availability of e-journals is ranked average in comparison to poor availability of e-books.

Mohamed and Sreelatha (2006)\textsuperscript{98} in their study revealed that 48.83\% of researchers of Calicut University use e-journals everyday and 93.40\% users access e-journals from the INFONET center established for accessing e-journals in library rather than any other place. 73.63\% of the students found difficulty in accessing full text of articles and lack of speed was a problem for 9.89\% of the students. 60.44\% of the students were satisfied with the infrastructural facilities available for accessing e-journals. All the doctoral students suggested that properly trained and skilled library professionals should be appointed for improving the services in accessing e-journals.


Mounissamy and Kaliammal (2006) in their paper entitled ‘Promoting effective use of electronic resources using library websites by IITs’ and NITs’: A comparative study opined that e-journals offer a solution to the problems in the management of journals. They save space, provide powerful searching tools and facilities of hyperlinks and multimedia. According to them, IITs’ and NITs’ in India provide access to databases and electronic journals via the online catalogue and the web to the users. Their study revealed that all the IITs’ are offering links to e-resources with options including “alphabetic list”, “Database list” and “Subject list”. Majority of IITs’ also provide training courses and updates on subject-specific problems related to e-resources.

Baljinder and Verma (2006) in their study of TIET, Patiala revealed that 77.27% of the students use e-journals. They noted that users were not having much information regarding availability of free e-journals on CD-ROM and Infonet. 45% of users didn’t know about the availability of such resources. Basic purpose of using the e-journals is academic research work. Their study revealed that almost all the users use online information and about 34% of users use these services daily and only 4% users are such who go online few times in a month.

Edwards (2006) in his paper entitled ‘Electronic Journals: problem or panacea’, outlined the selection criteria for acquisition of e-journals. He opined that libraries must take advantage of the free trial period, provided by many publishers to access of e-journals. According to him, the feedback from the users is very important for supporting the decision. He pointed out that with the features of speedy delivery, all time availability, searching facility and saving of shelf space, e-journals are the integral part of today’s research community.

According to Zainab, Huzaimah and Ang (2007)\textsuperscript{102}, the electronic journals are used for searching new information, reading full-text articles as well as abstracts, and browsing the table of contents. Their study examined the use of electronic journals through EJUM (Electronic Journal of the University of Malaya). They noted their perceived satisfaction about the electronic journals, the preferred features of electronic journals and problems faced by them in using the electronic journals. Their results revealed that 41.8\% of respondents accessed the electronic journals while making general searches using popular search engines such as Google and Yahoo. More than a third (39.5\%) of respondents accessed the electronic journals on campus using personal computers. Another third (32.6\%) accessed them from their homes. 39.43\% of respondents’ access e-journals weekly, followed by those accessing daily (17\%) and monthly (13\%). The majority of respondents believed that electronic journals would co-exist with print journals i.e., 46.2\%. 97\% users seem comfortable to use electronic journals that have a familiar look and feel similar to most e-journal systems. ‘Online journals should allow access regardless of time and place’, this feature is rated as important feature by 96 respondents.

Bonorino and Molteni (2007)\textsuperscript{103} in their study entitled ‘Electronic journals collections in Argentine private academic libraries’ revealed that the number of universities offering access to electronic journals has increased gradually over the last five years, though libraries count on a rich variety of electronic journals subscriptions – particularly databases. There is a lack of uniformity with regard to the adoption of standard criteria for cataloguing electronic journals – though


over 50% said they did catalogue them. Ten libraries answered that they have access to only printed form of journals. Fourteen libraries bought mixed subscriptions (i.e., online and print versions). 17 libraries ordered e-journals direct from publishers, some libraries joined a purchasing pool, also called purchasing club; none of them bought e-journals through a consortium. They suggested that guidelines related to serial publications should be drawn up in agreement with standards, and librarians should be trained in processing such material. There is no provision for resource marketing, promotion and advertisement improvisation. They opined that a professional who is creative enough to design better strategies must be a part of the library staff.

Borrego and Urbano (2007)\textsuperscript{104} in their research paper entitled 'Analysis of the behaviour of the users of a package of electronic journals in the field of chemistry' analysed the usage of 31 electronic journals of the American Chemical Society (ACS) in 2003 at the University of Barcelona. The results revealed that in 2003, 1,122 IP addresses accounted for the download of 82,007 articles from the publications of the ACS. 58,737 (97.01\%) respondents preferred PDF format for downloading the e-journal articles and 1,810 (2.99\%) preferred in html format. The consumption of abstracts during this period was far more limited, 258 users viewed 1,422 abstracts of 29 journals. 39.92\% of the users only downloaded articles of a single title. The users downloaded a total of 1,624 articles. The results provided the opportunity for better understanding of users' behaviour towards e-journals and established that this behaviour does not vary significantly from that observed in studies undertaken in other geographical contexts. The lower consumption of abstracts than articles show that many articles are consulted without a previous viewing of the abstract. The results showed that there is a strong correlation between the number of articles downloaded and abstracts viewed of a title, so that the

rankings of titles by articles downloaded and abstracts viewed are practically identical.

Dutta (2008)\(^{105}\) in her study entitled 'Access to electronic journals through CSIR consortia: a case study at Central Glass and Ceramic Research Institute' stated many reasons for increased usage of e-journals such as price hike of print journals, delay in publication process, shrinking of library budgets, information explosion and timely access of information by electronic journals. Her results revealed that journals of American Chemical Society were increasingly being used by S&T staff in 2006 as compared to 2005, where as total number of download of articles was only 237 which increased to 1037 in 2006 which indicated a sharp rise in the use of chemistry journals for their research works. Usage of Springer journals showed gradual rise during 2006 as compared to 2005. She recommended that consortia approach should be developed in libraries as it leads to increase in productivity of research output and also helps to meet the user’s growing and diversified needs.

Madhusudhan (2008)\(^{106}\) in his article entitled 'Use of UGC-Infonet e-journals by research scholars and students of the University of Delhi, Delhi', opined that e-journals perform an increasingly important role in research at DLIS. Not only current e-journals are required, but research scholars and students need to be provided the use of significant electronic back runs as well. The study showed that there is an ever increasing demand for subscriptions of more e-journal titles in LIS. There appears to be some need for academics to be provided with training in using e-journals. His result revealed that 72% of the respondents are accessing e-journals through department computer laboratories, 47% accessed from central library and 20% of the respondents used the college library. 73% of respondents agreed that print journals are


important for the foreseeable future, only 27% stated print format of journals are not required. The most common problem faced by 86% of the users is that of retrieval problem. 67% of the respondents were of the opinion that it had only limited core journals (LIS), 61 per cent faced the problem of slow Internet connectivity, 52 per cent found the difficulty of systems’ speed, 48 per cent admitted that they cannot access full-text, 45 per cent reported that due to insufficient time and training, they cannot make use of e-journals effectively, 44 per cent stated limited access to terminals as barrier to use of e-journals, 37 per cent found it difficult to get the relevant information, and 16 per cent said that they face problems owing to reading from computer monitor and poorly designed websites, which makes it difficult to select the relevant information. Sixty-four per cent of the respondents strongly attested to the fact that they needed proper training/orientation for searching e-journals. Seventy-five per cent respondents stated that they are accessing UGC Infonet e-journals for current and up-to-date information.

Patil and Parameshwar (2009)\textsuperscript{107} in their survey entitled ‘Use of electronic resources by the faculty members and research scholars in Gulbarga University’ found that 72.01% researchers and 75.50% faculty members search information from the electronic journals. 66.83% of respondents used both the electronic and printed journals. 64.20% of respondents stated that they feel the need of more number of e-journals in UGC-InfoNet consortium. Need of training and orientation programmes was emphasized by 59.19% of respondents to access e-journals. The authors suggested that there is a need to improve the Internet connectivity and library should organize some training programmes for maximum utilization of e-journals.

Baljinder & Verma (2009)\textsuperscript{108} in their study entitled ‘Use of electronic information resources: a case study of Thapar University’ revealed that the


undergraduate and postgraduate users used less e-journals as compared to research scholars and faculty members. 53.98% respondents used e-journals occasionally, 56% of faculty members and 75% research scholars accessed e-journals 2-3 times in a week, whereas 86.67% postgraduates accessed e-journals occasionally. 82.06% users accessed e-resources from the computer centre, 85% research scholars accessed from the library and 71.55% undergraduates accessed e-resources from their hostels. The e-journals were used more in departments by faculty and research scholars. The authors also provided the download usage statistics of two years to show the comparison of different types of e-journals and bibliographic databases accessed. The results revealed that during the year 2004, there were 8062 downloads whereas in the year 2005, 8711 downloads were recorded. The overall impact of e-journals showed that there is an increase in the collection and usage of e-journals. They opined that the librarian must find out the reasons for those e-journals whose usage has decreased.

Kumber and Gururaj (2009) in their study entitled 'Use of UGC-INFONET e-journals consortium by faculty members and research scholars of Karnataka University, Dharwad' revealed that 88.09% faculty members and 93.33% research scholars felt the necessity to include more e-journals in the current consortium programme. 81.66% research scholars and 64.29% faculty members felt the need of regular training programmes. The study revealed that 27.45% respondents found UGC-InfoNet e-journal programme as excellent. 66.67% faculty and 70% research scholars preferred both electronic as well as print version of journals. Almost half of the faculty members (47.61%) and a little more than half of research scholars (61.66%) felt that the information content available in e-journals is better than the printed version.

A research project on the use e-journals in U.K., which was initiated by Research Information Network (2009) clearly highlights that users are quite

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dependent on e-journals for their information needs. They are using search engines such as Google and Goggle Scholar to pick up the article of their interest. It reported that 24 hour access to e-journals is the major advantage. The project also showed a direct proportion between the expenditure on e-journals and number of articles downloaded. The study concluded that e-journals have given an 'unprecedented level' and 'convenience of access' to sea of knowledge available in form of online scholarly articles.

As gathered from the review of literature, no comprehensive study has been undertaken to study the management and usage issues related to e-journals in the libraries in India. The problems being faced by university libraries in managing e-journals are not well known. It is very relevant in this context to take up the study to know the e-journal usage among the university libraries in Punjab and Chandigarh.

1.10. STATEMENT OF PROBLEM:

Due to the growth and expansion of the Internet, e-journals are becoming important information sources for users. E-journals in libraries are currently getting a great deal of attention. Libraries are trying their best to make available the information embedded in e-journals so as to satisfy various information needs of their users. These have revolutionized the way in which scholarly information is being communicated and accessed. These bring enormous benefits to their users including their easy accessibility, affordability, storage facility and potential for quick and easy submission of abstracts for consideration of publication. They provide easier access to subscription-based journals and thereby save the time. Keyword search ability, accessibility at the time of publishing, etc. introduce changes in the publication system. E-journals gradually are moving towards an acceptable, affordable and necessary tool for retrieving scholarly information to any body, any time and any where. Academic libraries subscribe to electronic journals to meet their users' expectations and implement the concept of consortia based subscription of e-journals. At present some e-journals coexist with print journals, e.g., *IFLA Journal* and *Journal of Library and Information Science* whereas there are others which are available in electronic form only, e.g., *Australian Electronic Journal of Nursing Education* and *Biopolicy Journal*. However, Electronic journals now represent a significant
and growing part of the academic library's offerings. As demand for e-journals increases, librarians are faced with a new set of decisions related to their acquisitions and has created enormous changes in the library practices. It is a tough job to maintain and manage e-journals systematically. The steps required for managing e-journals are more complex than those for the print journals. Also, this practice often requires staff with a greater skills at each stage. The present study, while highlighting the importance of e-journals in information dissemination in higher education, applies a thought process to identify and tackle any problem being faced by the users as well as the staff to effectively disseminate nascent thought in the form of e-journals.

In spite of their impact on the information landscape, the electronic journals, as the review of literature reveals, are underutilized and underappreciated by the library community, perhaps due to the lack of awareness and promotion that goes hand in hand with the low budget of such academic libraries especially in India. Consequentially, there are many unanswered questions which are of paramount interest to both user studies and service provision. For example, are users not aware of the e-journals? What are the problems being faced by them to access them at various levels? Are libraries and information centers of higher education fully equipped with tools needed to meet the diverse needs of their user community in context of management of e-journals? Are the libraries redefining the ways by which the users’ demands are being fulfilled? Is the user community fully satisfied with access to online, full text information?

The present work is intended to do a comparative study of the usage of electronic journals in comparison to the print journals amongst the users in the libraries under study. The problem chosen intends to find out the problems faced by the staff and users in the usage of e-journals. By knowing the requirements of the students and staff who are handling e-journals, the researcher proposes to suggest solutions to the problems, so that effective e-journal access can be provided to the end user.
1.11. OBJECTIVES OF STUDY:
The objectives of the study included:

- To study the present use of e-journals in higher education with special reference to Guru Nanak Dev University, Panjab University, Punjab Agricultural University and Punjabi University.
- To study the existing infrastructural facilities available to access electronic journals in these libraries.
- To study the manpower needs and policies in accessing the e-journals in these libraries.
- To study the level of co-ordination and co-operation for e-journal usage amongst the four libraries under study.
- To study the problems and difficulties of library staff for providing access to e-journals.
- To assess the user satisfaction about e-journals access in these libraries.
- To suggest ways and means for maximum utilization of e-journals.

1.12. SCOPE OF STUDY:
The proposed study intends to assess the satisfaction of the users including students and the faculty in terms of availability of e-journals as provided by their respective university libraries. The study will include the following four university libraries in Punjab and Chandigarh:

1. Guru Nanak Dev University (GNDU), Amritsar.
2. Panjab University (PU), Chandigarh.
3. Punjab Agricultural University (PAU), Ludhiana.
4. Punjabi University (Pbi Uni.), Patiala.

The study will analyze the use of e-journals by the respective users of the above mentioned four university libraries as well as the problems faced by the staff of these libraries. This will give us a clear picture about the actual usage of e-journals so that we can maximize their use and save the time of the user.
1.13. LIMITATIONS OF THE STUDY:

Following universities are not included in the present research project because these universities do not have their own academic campuses and central libraries. Moreover, these universities are comparatively new and are lacking in necessary infrastructure for providing various facilities of e-journals.

1. Punjab Technical University (Establishment in 1997)
2. Baba Farid University of Health Sciences (Establishment in 1998)

1.14. HYPOTHESES:

Keeping in view the above objectives, the study intended to test the following hypotheses:-

- The e-journals available in four university libraries under study are not adequate.
- There is lack of infrastructural facilities for accessing e-journals in university libraries.
- There is a qualitative and quantitative variation in accessing e-journals in different types of libraries.
- No formal ICT training is being provided to staff for properly handling the e-journals.
- The university libraries under study in India are opting for consortia approach in order to deal with the problems of recent resource crunch.
- Information search through e-journals is faster, but involves many technical complexities.
- Traditional print journals are still more popular amongst the users.
- Since e-journals remain underutilized, various promotional strategies are required.

1.15. RESEARCH METHODOLOGY:

The survey method of research was adopted for the study in hand. The data was collected with the help of two questionnaires, one for the users and other for the library professionals, and distributed in all the four selected universities in Punjab. The survey was based on random sampling of 125 users (approximately) from each university, i.e., a total of 500 users were surveyed.
The data was analyzed through descriptive statistical methods by using computerized data processing techniques. Subsequently, the data was interpreted and relevant conclusions put forth.

1.16. CHAPTERISATION:

Chapter-1: E-JOURNALS: A SNAPSHOT

This chapter covers the need for the study, statement of the problem, objectives of the study and methodology adopted for the collection of data and its analysis. It also enlists the hypotheses tested during the study. It also defines the e-journals and highlights their role in higher education. It also provides the review of the existing literature related to the research problem. The description of such literature is mentioned in the chronological order.

Chapter-2: ROLE OF CONSORTIA

This chapter covers the general introduction to consortia, its need, goals, objectives, models, prerequisites and consortia efforts in India and at the International level. This chapter also highlights the role of consortia in subscription of e-journals in higher education institutions.

Chapter-3: INFRASTRUCTURAL FACILITIES AVAILABLE WITH SPECIAL REFERENCE TO E-JOURNALS IN GURU NANAK DEV UNIVERSITY, PUNJABI UNIVERSITY, PANJAB UNIVERSITY AND PUNJAB AGRICULTURE UNIVERSITY.

This chapter reports the general introduction of the four libraries under study and results of the statistical analysis performed on the data gathered from the librarians in the survey. The main objective of this chapter is to study and investigate present state of infrastructural facilities available in the university libraries under study for accessing the electronic journals.

Chapter-4: E-JOURNAL USAGE IN ACADEMIC LIBRARIES

The chapter is based on the survey of the four university libraries in Punjab and Chandigarh. The main focus is on survey of the users to identifying
the purposes, places, satisfaction level and problems faced by users while using e-journals.

**Chapter-5: CONCLUSION AND SUGGESTIONS**

This chapter reveals the significant conclusions drawn from the analysed data and provides the recommendations so that e-journal usage will become more effective in future.

**Bibliography**

**Appendices**