

E-journals in a networked environment: its impact on academic libraries in the digital millennium

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ABSTRACT

This paper tries to describe the Advantages of E-journals in terms of Accessibility, Speed distribution and production, Subscription Cost, Multimedia Capabilities, Internal and External Links etc and also tries to find out the Technological, Socio-cultural and Economic Barriers. The issues like Refereeing, Copyright and Licensing, Longevity and Storage and recent trends in E-journal publication and its implication on Academic Libraries in selection and acquisition, Cataloguing, archiving, user's access, training and support to staff and users are discussed in this paper.

1. INTRODUCTION

An increasingly important function of academic libraries today is the provision of information in electronic formats. Today, libraries are providing electronic access to a wide variety of resources, including indexes, full-text articles and complete journals. Journals play a vital role in the distribution of primary information. Lot of journals from all fields are currently available electronically via web. Availability ranges from sites, which provide table of contents only, to those supplying the full text of every issue. Some journals only exist in their online format and others have two different versions. In case of subscription, they may be free or chargeable. The impact of e-journals on academic library collections, services and administration is complex. Many librarians feel that the technology to solve the problems and take advantage of e-publications is either currently available or clearly under development. There are a growing number of academics and publishers who believe quite firmly that once the transition from print to electronic journals has been made, there will be no role for librarians in the scholarly communication chain. A major university library in US recently said that it had already passed its Year 2000 goal of having at least 25% of its serials in electronic form. It is now offering its students and faculty electronic accesses to more than 7,200 serials. While that

number includes not just traditional scholarly journals but also more popular magazines, it is quiet impressive. Has the corner turned on the loudly trumpeted revolution of electronic academic publishing? Are we in India, especially the academic libraries, on the doorstep of a predominantly electronic environment?

In the networked environment, “everything will be connected to everything else, reachable from anywhere”. At the moment, however, this is still a dream and, if achievable, it is still several years away. Many aspects of publishing are being transformed by the arrival of the World Wide Web and its facility to distribute information electronically. For journals, the transformation has barely begun. A large number of journals are now available in electronic form of some kind, but otherwise little has changed. Recently, one leading publisher reportedly described the growth of electronic journals based on the portable document format (PDF) as the “first frontier” facing journal publishers just a couple of years ago. The second frontier is the emergence of links. Judged by this measure alone, journals may have appeared on the Web but have yet to adapt to it. Publishing may have changed, but readers probably experience little difference between Web-delivered journals and, in many cases, their print originals. Users are now demanding new and better features that can be supported electronically, however, supported by librarians, as the price of acceptance of these new products. Electronic journals promise to change the future of scholarly research -- both in their function as the distribution organ of original research results and in their function as the basis for primary scholarly research and information.

2. E-JOURNALS

Different folks might have a different impression on the term “Electronic Journals”. They are, sometimes, referred to “E-Publishing”, “E-Serials”, “Online Journals”, “Web Journals” or “Electronic Periodicals”. What is an electronic journal? McMillan defined it as any serial produced, published, and distributed nationally or internationally via electronic networks such as Internet etc. We might simply define it as *a digital periodical dedicated to publishing, on the Internet, articles, essays, and analyses that have been read and commented upon initially by a select group of editors and reviewers, to meet a certain arbitrary standard of excellence (as determined by the editors) for a given discipline addressed by the journal itself.* The medium distinguishes

an electronic scholarly journal from its print counterparts but the process of developing content for both print and electronic peer-review scholarly journals is generally the same. The digital medium allows the editorial process to occur at a faster pace than in print by providing authors with information quickly to revise and otherwise modify their work to meet editorial standards. That electronic medium, in addition, allows for some experimentation in the ways in which authors and their audiences react, although many electronic journals fail to take advantage of these opportunities for debate and discussion.

Electronic serials may be defined very broadly as any journal, magazine, e'zine, webzine, newsletter or type of electronic serial publication which is available over the Internet. Within this broad definition, the titles can be electronically accessed using different technologies such as the World Wide Web (WWW), gopher, ftp, telnet, email or listserv. Of course, virtually all-modern electronic journals are mostly available via the Web.

3. ADVANTAGES

3.1 Speed in distribution and production

The speed advantage of E-journals facilitates elimination of printing and mailing by easily integrating the authoring and publishing systems. It also establishes network communication among authors, referees, editors and even the users. Portability also increases and facilitates prompt annotation and commentary by the worldwide scholar community. Articles can be put on the Web as soon as they are ready, without having to wait maybe months for a space in a journal issue. The American Chemical Society put articles on their Web site "as soon as publishable" which can be up to 11 weeks before print. This all means that the information is much more up-to-date than can be achieved with paper.

3.2 Accessibility

Access for a particular article or a journal is not bounded with time/period and place/geographic constraints, in case of e-journals. We can search and retrieve even large collections of material simultaneously and instantly. Any source of information -- whether a journal article, a newspaper story, a magazine, database, or a primary source document -- can be important. The easier the access to these sources, the more likely the sources will be used for the users. It is for this reason -- improved access (meaning

quicker publication, desktop access, improved search and retrieval tools, and perhaps lower cost) -- that electronic publishing takes on real significance. Libraries can have online access to it and can download or print the full or selected articles. People worry that with information converted to digital formats, scholars in Third World countries will be disadvantaged, but it has been argued that it is far cheaper for these researchers to get one computer with Internet access than to subscribe to many journals, so electronic journals will be a tool for "further breaking down the barriers to democratic research". For any researcher, availability from a desktop computer means a significant increase in accessibility, particularly for those who do not work within easy reach of the library and it is also keen on the fact that entire archives will be available, several people can read an issue at once, and they cannot go missing. Also different layers of access can be given to different people with little extra effort, e.g. different levels of subscription allowing access to abstracts only, or full multimedia. Searchability is one of the core advantages of a digital format and it is argued that the easier it is to find research, the fewer duplicated experiments there will be, resulting in less wasted time.

3.3 Subscription Cost

The steep hikes in number of print journals and the subscription prices for them make the shrinking budgets of academic libraries even smaller. In their excellent review of the development of scholarly publishing in the United States, Tenopir and King present evidence showing that the average institutional price of a scholarly journal subscription has increased from \$39 in 1975 to \$284 in 1995, a factor of 7.3 in just twenty years. Based on these figures, Tenopir and King conclude that: "It is clear that traditional scholarly publishing is in serious economic difficulty". General inflation and increase in size (more pages per issue, more issues per volume, more volumes per year) of the journals, account for only 52 percent of the price increase. This phenomenon, also known as the "serials pricing crisis" in the library community, has, indeed, advanced to a stage where one might seriously doubt the economic viability of the present printed system of scholarly communication. Electronic journals, as distinct from electronic versions of printed journals, seem to offer at least a partial solution. Stevan Harnad, founder of *Psycoloquy*, one of the first electronic journals, claims that electronic publishing leads to a cost saving of 70 percent, since in a purely electronic environment, only two cost

categories remain: peer review and editing, while Whisler argues that only a 20% saving can be made as distribution costs are a low proportion of the final journal price, and even that saving will be eaten up by extra costs caused by new features. Jill Taylor-Roe of Newcastle University library mentioned that her library would attain 20% of their total journal budget for e-journals by the end of the current fiscal year.

3.4 Multimedia and Interactive Capabilities

Besides the traditional plain text, tables, figures and graphics other innovative ways of presenting research results can be supported by Multi media capabilities. The rapid turnaround time means that articles can be read, commented on by the journal's readers, and amended much more quickly than can be done with print. The ease with which e-mail can be sent, or forms filled in means that there could be much greater feedback through the Web. Rather than just recreate a print journal in exact format, which many of the commercial publishers are doing, advantage should be taken of all the possibilities of the Web to add value, for example by using animation, virtual reality and interactive mathematical charts. Also a large amount of supporting data can be linked to from the article if the reader wanted to look more deeply into the results. The idea of a "living article" which could show the results of an ongoing experiment, frequently updated is relevant here

3.5 Internal and External Links

Hypertext and hyper media enable linkage among sections within an article and among articles in journals and other electronic resources. Links are not a superficial feature of the Web, nor are they simple add-on features for e-journals. Links have the power to alter the character of journals fundamentally, most obviously in the development of "distributed publishing" or "networked publishing" in which users can find items of interest irrespective of the publisher. Links are important for users by providing faster, more direct access to more information and for librarians by supporting more effective information retrieval, especially from large archives, and can help with identified user phenomena such as "successive search episodes". Links are the mainstay of the hypertext format, and should be exploited. Not only can papers link to those they have cited, but also with a bit of effort, they can be linked to those that cite them. The intrinsic value of the links [to be] nearly as great as the content itself. The three main link

types are *citation links*- linking on references in papers, backward and forward, in time, *keyword links*- indexing links for individual journals or collections of journals links to dictionaries or glossaries, and *PDF links*- enables Open Journal links, say citation or keyword links, to be added to documents in PDF format in the same way as they are for HTML.

4. DISADVANTAGES

Problems in managing e-publications for academic libraries and their users include

- Providing access that matches the technological capabilities of both library and user
- Providing access that satisfies the profit motive of commercial e-publishers
- Collection development planning that requires knowledge of the electronic delivery mechanisms, as well as the subject content of e-publications
- Archiving e-publications in ways that avoid problems with e-media degradation

Including the high initial cost and lack of standardization, there are some factors which might hinder libraries from utilizing e-journals such as *Technological Barriers*- network dependency, Screen quality of graphics and photos, archiving etc, *Economic Barriers*- in terms of expense for equipment to display, print etc, Internet charges, the complicated pricing schemes of publishers and some *Socio-cultural Barriers*.

5. ISSUES

5.1 Refereeing

According to 1998 edition of *Directory of Electronic Journals, Newsletters & Academic Discussion* there are 3414 serial publications of which 1049 (31%) are peer-reviewed. Publications charged for their access are 912 (27%) while the remaining are available free on the Internet. For getting certified the scholarly merit and refining scholarship of an article, Refereeing or peer review is considered as a unique characteristic and process of scholarly journal publishing. The same is implemented in many e-journals, even now some challenges are there from academic institutions in case of legitimacy of e-journals. But the interactive publication with open peer commentary will definitely revolutionize the traditional refereeing model. The importance of the reviews is not only to facilitate discussions. It also presents major benefits to the authors who submit their papers. They gain valuable feedback from the readers. Based on the opinions and commentaries or reviews, authors can improve their research, their paper,

and the quality of the publication. The modified paper can later be submitted to a paper journal in an improved form with the mistakes and ambiguities identified and corrected. There are several high quality, free, scholarly electronic journals emerging recently as an alternative to the 'journal crises' caused by their spiraling subscription rates. Consumers and publishers of electronic journals believe that acceptance and usage of e-journals will increase steadily because of all the merits, like ease and speed of publication, enabling instantaneous linkages among the researchers, documents, publications, websites and other electronic resources

5.2 Copyright and Licensing

There are severe copyright problems due to the inadequacy of current legislation and the ease of replication, modification and transmission. Commercial publishers asserting their entitlement to copy right and intellectual property through licensing policies. Scholarly communities' value sharing information and the academic model of e-journal reasserts a "gift culture".

5.3 Longevity and Storage

The volatility of E-journals makes preservation of electronic journals a major concern. Tracing of back issues, security in future access and transmission of information through time are not completely clarified yet. The Committee on Institutional Cooperation (CIC), an academic consortium of major research universities, began the cooperative archival project, CICNet. There are issues of preservation of storage media, hardware and software dependency. Offline storage media includes tape, hard disks, floppy disks and optical media such as CD-ROM and DVD-ROM.

6. RECENT TRENDS

Max Planck Society, the German based research organization similar to an academy of the sciences, conducted a survey of researchers' use and acceptance of electronic journals from April 15-May 15, 1999. The results of this survey show a significantly high acceptance of electronic journals and an unwillingness to return to print versions only. In general, the positively rated aspects were considered highly advantageous for electronic journals. In comparison, the general level of the disadvantages was only half as strong, thus showing that although disadvantages were still perceived they did not have the gravity in comparison with the positive aspects. The

greatest advantages of electronic journals – as seen by the respondents in this survey -- include the direct accessibility from the researcher's desktop, the prompt availability, the possibilities of downloading (or printing out) the desired document or information segment, the currency and up-to-date information electronic journals provide over print versions, and full text retrieval possibilities. The greatest disadvantages were seen in the lack of long term access (and with it the assurance which archiving provides) and incomplete volumes where either individual issues had been only sporadically scanned or digitized or back volumes had not been digitized and its network dependency, reading from the monitor, loss of certain attributes of the paper version, graphic quality, lack of standardization, lack of citation status, and standards.

According to Fytton Rowland from Loughborough University, whether e-journals are commercial or free of charge, it remains true that they need to be acceptable to scholars in both their author and their reader role. While those e-journals, which are electronic versions of print journals, are clearly acceptable, newly founded electronic-only journals do not yet have the desired level of academic respectability and prestige. On the other hand, as users become more and more used to retrieving information from WWW, the previously perceived reluctance of readers to use the electronic versions may begin to evaporate. It is likely that the merging situation will be one of diversity between disciplines. Much will depend on the attitude of existing institutions within the academic community, notably University senior management and learned societies.

According to ARL Directory the Subject Area wise distribution of E-journals as follows;

Subject	Percentage
Arts and Humanities	14
Life Sciences	21
Physical Sciences	8
Recreation and General Interest	14
Social Sciences	28
Technology	15

7. IMPLICATION ON ACADEMIC LIBRARIES

7.1 Selection and Acquisition

Because of that it is the subject not the format that guides the identification of materials, different task forces recommend that the responsibility for selecting electronic journals should rest upon department libraries and its librarians. The decisions of subject specialists in relevant disciplines are made according to established selection criteria, and this process resembles the selection of other periodicals. While most practicing librarians agree that existing library selection policies are readily to be applied to electronic journals. There are some considerations unique to electronic journals such as; subscription scheme, ordering procedure, standards, effectiveness of the search engine, ability to limit to local holdings (if not full text), and hardware and software compatibility. The academic librarians have to take care about “free” electronic journals because the “free” status can change anytime. It can be very hard for users to accept a library discontinuing certain journals after having them available for a while. The support of the journal in teaching and research, current portfolio, preference to the weak collection areas and the interdisciplinary nature of journals are some important factors embedded with acquisition.

7.2 Cataloguing

The application of classification, cataloguing schemes and thesauri to improve online information retrieval can be traced back to the beginnings of online searching itself, but the true potential for using knowledge structures in the user interface has yet to be realized. Electronic journals can be classified according to the ordinary guidelines or existing schemes. Libraries should be alert to emerging standards for cataloguing electronic publications. It is suggested that libraries should allow paper and electronic forms for the same title to reside on the same bibliographic record to facilitate access, even though standards do not yet allow such practice. It is to be noted that electronic journals should remain in electronic form at every stage, from initial processing through to reader access. Printing, binding and shelving should not be performed because the costs and staff involved would be phenomenal, at least at this stage of technology.

7.3 Archiving

One of the main disadvantages to electronic journals was concern about a permanent archive. As the access protocols for information, and the patterns and standards for electronic journal publication, are evolving, academic libraries are like a blindfolded person shooting at a moving target. According to the ARL survey, 28 percent of the surveyed libraries rely totally on the publishers for archiving. Libraries cannot develop policies on the basis of a stabilized publishing structure. Any plans for access and archiving will have to be temporary. Non-librarians seem to assume that 'someone' will archive electronic journals and that this 'someone' is the library. One university library, after subscribing to the CHEST initiative of the EBSCO database of journal articles available via the Internet, and finding some of its hard copy journals available in this format, subscriptions to the hard copy versions were cancelled. The funding saved was used for other library materials. Then the contents of the database were changed, and those journal contents were no longer available. This caused the library great budgeting difficulties, not only in re-subscriptions, but also in obtaining back copies to complete the archival record. This has highlighted us the importance of maintaining an archive.

7.4 User's access

Depending on the licensing agreement and local funding, downloading and printing can be provided in libraries. While some libraries are providing onsite access, many are moving toward providing remote access for users from their on departments and even from their own desk tops. Minimum hardware and software requirements are going to progress as technology progresses, but basic entities such as hard drives, color monitors, external disk drives, printers, security cables, tables and chairs are often inevitable to be equipped onsite. Internet connection and bibliographic linking software are extras to provide value-added service. For libraries, which provide access to electronic journals through their home pages, emphasizes security, adherence to licensing agreements and active maintenance to assure effectiveness.

7.5 Training and support to Staff and Users

Researchers can potentially access information resources from all over the world without even entering the library, and this could be devastating for the library in its role as information provider. However, with the number of electronic journals being

published and the variety of different interfaces, more sophisticated searching and retrieving skills are necessary. If library staff is provided with adequate training and support in order to be aware of new development of technology, more flexible and suitable services can then be available for users. The information provider role of libraries remains important but the delivery and type of services might have to adapt to the changing technology and users' needs.

8. ROLE OF AN ACADEMIC LIBRARIAN

Selection of web-based resources affects every division of the academic library. The transition from print to electronic journals for libraries poses a number of critical questions to academic librarians, and many authors have commented on the dilemmas associated with electronic journals as follows;

- Will the electronic version of the journal cost more or less than the paper version?
- What will be the licensing terms and who will negotiate them?
- How quickly should I make the transition to electronic journals?
- Should I discontinue my print subscription?
- Which electronic journal services will provide me with a critical mass of journals relevant to my users?
- Will I have to link to several different e-journal services?
- Will I be able to select the journals I want in my collection or will they be bundled by the publisher or vendor?
- How will the electronic journal be integrated with my local catalogue and other reference services, such as bibliographic databases, table-of-contents services and document delivery?
- How are archives of older issues to be managed?
- How can users and libraries navigate their way through the various payment structures associated with e-journals, often compounded by linkages between e-journal and print subscriptions?
- What are the licensing implications associated with sharing e-journals and articles in e-journals through inter-library loan?
- What mechanisms can support users in accessing the e-journals that are available through several different services?

The main tasks of an academic librarian in the print environment like providing and facilitating quick and easy access to information, selection and purchase of material, organizing them, providing information skill training, archiving etc are equally relevant in the electronic environment also.

9. CONCLUSION

The scholarly journal as we know it has been around for over 300 years and in this time it has barely changed. Now a revolution may be happening in the way scholarly communication is carried out, using the Internet. Electronic journals open up many exciting opportunities and potentials for academic libraries also. They possess many advantages and also disadvantages. Librarians need to be able to identify and balance the factors that would make electronic journals a success or failure in their libraries. Developing a common vision of the future of information technology can consolidate efforts to tap into the evolving telecommunication infrastructure. There is a general consensus that electronic journals would not replace but coexist with the print format. Flexible and multi-faceted services for users would be the way to accommodate the diverse formats of scholarly journals. More challenging and complex philosophical and technological issues will need to be dealt with as the future unfolds. Universities and libraries – institutions need to be convinced that electronic journals are cost-effective, and can be networked for multiple user access at a price that is acceptable to them. In particular, at the present time, electronic journals are often in a trial phase and the librarian has maintained the print subscription for archival purposes. The advantages of electronic publishing are clear that it will no longer be necessary to browse through the paper journal contents page hoping to find an article of interest. Instead readers will be able to register their areas of interest and the electronic publishing system will deliver articles, which match those requirements to the reader's desktop. Furthermore, Electronic journals, and what they evolve into, will be at the heart of scholarly communities that are created tomorrow. There are several high quality, free electronic journals existing currently. These journals are being underused due to lack of publicity, user habits not being accustomed as yet to the electronic media, and low visibility. The libraries would

do well to publicize such journals that they find scholarly enough and within the subject scope, providing user initiation and education facilities, and by identifying and matching user 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.

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