Emerging Technologies and Changing Dimensions of Libraries and Information Services

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Challenges of E-Resource Management

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ABSTRACT

This paper is discussing the Challenges faced in the access and resource management of electronics materials.

Keywords

Access Management, Digital Resources

1. INTRODUCTION

Library profession has been ever changing its scenario from time to time. There has been many paradigm changes from library economy to knowledge economy, macro documents to micro documents (documentation) finally from print media to electronic media. Today library as a physical place has lost its value. Role of library and library professionals have changed and would continue to change in near future also. The obvious reason for this rapid change is influence of technology on the profession. The impact of IT has been tremendous on the profession which of course improved the image of the profession and professionals but at the same time posed many challenges.

The first paradigm change which we noticed was users' preference to micro documents from macro documents (books). As a result, micro documents became primary source of information than books. Their collection, analysis and arrangement was called documentation, defined as the art of collecting, classifying, and making readily accessible all kinds of intellectual activity (Bradford, 1948). The rapid decline in artefact particularly printed books which used to be primary source of transmission of recorded knowledge. The users behaviour in the digital era has significantly changed. Their preference today is for digital resources than printed ones, compelling the professionals to think and reorient their functions and services to provide better services as per expectation of the users. Types of e-resources are many available in different formats. Such multiple e-resources today coming in different formats need entirely new methods and techniques to manage them for effective use. When the book entitled 'Towards Paperless Information Systems' by F W Lancaster was published in 1978, majority of professionals did not anticipate the present scenario of electronic age. But communication technology has completely changed the library scenario with increasing trend to convert print media into electronic form. Electronic publishing also impacted the profession to a great extent when large number of resources started coming in electronic forms. However, the objective of the profession did not change. Today library as a collection of physical artefacts is not as it used to be 20 years ago. The emergence of new relevant information and communication technologies outpaced the ability of the library as in institution to keep up (Martell, (2003). At the same time core of librarianship remains the same as it used to be hundred years ago. But, it has become more difficult and challenging to achieve this objective in the present digital era.

Today's users don't prefer indexing and abstracting services but their preferences are for only those databases which have full-text material. They want to limit their search only to such resources which are available with full-text. Therefore, these resources have become most common medium of scholarly communication. The most important trends now are 'finding and linking to full text, whatever the source, and integration of library holding with commercial indexing and abstracting,' said Constance Crump, Manager of, Public Relation ProQuest (Tenopir, 2004).

E-Resources have been hot topic for discussion which came into more use in early 1990's. Their usability day by day is increasing. More and more scholarly publications are being made available on-line. Libraries since 1990's have been trying to give text online. But availability of information/text online is not the ultimate target. However, everyone is realizing the advantage to being hooked up electronically to rest of the world. Many publishers like Elsevier had recognized e-resources as tidal wave of future during 1990s. However, it is still being considered as adjunct to print material by many since printed material have their own advantages over e-resources. Tenopir (2002) has given detailed account of various studies conducted on usage of e-resources and users' preferences for them. However, there are still opinions in favour of printed material. In humanities, scholar typically reads a whole text, and this is better done on paper than on computer screen (Wiberley, 1991). Electronic resources brought convenience and easy access to information. Today,

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profession is seeking solutions through various platform and forum like the present one.

2. DEVELOPMENT OF E-RESOURCES

Beginning of e-resources was in the form of electronic databases started coming in the form of CD-ROM. All international databases started coming on CD-ROM which made information access more easy and expeditious. Online access during early 1990's was not only expensive but also quite slow with very limited use. The oldest networked electronic journal recorded is New Horizons in Adult Education (NHAE) which started distribution in fall 1987 followed by Psychology, Post Modern Culture and Bryn Mawr Classical Review now known as The Medieval Review (Okerson, 2000). These were the e-journals which appeared during 1980's. In 1991, Directory of Electronic Journals was published by Association of Research Libraries in Washington (ARL) which listed only 27 e-journals (Okerson, 2000). During 1991, there were 110 E-journal which increased to 675 in 1995 to 3414 in 1997 (Shemberg and Grossman, 1999). The coverage of e-journals listed in ARL increased from 27 in 1991 to 306 by 1995 out of which 140 were WWW-based only (Okerson, 2000). According to another survey, growth in E- journal titles has been rapid, from 306 titles in 1995 to over 8000 by the end of 1999 which Okerson and his colleagues had listed in NewJour. NewJour that was a service of announcement of emerging e-Journals. The number of subscription to this service started by Okerson and his colleagues reached 3,900 by 1999 from 700 subscribers in 1993-94. This shows the interest of library professionals in e-journals during 1990's. In the beginning of 1996, an article appeared in Science under the title 'Science Journals Go Wired. The special report examined the trend of scientific communication. Earlier trend of electronic resources was towards annotated forms which covered bibliographic details of books and journals including table of contents and abstract. Full text journals was the target of eminent publishers who wanted to catch up with the 'wave of future' in the beginning of 1990's. Commenting on this tidal wave of electronic revolution, Nobel laureate molecular biologist Rich Roberts had observed that 'every one is realizing that there's some advantage to being hooked up electronically to the rest of the world' (Taubes, 1996). During 1990's, still there was uncertainty of success of e-resources among the minds of many including publishers. In 1995, an editorial by Shmuel Winogard and Richard N Zare which appeared in Science (4th Aug., p.615) under the heading 'Wired' Science or whither the printed page generated good deal of discussion. The enthusiasm to enter into digital age and concern about quality control, authorship, intellectual property and archivability were discussed at length at various platforms. Opinions were also expressed in Letters which appeared in Science, issue of (1995). This was the background of emergence of e-resources in the form of bibliographical databases followed by full-text.

Therefore, hybrid version of electronic as well as print medium versions continued Even today, many journals are being brought out in both versions. Publishers still feel that both versions should be continued, which means that importance of print version is still there. But future of journals may belong to only in electronic version. However, majority of the users expect that both versions should be available which is not affordable to libraries. However, the race for online journals became faster after 1996. By the end of 1995, there were already over 100 peer-reviewed science, technical, and medical journals. Some of them like the Online Journal of Plastic and Reconstructive Surgery and Psychology were only in electronic form (Taubes 1996). This shows that publishers had started thinking about decline in use of printed journals. Today, there is a proliferation of E-journals and other e-resources. Commercial publishers like Elsevier and many others entered e-publishing during 1990's. During mid 1990's the following publishers gave their plan regarding e-journals:

i. Elsevier: Announced 1100 Elsevier e-journals through its local server; a few fully electronic through WWW, including gene-COMBIS and New Astronomy.

ii. Springer Verlag: introduced only 8 online journal; two fully electronic, including Journal of Molecular Modeling.

iii. John Wiley & Sons: Its first E-Journal was released in April, 1995 entitled: Journal of Image Guided Surgery and planned to bring all its 326 journals on web.

iv. Blackwell Science Limited: Proposed to bring 125 of 200 journals with full text on-line.

v. Academic Press and Taylor & Francis: also launched publication of E-Journals during 1995-96.

Now e-resources are available in large quantity and more and more resources are being added every year. Springer's protocols alone covers the collection of more than 1,700 peer reviewed journals plus a constantly expanding library e-reference works, e-books and online archive collection.
Springer materials contain 91,000 online documents, includes more than 1 million literature citation, 165,000 substances and material systems and 3,000 properties (Springer.com). item J-Gate covers e-journal portal for 21,000+ academic, research and industrial journals, indexing nearly 2 million articles with dynamic links to full text ((www.jgate.in). All publishers are now racing against one another to bring more and more journals and books on electronic version. Even the management of printed journals has been full of complexities and problems. Professionals are still not very comfortable handling these resources effectively due to varied complexities. Some of the immediate problems confronting management issues of e-resources are discussed as followed:

3. MANAGEMENT OF E-RESOURCES

There is a proliferation of e-resources and it is difficult to make right selection out of so many available resources which have very high subscription rates. One source which may be very useful to one organisation may not be so to the other. Therefore, selection of package/database needs proper evaluation so that products so purchased or subscribed are properly utilised. It becomes more challenging to the library professionals when they have to plan for hybrid collection of printed as well as digital resources. Wiberly (1991) has rightly observed that availability of information/text online is not the ultimate target. In humanities, scholar typically reads a whole text and this is better done on paper than on computer. Hybrid library concept has been extended beyond the library domain by the e-library program of UKOLN project coining the phrase' hybrid information environment'

which is likely to continue in the present 21st century. Libraries have to extend their services in a integrated way of all the resources irrespective of their formats and forms and domains.

Effective management of E-contents is a big challenge for library professionals which requires special skill and expertise. In Morning Herald of 23 Sept., 2005, Connell remarked rightly that 'it all seems very attractive - scanning documents, taking pictures, putting them into computer for safekeeping, allow us to throw away the hard copies and save spaces. But what happens sometime later when we discover that we no longer have machines, programs, the hardware, the software, know-how to access all that computer-based digital material. There has been continuous increase in printed as well as e-resources. But increase in e-resources is likely to be manifold in near future. Consequent upon the rapid increase in the production of e-resources, collections of such resources in all the libraries are also bound to increase. As such, the management of large virtual collection would become more and more complex which would require good E-resource management system so that e-resources along with printed resources could be integrated for effective use. Moreover, every organization is going for building up institutional repository that would also need proper management as an open source for wider use. Cole (2005) described that complexities that those who manage electronic resources face [problems] on daily basis. However, Feather (2006) feels that e-resource management has evolved to a point where the matter of troubleshooting an access problem does not need to be shared with so many individuals unless it is major or unusual. For those who work with e-resources daily, an access problem with an e-journal is no more unusual than a print journal issue that needs to be solved. Even the complexity of management of printed journals is not easily manageable due to their changing nature and other problems. Nevertheless, distinguished features of e-resources need special management criteria so that their selection, procurement and use could be made more effective. E-Resources have problems at creation as well as at management levels. Copyright, legal and financial issues are to be handled properly. Accessibility is another issue; whether it is to be provided to all or to restricted users if information product is being subscribed. There is large number of terms and conditions which are to be settled during purchase of these resources whereas printed material once purchased don't have any such problems and library has full propriety of all such materials.

Many libraries host publishers' databases being subscribed on their websites where users have to search/ browse each database one by one whereas their preference is to search all databases with a single click. Therefore, provision of federated search is required which libraries have to plan and execute for the convenience of the users. There are thousands of open access databases of various types of e-resources which unless organised systematically in such a way that their usability is enhanced. If these resources remain scattered on the web, and libraries don't identify and organise them in a new package and integrate them with other available resources, these are likely to remain underutilised. Many e-resource management systems have been developed nationally and internationally by professional groups/bodies including commercial vendors, that are being used in many libraries. It is important for every library software vendor to make provision for effective management of e-resources. However, there is hardly any ideal solution to solve all the problems associated with management of these resources. Only experience of handling them can give solutions to the various problems. Archival of dataset and their retrieval at later stage is also a problematic area needing solutions.

3.1 Collection Building

This is an invisible collection which has to be developed parallel to print resources. Print resources are being handled since long and methodology for their management has been improving from time to time. Professionals have long experience to handle them. The objective of developing e-content collection is providing access not only to e-books, e-journals, e-conference proceeding, databases or indexing and abstracting services etc. but everything which is needed by the users in a particular library irrespective of their formats and availability. First step is to identify such e-resources which support the academic activities of the university or institution. These sources are so many that tracking the relevant ones are difficult. Making invisible sources of information visible is more challenging work than handling printed material.

In collection building process, libraries need participation from the users and their preferences for the products are to be determined to develop need-based collection. Identification of e-contents according to users need is also difficult due to various reasons. Users unfortunately are not so familiar with the selection tool of e-resources, even the professionals are facing problems in identification and selection of such sources. Acquisition of printed as well as E-resources have similarity as well as dissimilarities. Selection tools of printed resources are familiar to professionals as well as users. Procedures are well established for printed material, though most of the libraries don't have written acquisition policy. Nevertheless, system of acquisition invariably functions smoothly. Acquisition process for any e-journal is long, expensive, and overly complex. The cost comparison between ordering a print journal and subscription to an e-journal is ten to one [10:1] if not fifty to one [50:1] (Tonkery, 2001, 90). Selection has to be done from publishers' sites, institutional catalogues of e-resources and other web based selection tools. Some of the well established sources are:

Choice Cards, Project Gutenberg Internet Public Library (IPL), Directory of Book Reviews on the Web, Danny Yee's Book Reviews, H-Net Reviews in Humanities and Social Sciences, Book Page, New York Times "Best Seller" ARTstore, JSTOR etc. There are other important review sites like: Booklist Quarterly, Black Review of Books, Atlantic Monthly, Book Wire etc. (Arien, Shelley, 1998). Most important source is Global Books in Print Online (GBIPO) All important publishers have their own catalogues on web. There are now many bookstores on web from where selection of e-books could be made. Library professional are yet to get full familiarity with such web resources which could be used for selection of e-resources. They don't find these sources as convenient as the print sources of selection. The system of acquiring e-resources is still being evolved in most of the libraries. Evaluation of such resources is also equally difficult which is only possible through trial versions of the these products if availed.

Individual titles of e-books and e-journals are comparatively costlier and not easily affordable by individual li-

braries. It is more expensive to take the package as per policy of most of the publishers as well. But all the titles in the package may not be useful in the package. This creates dilemma among librarians whether to subscribe/purchase individual titles or make deal with the publishers for packages. There remains interest conflict between publishers and the librarians. Discovery of such e-resources and matching them with the users' need is the primary objective of collection development.

3.2 Pricing Policy

Other problems with e-resources are pricing policies which differ from publisher to publisher and vendor to vendor. There are different subscription rates depending upon various factors like number of users, availing of inter-library loan, duration of subscription, level of use, on standalone system, on Local Area Network, with IP address or on Proxy Server etc. Eileen Abel (1996) described the early stage of pricing which included 'connect time, flat fee per search, computer resources, subscription or flat fee-pricing per year, differential by time of day. There was flat pricing rate irrespective of use. Another pricing followed which began with 'free with print version'. This was to promote the use of e-resources in the beginning. At the same time during late 1980s and in the beginning of 1990s many databases stated coming on CD-ROM with different pricing policy which was much cheaper than online access providing more facilities of searching and onetime payment of purchasing of databases on CD-ROM. Today, there are many pricing models which differ from publisher to publisher and vendor to vendor. Oppenheim and Robert (2002) have rightly observed that the greatest enigma in online world remains pricing. Many pricing models include number of potential users under a local network, FTE (Institutional fulltime equivalents) etc. Some of the models based upon different matrix are summarised as below: Number of concurrent users/FTE, nature of institution (some concession is given to smaller institution), more subscription to specialised institutions being less in number, perpetual access/subscription for a specific period, different renewal policy, long term/ short term subscription, access to back files, access through IP addresses/ Proxy server, archival licence, site restriction, pay per view, offer of open access sources with subscribed package, length of time of access (five years access may be concessional), PayPerView Policy of some publishers like OVID ScienceDirect that allow users to purchase as many articles as required using their credit card by opening an account. ScienceDirects charges USD 31.50 per view. Pay per- view or pay per-use creates barrier that affects the frequency of online access and download observes Tenapir (2002). Nicholas and Huntington (2002) found that users who entered an online journals system from a subscription institution visited collection more than non-subscriber (pay per-article). Consortia prices are much different than subscribing individual titles. Librarians have to negotiate for subscription rates as subscription rates/outright purchase are not fixed as in case of printed material. There are no printed prices of e-resources. At the same time, terms and conditions of the license of different publishers are also different. Publishers want to protect their own interest which may not suit the librarians. Therefore, these terms and conditions also shall have to be negotiated. Publishers' as well as institutional interests are to be rationally protected by mutual understanding. Escalation in subscription of e-resources is a big concern of the librarians as well of academic community.

In UK, a parliamentary Committee was constituted to look into the rising prices of scientific publications. The chairman of the Committee, Dr Gibson, M P made the observation that 'journals are at the heart of the scientific process and researchers, teachers and students must have easy access to scientific publications at a fair price. Scientific journals need to maintain their credibility and integrity as they move into age of e-publication'. This shows the concern of the Government about the pricing of scientific publications and their accessibility to the users. But librarians still have to negotiate to settle good deal with the publishers or vendors as the case may be. Another issue to be resolved by the librarians is to decide as to what % of their budget is going to be spent on e-resources and printed material. Though users' preference is more for e-resources, despite this, printed resources cannot be discontinued. Therefore, budget distribution for print and e-resources has to be objectively worked out strictly suiting to the users. Use of e-journals is now well established, whereas use of e-books is still in transitional stage in most of the libraries particularly in developing countries. Many of the libraries are yet to begin with acquisition of e-books. All libraries need to formulate collection development policy for digital resources and earmark separate budget for acquisition of e-resources. Budget cuts and corresponding sharp rise in subscription prices are making handling of all resources more complex forcing libraries to cancel certain journals from their subscription list every year. In recent years, the price increases in journals have averaged 7-10%. It seems certain that libraries will have less money to spend than they had in 2009 (Van Orsdel and Born, 2009).

3.2.1 Bundle Pricing

Journal bundling refers to the practice of aggregating all titles produced by publishers into a single product, or subject-based subsections. This comprehensive product is then marketed and sold as an all-or-none at all. To avail bundle price, libraries have to cancel other individual journals which may be more useful. It is not affordable to avail both pricing models. The bundle pricing may suit only those institutions which have more diverse needs, may not be suitable for specialized institutions. However, evaluation of these resources in the terms of usability has to be done before taking decision.

Bundle pricing for e-books has also been introduced and thousands of titles are being sold/subscribed under bundle pricing model. Publishers are interested to offer bundle price for all their publications. It is quite possible that less than 50% or even less of such publications would be useful to the respective institution. In such complex situation, it is difficult to take right decision whether to go for bundle pricing or purchase selective titles by paying more for individual title. No doubt, that this pricing model gives access to a wide range of collection, but usability of all the resources contained therein cannot be ensured in advance. For examples As such suitability of pricing model has become important for acquisition of e-resources. We also find pricing model for download of articles such as ScienceDirect has the following bundle pricing model:
500 articles download USD 10,000
200 articles download USD 5,000

100 articles download USD 2,800

3.2.2 *Consortia Pricing*

Many large electronic resources that are prohibitively expensive for individual libraries become affordable when several libraries work together and share the costs (Wilkinson and Levis (2005). More resources, of course, can be made available through becoming the member of the consortia but these resources are not equally useful to all the participating libraries. Normally, consortia prices are negotiated and paid by the apex funding agency. In India, organisations like UGC, ICAR, ICMR, CSIR or state Governments take decision to join certain consortia where requirements of all the libraries are not taken into consideration.

In subscribing printed journals and purchase of printed books, there is no problem in identifying subscription rates which are published. While processing bills for payment of these resources, price proofs are checked and verified from the available sources so that over payment is not made which is not possible in case of e-resources since there is no standard pricing model for such resources. Different publishers have different policies which go on changing year after year. It is difficult to remain in touch with these changing pricing models. For examples Oxford journals policy for 2010 onwards shall include price of online journals as 'base' rather than print-plus-online or combined price. In these instances, the print only price will be 110% and combined price 120% of the online only price. Some of the subscription policies of different publishers is summarised below:

- Subscription may vary on the size of the library users, number of users accessing the database at a time and size of the network, FTE/concurrent users
- Access to back volume may be given up-to a particular period of time along with current subscription depending upon the availability of back files
- Some publishers may offer subscription of print journals along with e-version at 10-20% addition price
- Some publishers may extend their access to the resources being subscribed for different period of time as per their policies after the expiry of the subscription or license period of using database on concessional basis
- Some publishers offer bundling of e-journals with the condition to buy all or none, some may also offer selective titles with higher price
- Some allow interlibrary loan and sharing
- Some may deal with e-journals only, some may give offer for both e-journals and e-books together. There are many more models differing from publisher to publisher.

Many E-resource Management Systems have been developed to provide solutions to organise e-collection for easy access and effective retrieval. Collins (2005) and Meyer have give good account of some of the ERM systems. In India Informatics and Total Library solutions have developed. There are many areas in e-resource management which need solutions. New versions of some of the library software like Liberty-3 and have also included the provision of management of e-resources.

4. ARCHIVING PROBLEMS

Online access to e-resources has many advantages over printed material. Information seeking behaviour in the present Internet age has been changed entirely. All prefer easy access and their dependence is more on e-resources. Maintenance of back volumes of printed material is much easier than maintenance of back files of e-resources except the space problems. Publishers insist on maintenance of back files on their own server for which they charge maintenance cost. This amounts to payment of additional cost for which institutions have already paid as subscription cost or license fee. The fear is that information which has lost its commercial value may disappear if left in the hands of commercial (both-for-profit and not-for-profit) owners only; but there is yet no model for transferring control and responsibility to any not-for-profit entry or group of entities (Okerson, 2000). Maintenance of perpetual access to back files of large databases involves additional recurring expenditure and careful handling. Handling of digital resources is more delicate and needs computer skill and timely transfer from one platform to another with the change of hardware and software.

In case of transfer of ownership of databases which is becoming more common to the third party may create added problems. There is always apprehension of changing of technology in the form of hardware and software and publishers may not be very vigilant in changing databases to the new platform especially of those resources which are not commercially viable. Different publishers have different archival access policies. Some provide full archival rights for the products being subscribed for the subscription period, however, some may not give. Important is to get perpetual access of back files, which has to be negotiated with the publishers.

5. CONCLUSION

Publishers' preference is to bring out their publications in both print and digital formats. They would like to charge both for paper and electronic version, only 10-30% more for both versions. But e-resources are becoming now more expensive due to their popularity. Publishers have been liberal earlier to popularize the e-products. As these are being established, the trend is to increase the subscription. Some may allow access to old issues of the journals being subscribed, some may fix the limitation of period say last 5-10 years, some may give access during the subscription time only. Access to back issues is main problem with e-journals. It has been established that maximum of the literature being used in research is 1-2 years old. However, some of the leading publishers are providing perpetual access to back volumes as per agreement, but the cost of perpetual access is quite high to afford. All such resources need to be preferably made freely available to users to read, download, copy, distribute, print, search, or link to full texts of these articles at later stage without any additional financial, legal, or technical barriers. The only constraint on reproduction and distribution, and the only role for the copyright in this domain, should be to give authors control over the integrity of their work and right to properly acknowledged and cited (Open Society Institute). As such management of E-resources is still not established. Open Archival Initiatives are still in developmental stage.

Some still believe that with unlimited access to informa-

tion via Internet, the need for and practical value of physical repository of printed material and other material are less compulsory. Though the statement of International Coalition of Library Consortia (ICOLC) of 1998 has relevancy even today which states that academic institutions and library clients 'expect their libraries to obtain new electronic resources while simultaneously maintaining or growing traditional collection. Nevertheless, shift is quite evident towards computer mediated communication studies which refer to number of ways in which electronic sources are consulted (Savolainen, 2000).

Therefore, there is no option rather than to continue with hybrid model of acquisition. Modern electronic devices may not serve as effective tool for preservation. There is no reliability of electronic texts and their long term preservation Moreover, printed material still have relevance and cannot be de-emphasized. Therefore, acquisition of both types of material should continue with different emphasis and priority which each library has to decide individually. These are complimentary and supplementary to each other. E-resources have not been able to replace printed material so far. This is supported by the fact that the publication of printed material has not declined as a consequence of electronic version of scholarly publications over the past 4-5 years. Peter Drucker (2002) has rightly stated that online edition delivered over the Internet to be printed out by the subscriber for readability. Instead IT replacing print, print is taking over electronic technology as distribution channel for printed material. A key point is that most of scholarly documents that start in electronic format will end up in paper form sooner or later. Electronic material has to be downloaded for sustained reading. It is only fact finding information which may not need to be downloaded, all other textual data has to be again transformed into print media for its effective use particularly for sequential reading. How long, are we able to read E-books continuously? Reading devices of e-books are yet to be standardised for comfortable reading. The usage of e-resources would no doubt go on increasing, with less use of printed material but printed resources would not be replaced so early. There are no apparent evidences of death of printed book. The usage of printed material has not probably declined, however, there is still upward trend in publishing printed books. It is the responsibility of the library profession to introduce such e-books that have probability of more use. Users need to be exposed to e-books which have their advantages and disadvantages. As soon as readability of e-books is improved, they are likely to catch up. Tony Durcan, former President of The Society of Chief Librarians commenting on how book issues have seriously declined in recent years and cites a statement from department of Culture, media and Sport that annual visits to library have declined from 302 million a decade age to 280 million, with decline in book loans far sharper. The e-book is portrayed as the answer to this terminal decline in the use of print in "library" and in society at large (Joint, 2009). Supply of e-books has been increasing annually 23% as per estimate made during 2005 and 2006 which might have increased much more by now. Subscription and purchase of e-books is also full of complexity. E-books are yet to become popular among users. Compatible of book readers with different formats is yet to be established. Nevertheless, it is also professional responsibility to introduce e-books in the library which cannot be delayed further. E-Resources require planning, and specialized management skill. Whatever the preferences and priority may be, the responsibilities and functions have multiplied where print as well as other media of information are to be well organized and managed which require new professional competence and knowledge. We have to face print as well as virtual world equally. People need information irrespective of their formats whether it is available on net or elsewhere. Professionals shall have to work had with added responsibilities and functions in hybrid information environment struggling hard to find solutions for acquisition and organisation of e-resources which is still in fluid situation in many respects. Unless we find established uniform standards and techniques for organisation of e-resources on the lines of printed material, research and innovations have to go on to establish the practices on sound foundations.

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