SUMMARY, CONCLUSIONS AND SUGGESTIONS

For various reasons, electronic resources are increasing and many libraries are using them to meet the information requirements of their users. The beginning of electronic resources can be traced back to 1960’s and the computer based bibliographic databases of DIALOG, the World Wide Web influenced the library services thoroughly. Subsequently, the professionals made their mind go for electronic resources which require various aspects like selection, acquisition, management and planning, copy right, licensing negotiations, etc. All these reasons made the librarians to apply various management aspects to develop and maintain E-Resources in their libraries.

6.1 Engineering Education in India

Engineering education started in India during the British regime and the first college was established in Roorke in 1847. After independence, engineering education in India grown to meet the requirements of the society. The government of India established a body to look after the development of engineering education known as All India Council for Technical Education (AICTE). At present, the engineering education offered in India particularly in Andhra Pradesh to train graduates to develop the manpower required in industries and related areas to meet the challenges nationally and globally. Subsequently, a number of National Institutions like Indian Institutes of Technology, Indian Institute of Science and private engineering colleges have come up.
6.1.1 All India Council for Technical Education (AICTE)

AICTE was setup in 1945 to prescribe standards, quality assurance, accreditation, etc., in engineering colleges. To take care of all these things, AICTE constituted a body know as National Board of Accreditation (NBA). The AICTE is responsible to accord permission to establish institutions in the field of engineering, technology, architecture, town planning, management, pharmacy, applied arts and crafts, hotel management and catering technology, etc.

6.1.2 National Board of Accreditation (NBA)

The National Board of Accreditation is a wing of AICTE came in with the following objectives:

- To assist all the stakeholders in technical education (like parents, students, teachers, educational institutions, professional societies, potential employers, government agencies) in identifying those institutions and their specific programmes which meet the norms, standards and other quality indicators specified from time to time.
- To provide guidelines to the technical institutions for the desirable up gradation of existing programmes and for the development of new programmes.
- To encourage the maintenance of a standard of excellence and to stimulate the process of continual improvements in technical education in the country. NBA aims to recognize and acknowledge the value addition in transforming the admitted raw student into a capable engineer having sound knowledge of fundamentals and acceptable level of professional and personal competence for ready employability in responsible engineering assignments.
The NBA is contributing greatly for the development of libraries attached to engineering colleges.

6.2 Engineering Education in Andhra Pradesh

The state of Andhra Pradesh was formed in the year 1956. To train the engineering graduates, a technological university JNTU was established at Hyderabad. Later, this university is turned into three technological universities to meet the requirements of three regions of Andhra Pradesh, i.e. JNTU at Hyderabad for Telangana region, JNTU at Anantapur for Rayalaseema region, JNTU at Kakinada for Andhra region. In addition to this, traditional universities like Sri Venkateswara University, Andhra University, Osmania University have established their own colleges. In the recent past private universities have come up namely, GITAM University, KL University and VIGAN University.

6.3 Engineering College Libraries:

A library plays a pivotal role in ensuring the success of higher degree of Engineering and Technology. The important activities of engineering college libraries include the Collection Development, Reference Service, Circulation, Document Delivery, User Education, Access to Electronic Resources, etc. Engineering college libraries are expected to provide cost effective and reliable access to information using the state-of-the art information technology tools. The basic objective of the Engineering college library is to be a dynamic instrument for explaining the expanding horizons of knowledge. The library endeavors to make the legitimate needs and demands of the patrons, from the senior
academics engaged in advance research to the fresh entrant stimulate and encourage students to develop the lifelong habits of good reading, study and research and to be the centre of Engineering college for educational and scholarly pursuit.

6.3.1 Objectives of Engineering College Libraries

The engineering college libraries are established with the following objectives:

- Conservation of knowledge amassed from times immemorial,
- Dissemination of this knowledge through teaching and publication.
- Extension of the bounds of knowledge through Technological work by students and teachers, and
- Helping the students and the taught to achieve their technical degree.

6.3.2 The Functions of Engineering College Libraries

- To acquire, process, Organize and make available varied types of reading materials for meeting the needs of different levels of user;
- To guide students and provide them the resources useful for enhancement of Technical projects;
- To keep the faculty members informed of the latest resources in their fields of specialization;
- To establish an information centre in library and render readers advisory services, so as to enable them to make use of library resources;
- To adopt new technology, e.g. computerization in certain areas with a view to provide purposeful service in minimizing possible time; and
- To keep the authorities informed of the achievement and literary output of the institution to seek support and financial assistance.
6.4 History and Development of Electronic Resources

The electronic publishing has revolutionized the availability of E-Resources. Subsequently, E-Books, E-Journals, E-Databases etc., have developed. Now the use of E-Resources through Internet is quiet significant.

6.4.1 Definition

According to AACR2, 2005 Update, an electronic resource is: "Material (data and/or program(s)) encoded for manipulation by a computerized device. This material may require the use of a peripheral directly connected to a computerized device (e.g., CD-ROM drive) or a connection to a computer network (e.g., the Internet)." This definition does not include electronic resources that do not require the use of a computer, for example, music compact discs and video discs.

6.4.2 Features of E-Resources

(a) High compact storage;
(b) Ease of reproduction, multiplication, manipulation and transmutation;
(c) Contents can be very easily detached from its media or container;
(d) Ease of migration of contents from one medium to another;
(e) Ease of transmission, communication and storage;
(f) Hypertext and multimedia;
(g) Seamless integration of print and electronic resources;
(h) Sophisticated and multipronged searches through keywords, free text, Boolean operators, less numbers and natural languages processing;
(i) Wall less libraries leading to the vision of Multimedia Global Virtual Library (MGVL) Inagurating an era of “Death of distance”; and
(j) Convergence of technology, which is getting more powerful each day
6.4.3 Advantages of Electronic Resources

The advantages of E-Resources are: Easy usability, Readability; Budgetary aspects- speedy accessibility, Easy back file access; Multi-access- Speedy retrieval, Functional aspects; Content analysis- Consortia mode, Interactivity, Hypertext, Virtual reality, Flexibility etc.

6.4.4 Sources of Electronic Resources


6.4.5 Open Access E-Resources

Some popular Open access journal sites:

1. Directory of Open Access Journals (DOAJ)
   (http://www.doaj.org/doaj?func=loadTempl&templ=about&uiLanguage=en)

2. High Wire Press
   (http://highwire.stanford.edu/lists/freeart.dtl)

3. First Monday
   (http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/index)

4. MERLOT Journal of Online Learning and Teaching
   (http://jolt.merlot.org/)

5. Google Scholar
   (http://scholar.google.com/intl/en/scholar/about.html)

6. Directory of ABC Chemistry:
   (http://www.abc.chemistry.bsu.by/current/fulltext.htm)

7. Bentham Open Access
   (http://www.benthamscience.com/open/?gclid=CNOviWb_KkCFUZ76wodUSHxXw)
6.4.6 Consortia

The INDEST is a popular consortia in engineering and technology. The following are included in INDEST:

- ABI/Info complete (Proquest), ACM Digital Library, American Society of Civil Engineers (ASCE), American Society of Mechanical Engineers (ASME), ASTM International standards and journals, DEL, Emerald Management Xtra (EMX), EI Compedex plys (engineering Village 2), INSPEC on ei Village, IEEE/IEE Electronic library Online (IEL), Nature, Proquest science journals, Science direct, Springer link.

6.5 Electronic Resources in Engineering College Libraries

To meet the objectives of engineering college libraries, it is necessary to use electronic information resources. So, it is necessary for library professionals to understand certain areas like selection, evaluation, licensing, acquisition, management and preservation to maintain them in libraries. The users too, preferring E-Resources to meet their information requirements and the technology and infrastructure required in this context is available at affordable cost.

6.5.1 Selection of E-Resources

For electronic collection development in libraries, the selection is considered as one of the important steps. In selection, the issues like accessibility, content evaluation, technological aspects and legal aspects are to be applied. Format of electronic resources is also a curtailing factor in acquisition. The following aspects be considered for selecting E-Resources: Technical feasibility, Functionality and reliability, Vendor support, Licensing, Currency, Value for money, Accuracy, completeness and Duplication.

6.5.2 Evaluation of E-Resources

The information available in E-Resources is un-filtered and un-stable, particularly on the Web, so a kind of evaluation is necessary in acquisition. The following checklist is followed in many libraries: Content, Technical requirements, Method of Access, Authentication, Compatibility, Functionality and Reliability, Search and Retrieval, Exporting and downloading, Response, Reliability and Availability, Vendor Support, Trial Evaluation and Product Demonstration, User Training and Support, Technical/Customer Support and system Notification Processes, Customization, Data security and Archiving, Bibliographic data provision, Supply, Purchase models and Pricing, Number of users and Sites, Back-files, Archiving and Post termination rights, Cancellation rights, Invoicing, Renewals, etc.

6.5.3 Licensing Considerations for Electronic Resources

Licensing aspects are important while acquiring E-Resources. There are certain aspects to be considered in this area:
**Access Concerns:** Authorized users, Authorized sites, Method of access, Archiving policy and Perpetual access, Institutional archives/Self-archiving, etc.

**Use of the Electronic Information Resource:** Inter Library Loan (ILL), Pay-per-view Service, Viewing, Downloading and Printing, Course packages, Course reserves, User statistics, Liability for Unauthorized use, etc.

**Vendor Support and Technical Considerations:** Linking service, Content consistency, Bibliographic data, Commencement date, System integration, Technical support, Notifications process, Customer support, Web browser accessibility, Documentation, Guaranteed up time etc., are considered in this area.

**Flexibility and Enhancements:** Cancellations, Value for money, Consistency with print equivalent, Availability, Drop-out clause etc., are included in this aspect.

**Legal Issues:** Aspects like Terms of payment, Grace period, Governing laws, Resource providers, authority to provide access, etc., are considered.

### 6.6 Review of Literature

Articles have been collected from journals published in India and abroad and back volumes available in Dr.V.S.krishna library, Andhra University, Visakhapatnam, to prepare reviews. For this purpose, open access journals from the Internet and UGC-INFONET are also consulted.

The collected articles are grouped under three areas:

- Selection of Electronic Resources
- Acquisition of Electronic Resources
• Management of Electronic Resources

It is obvious from the reviews that the libraries are giving due preference and importance for acquiring electronic resources. The management aspects that are to be kept in mind while acquiring E-Resources are given due importance. These aspects made the researchers to take up the present study on management of electronic resources in NBA accredited engineering college libraries.

6.7 Study Design and Methodology

The present study is taken to understand the management process of different electronic resources in engineering college libraries and to identify the best practices for the management of E-Resources with the following objectives:

6.7.1 Objectives of the Study

• To study the electronic resources available in the selected NBA accredited engineering college libraries.

• To study the present situation and identify the problems on electronic resources (selection, acquisition, management) in selected NBA accredited engineering college libraries.

• To study the network infrastructure available to make use the electronic resources in the selected NBA accredited engineering college libraries.

• To study the awareness and knowledge of library professionals on various aspects of electronic resources like, selection, acquisition, management and De-selection, etc., in the selected NBA accredited engineering college libraries.

• To study the tools used for selection of Electronic resources and criteria followed in selected NBA accredited engineering college libraries.
To study the management aspects like verification of access, feedback, updating, renewal, AMC, etc., of electronic resources in selected NBA accredited engineering college libraries.

To study the licensing and evaluation aspects of electronic resources in selected NBA accredited engineering college libraries

For the present research, the engineering colleges fulfilling the following criteria are selected for the study.

- The college must be an NBA accredited private engineering college.
- At least 4 courses should have received accreditation.

It is found that there are sixty one private engineering colleges duly accredited by NBA. For the present study thirty engineering college libraries are selected covering 50% of the total population. A mention is made about region wise distribution, but it has no significance on getting accreditation by NBA. Therefore, the region wise issue is not considered in sampling. Keeping in mind the objectives of the study a questionnaire was prepared covering all the aspects of the study such as General aspects, Technical aspects, Licensing aspects, Budget issues, Evaluation aspects, Acquisition procedures (Verification of bibliographic information, Pricing options, Reviewing of business and license agreements, Ordering and acquiring products), Management issues and De-Selection issues. The questionnaire was pre-tested and the final questionnaire was prepared incorporating necessary modifications. The data analysis is made using SPSS 15.0 V software.
6.8 Observations of the Study

The data collected from the selected 30 NBA accredited engineering colleges on management of e-resources in their libraries is analyzed i.e. General Information about the Colleges, Network Infrastructure, Electronic Resources, Tools for Selecting E-Resources, Selection of E-Resources, Acquisition Procedures, Management of E-Resources and De-selection of E-Resources.

6.8.1 General Information about the Colleges

To fulfill the objectives of the study, 30 engineering college libraries were selected to elicit information and analyzed to draw conclusions. All the 30 college librarians have professional qualifications i.e., Master’s level and some of them have research degree in Library and Information Science and other additional qualifications like Post Graduate Diploma in Library Automation Networks, Diploma in Library Networks. Out of the 30 colleges, 15 colleges are established before the year 2000 and the remaining after 2001. Out of the 30 engineering colleges, 5 are accredited in the year 2005 or before and the remaining colleges in the year 2006 and after. In 11 colleges, the E-Resources are introduced in the year 2005 or before, whereas in 19 colleges the introduction of E-Resources took place in the year 2006 and after.

As most of the librarians are well qualified, it would be possible them to manage the E-Resources in their libraries successfully.

6.8.1.1 Network Infrastructure

To make use most of the E-Resources, suitable network infrastructure is necessary. Most of the libraries are using OFC and Wi-fi networks to offer E-
Services in their libraries. Regarding Internet service providers, the BSNL (a state owned service) is being used in majority of the libraries and the remaining libraries are using private internet service providers. Except one college, the remaining are using either broad band or leased line in their internet facility centers. The LAN is reported in all college libraries. Regarding the facilities for use of E-Resources, most of the libraries have enough number of PC’s, the suitable PC’s configuration, satisfactory Internet speed and separate server for E-Resources. It is suggested that the remaining libraries should also use enough computers and upgrade their configuration which may help them to offer and maintain electronic resources effectively. The power backup, the availability of scanner, CD, DVD writer and printing facility is reported in majority of the colleges.

It is understood from the above discussion, the network infrastructure available in these colleges is sufficient, but these facilities be upgraded from time to time.

6.8.1.2 Electronic Resources

The awareness, knowledge and availability of E-Resources (Open source) of librarians are found satisfactory on E-Books, E-Journals, E-Magazines, E-Audio-Video lectures and E-Databases. But on other E-Resources like E-Thesis, other Institution Repositories, E-News, E-Reports, E-Subject gateways. The awareness, knowledge and availability of library professionals is far from satisfaction on other E-Resources. The situation reported more or less same in E-Resources (subscribed). It means, the awareness and knowledge on E-
Resources (open & subscribed) of professionals is promising. The other sources like E-Thesis, E-News, E-Reports, E-Subject gateways and awareness, knowledge and availability of library professionals on these is quite unsatisfactory. In subscribed E-Resources, the situation on institution repositories is satisfactory. Since the awareness, knowledge of librarians on electronic resources is promising, it would be possible for them to maintain and manage E-Resources in their libraries.

On awareness, knowledge and availability of other E-Resources (self) like Institution repositories developed by them (self), OPAC and university question papers is reported satisfactory. Whereas on the other E-Resources developed by students (PPT, Seminars etc.,) and conference proceedings, the situation is not satisfactory.

By and large the awareness and knowledge of library professionals on E-Resources (Open, subscribed and self) is found satisfactorily. It is necessary to encourage to use the E-Resources developed in their institutions and available in libraries.

6.8.1.3 Tools for Selecting E-Resources

For acquiring and selecting E-Resources, the professionals’ awareness and knowledge on tools available for selection of E-Resources plays a crucial role. In this context, for selection of E-Resources the following tools are considered - Publisher Catalogues through vendors, Reviews in Electronic periodicals or Journals, Vendor websites like GIST, Observation of other college library resources, Publishers’ demos in seminars/ Conferences, Opinion from
experts/ Faculty, Enquiry with existing vendors, Trial offered by the Publishers, Trial offered by vendors and Consortia. The awareness and knowledge of professionals on tools listed is promising. But the use of these tools for selection of E-Resources is not that much promising. It is understood from the table 5.9A that six libraries are using four and less tools for selection of E-Resources, such librarians be asked to learn knowledge on these aspects from other librarians.

6.8.2 Selection of E-Resources

6.8.2.1 General Aspects

For selection of E-Resources, the library management should follow certain aspects such as General, Technical, Licensing, Budgetary and Evaluation (Pre-Acquisition). In general aspects, the following items are covered – User Needs, Vendor Credibility, Publisher Reputation, Technical background of publisher, Technology oriented subjects it covers, Awareness about trial version, Full text and availability through web page, Full text of back volumes of journals, Search capability, Duplication of existing resources, Peer reviewed articles in journals, Language of electronic resources, Anticipatory use of electronic resources purchase, Structure of the electronic resource, Archival facility by vendors, Literature availability, Consideration of professional awareness, Availability of sources in print format, Information literacy program by vendors/suppliers and Online user awareness program offered by publishers. It is evident from the table 5.10 that most of the general aspects listed for selection of E-Resources have been followed, but the aspects like information literacy program by the vendor, technical background of the publisher, structure of E-
Resources etc., are not reported by all libraries. These aspects are also be followed in libraries. It is also reported from the table 5.10A except one library, all are reported following eleven or more than eleven aspects of selection of E-Resources.

6.8.2.2 Technical Aspects

In technical aspects followed for selection of E-Resources, the following aspects are covered: Mode of access - Single user, Mode of access - Multiple user, Kind of Access - IP based, Kind of Access - User Name & Pass Word, Compatibility of Library hardware and software, User friendliness in setup files for running offline, Data access - Direct from web page, Data access - through Link with other web page, Technical support by vendors - over Telephone, Technical support by vendors - over E-Mail, Technical support by vendors – online, Sufficiency of search speed, Easy to setup, Limitations of availability (access 24/7), Timeliness of updates and Observation of usage Statistics provided by vendor. It is obvious from table 5.11, except kind of access and data access through link with other web page, the remaining technical aspects are being followed, a feature that helps growth of selection of E-Resources in libraries. Out of the 16 aspects listed, 10 and more aspects are followed in 27 libraries.

6.8.2.3 Licensing Aspects

Licensing aspects are important for the management of E-Resources in libraries. The following licensing aspects are asked in the selected 30 libraries – Access Method - IP based, Access Method - User Name & Pass Word, Limit of authorized users number, Breach of agreement by vendor, Information or
warning in case of library violates, Time span for investigate and take corrective action, Reasons for termination of access, Confidentiality of business terms, Electronic reserves, Indemnification, Inter Library Loan conditions, Provision for modification of license terms, Perpetual Use, Archival Rights, Renewal terms, Cancellation terms, Dispute resolution, Warranty of the product, Reimbursement for downtime of resources and Terms & Conditions of Technical support by vendor. Most of the libraries are following access method, IP based, renewal terms, cancellation terms, terms and conditions of technical support by vendors, etc. And a good number of libraries are not following access method, user name and pass word, breach of agreement by vendor, indemnification etc., which are crucial in licensing process of E-Resources and it is found from the table 5.12A that six libraries are following less than 9 aspects in this context.

Before acquiring the E-Resources, proper procedure be followed for evaluation by considering the following aspects:

6.8.2.4 Budget Aspects

In selection of E-Resources, budget aspects like Final cost, Fitness to the Budget, Payment mode, Level of optimum utilization of electronic resources, AMC charges, Cost of additional infrastructure and Maintenance cost are considered and elicited information from 30 engineering college libraries. It is observed from table 5.13 that most of the budget aspects are being followed while selecting E-Resources in their libraries, a promising feature. Except one library, the remaining are following five and more than five budget aspects for
selecting E-Resources in libraries. It means that all the libraries are giving excellent importance to budget aspects in selecting E-Resources.

6.8.2.5 Evaluation Aspects

Before acquiring the E-Resources, proper procedure be followed for evaluation and consider the following aspects: Content, Currency (Frequency of updates, archiving of availability), Reputation (Reliability), Indexing (arrangement of subjects), Impact Factors (Rating of the journals usage), Ease of access, Final Cost is fit to budget, Technical Support by vendor and Terms and conditions of Licensing agreements. It is obvious from the table 5.14 that all the stated aspects are being considered for evaluating the E-Resources before their acquisition, except the impact factor aspect. Most of the librarians expressed that the impact factor and its significance is not understood by the faculty members thoroughly. It is evident from the table 5.14A that out of the nine aspects listed, all are considering most of the aspects for this purpose. It indicates that engineering college libraries are given due importance for evaluation of E-Resources while acquiring.

6.8.3 Acquisition Procedures

For acquiring E-Resources, the following four aspects are considered i.e., verification of Bibliographic Information, Pricing options, Review of licensing & business agreement and Ordering & acquiring.

6.8.3.1 Verification of Bibliographic Information

The bibliographic aspects for books and E-Resources are not similar. For E-Resources, the following aspects are considered - Content provided in the
resource, Coverage of the subjects, Frequency of updates, Cost (Comparison with different Vendors) and Search retrieval capabilities. All most all the libraries have reported that they are following all aspects of bibliographic information, except the aspect-frequency of updates. Some of the librarians are not observing the frequency of updates aspect. Out of the five aspects listed, three and more are being followed in 24 libraries. The remaining libraries should also observe more bibliographic aspects for acquiring E-Resources.

6.8.3.2 Pricing Options

To acquire E-resources, the criteria followed for pricing are given below: Annual subscription, Subscription one time purchase for archival product, Institution size (No of courses offered) vs. Price, No of users (students, staff and faculty) vs. price, Journal package details and Content access (full text articles/abstracts). The pricing options are quite important and influence the use pattern of E-Resources. Therefore, an attempt has been made in table 5.16 to draw information on these aspects from selected engineering college libraries. It is clear from the table that all the listed six pricing aspects are followed by most of the engineering college libraries while acquiring E-Resources. The knowledge of the professionals on these aspects would help to subscribe or acquire E-Resources with minimum management problems in future. It is clear from table 5.16A, 29 libraries are following four and more pricing options while acquiring E-Resources.
6.8.3.3 Review of License and Business Agreement

It is necessary to review the license and business agreements for E-Resources from time to time. In this context, twelve aspects are identified and data collected from 30 selected engineering college libraries is presented in table 5.17. The aspects are Content of licensed materials, Web Site, Specification of authorized users, Copyright and fair use, Confidentiality, Cost (price fluctuations due to foreign currency), Governing law (legal jurisdiction), Perpetual access, Terms of termination, Terms of payment, Indemnification and Usage statistics.

It is observed that except confidentiality, governing law (legal jurisdiction) and indemnification, the remaining aspects are followed for reviewing of licensing and business agreement for acquiring E-Resources in the studied engineering college libraries. It is necessary to observe these three aspects also to minimize management problems at a later stage.

6.8.3.4 Ordering Process and Acquiring

For ordering and acquiring E-Resources, the criteria followed in selected engineering college libraries is discussed in table 5.18 considering the following aspects – availability of order format, Providing technical information to vendor, activation information by vendor, intimation to management about access of ordered product and invoice processing. Except the aspect availability of order format, the remaining aspects, order processing and acquiring are followed in most of the selected engineering college libraries. Most of the librarians expressed their ignorance on order format and their advantages.
6.8.4 Management of E-Resources

6.8.4.1 Procedures for Management of E-Resources

An attempt has been made to study the procedure followed for management of E-Resources in engineering college libraries after their acquisition. The following aspects are included – Verification of Access - Content, Verification of Access - No of users, Verification of Access - Access method, Organizational chart, Periodical reviewing, Enquiries and user feedback - Content not covered, Enquiries and user feedback - Downloading, Monitoring speed of Information Download Facility, Monitoring Information storage Facility, Print facility to all documents/ part, Data Records of Electronic Resources, Shelving of e-resources - Accessioning, Shelving of e-resources - Classification, Shelving of e-resources - Cataloging, Updating of new electronic resources in OPAC, Information literacy program - Presentations by publishers, Information literacy program - Announcements by library, Staff training, Database administration, Communication with vendors, Tracking of Utilization statistics, License Tracking, Conservation & Preservation, Overdue alerts to management, Archiving and AMC Tracking. It is evident from table 5.19, most of the libraries are following aspects listed - except organizational chart data, records of electronic resources, shelving of E-Resources - Classification and cataloguing. The libraries which are not following the aspects listed, be followed on priority basis. It is necessary for libraries to follow maximum number of aspects for management of E-Resources for effective management. Out of the
listed 26 aspects, 13 and more are followed in 24 libraries. Six libraries are following less than 50% aspects to manage E-Resources in libraries.

6.8.4.2 De-Selection/Weeding

It is necessary to weed out electronic resources for various reasons in libraries. In table 5.20, an attempt has been made to elicit information from the selected engineering college libraries on De-Selection in consideration of following aspects:

Having any De-Selection (weeding) policy, Whether following the guidelines for De-Selection, Non circulated materials since number of years, Materials not compatible with existing hardware or software, Outdated or inaccurate materials, Duplication of materials and Materials damaged beyond repair. It is obvious from table 5.20, most of the aspects listed for De-Selection are not being followed in selected engineering college libraries. Very few libraries have weeding policy and the guidelines listed for De-Selection are also followed rarely. It is necessary to weed out E-Resources, based on policy or following said guidelines, otherwise the E-Collection would be un-manageable at a point of time.

Suggestions

- It is suggested that the libraries should also use enough computers and upgrade their configuration from time to time which would help them to maintain electronic resources effectively.

- It is suggested that adequate power backup facility be provided, in order to maintain E-Resources to the expectations of the users.

- It is suggested to encourage library professionals to learn on E-Thesis, other institution repositories, E-News, E-Reports, E-Subject gateways, etc.,
• It is suggested that the professionals be encouraged to improve their knowledge on E-Resources for selection and use them in libraries thoroughly. If necessary, the professionals be advised to visit other libraries to observe their practices and attend awareness programmes.

• It is suggested that the library should follow all the licensing aspects as far as possible to minimize and avoid management problem at a later stage.

• It is suggested that all pricing options be considered in engineering college libraries while acquiring /subscribing E-Resources.

• It is suggested that all the libraries should follow as many as possible aspects of review of license and business agreements to minimize problems with vendors.

• It is suggested that all libraries should use a suitable order format for acquiring E-Resources.

• It is suggested that all the aspects of management of E-Resources should be followed in engineering college libraries.

• It is suggested that all libraries should have a De-Selection policy or guidelines for De-Selection for E-Resources in engineering college libraries.

Conclusions

Information is a key resource for academic community for various reasons. Information is now available in various electronic formats. The growth of electronic resources is significant. The technological development provides an opportunity for easy access and uninterrupted access of electronic resources. In engineering subjects a variety of electronic resources are available. In Indian context the AICTE, the apex body at national level for engineering and technical education is laid down guidelines for subscription of E-Resources. Consequently, the engineering college libraries are subscribing a variety of electronic resources to meet the information demands of users in engineering
colleges. Most of the engineering college libraries are following management aspects to maintain E-Resources in their libraries. The engineering college libraries should also give importance to formulate a collection development policy for E-Resources and De-selection of E-Resources. The professionals in engineering college libraries be asked to learn the management practices being followed in well established libraries, so that gained knowledge and experience could be applied in their libraries as and when necessary. It is necessary for professionals to attend information literacy programmes on the areas of management electronic resources.

Scope Further Research

4. Areas to be considered for Designing of Electronic Resources Management software for Engineering College Libraries.