

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

---

Library Philosophy and Practice (e-journal)

Libraries at University of Nebraska-Lincoln

---

Winter 11-16-2018

# NETWORKING OF ENGINEERING COLLEGE LIBRARIES IN ANDHRA PRADESH: A PROPOSAL

C. Chinna Balu chinna

JNTU Hyderabad, cbalu19@yahoo.com

Follow this and additional works at: <http://digitalcommons.unl.edu/libphilprac>



Part of the [Library and Information Science Commons](#)

---

Chinna Balu, C. chinna, "NETWORKING OF ENGINEERING COLLEGE LIBRARIES IN ANDHRA PRADESH: A PROPOSAL" (2018). *Library Philosophy and Practice (e-journal)*. 2017.

<http://digitalcommons.unl.edu/libphilprac/2017>

# NETWORKING OF ENGINEERING COLLEGE LIBRARIES IN ANDHRA PRADESH: A PROPOSAL

Dr. C.CHINNA BALU

Librarian(i/c), Dr. APJ Abdul Kalam IIIT Ongole, RGUKT-A.P.

R.K.Valley, Idupulapaya, Vempalli(M), Kadapa-516330. A.P., INDIA

[cbalu19@yahoo.com](mailto:cbalu19@yahoo.com), [chinnabalu@stpetershyd.com](mailto:chinnabalu@stpetershyd.com), [chinnabalu016@gmail.com](mailto:chinnabalu016@gmail.com)

## ABSTRACT

This proposal interprets the importance of library network and the concept of engineering college libraries networking to facilities information resources sharing and support activities in libraries has become a quintessential in Andhra Pradesh, India. This paper deals with an idea to motivate for networking and resource sharing JNTUH, JNTUA, JNTUK affiliated to Engineering College Libraries. The present study briefly highlights some of the objectives, functioning essentials, benefits, drawbacks, services, future prospects and implementation phase of completeness of proposal networking formation as crucial for "APECLIBNET".

**Keywords :** Network, Engineering College Libraries Networking, JNTUH, JNTUA, JNTUK, Andhra Pradesh, Hardware, Software and APECLIBNET

## 1. Introduction

Networking is also known as computer networking, is the practice of transporting and exchange data between nodes over a shared medium in an information system. Networking comprises not only the design, construction and use of a network, but also the management, maintenance and operation of the network infrastructure, software and policies.

Computer networking enables devices and endpoints to be connected to each other on a local area network (LAN) or to a large network, such as the internet or a private wide area network(WAN).

Today engineering college libraries are unable to satisfy all the information requirements of their users from their own collection. Library networking is meant for promoting and facilitating sharing of resources available within a group of libraries with the purpose of providing information services optimally to all the potential users and also to make use of national and international resources.

## 2. Library network

The term networks generally reflect to computer networks which allow different configured computers to communicate among them and share resources and information available with them. UNISIST – II (UNESCO 1979) defines information networks as "A set of inter-related information systems associated with communication facilities, which are cooperating through more or less formal agreements in order to implement information handling and to offer better services to the users". A computer network or data network is a telecommunications network that allows computers to exchange data. In computer networks, networked computing devices pass data to each other along data connections. The connections (network links) between nodes are established using either cable media or wireless media. The best-known computer network is the internet (Wikipedia). The National Commissions on Libraries and Information Centers in its National Programme Document (1975) defined a network as "Two or more libraries engaged in a common pattern of information exchange, through communications for some functional purpose".

The network should have:

- A telecommunication network; and
- As many databases as possible preserved on optical media.

### 3. Drawbacks in the existing system

In the present set up, the services of several engineering college libraries have been found to be far from satisfactory. The shortcomings observed mainly relate to three aspects. They are:

- Insufficient reading materials and services.
- Inadequate funds, and
- Lack of trained manpower with the respect to engineering information sources.

The various information services that can be provided in the libraries depend on sound financial position of the libraries.

### 4. Review of Literature

**Sammi Reddy's**<sup>1</sup> article deals with the status and successful development of manpower, training high degree of technological skill, intelligence initiative, efficiency, understanding, team management for improving library services. Strengthening of library-procurement of latest and advanced books, current journals, electronic form materials, such as CD-ROMs, Disks, Video Cassettes, etc., fulfils the needs of day-to-day requirement. Resource sharing avoids duplication of purchases of information, and promotes mutual academic interaction.

**Yadagiri**<sup>2</sup> described the application of information technology (IT) in creation of database, housekeeping services such as, circulation desk, OPAC etc., and introduction of latest IT infrastructure viz., Bar coding Technology, Digital Graphic Printer, Multimedia systems, CD-ROMs, Audio-Visual media, etc., in the Regional Engineering College Library, Warangal.

**Harish Chandra**<sup>3</sup> described the various factors that motivate engineering colleges for implementing resource sharing. Various considerations for networking of engineering college libraries and major potential problems for resource sharing are examined as well.

**Mahajan**<sup>4</sup> expressed that education aims to impart knowledge and makes good citizens. Libraries are the repositories of knowledge and form an integral part of education. Libraries have a long history, starting with the chained and closed-access libraries of earlier times to the present-day hybrid, digital, and virtual libraries that use the latest technology for provision of information through various services.

**Rajeev Kumar and Kaur**<sup>5</sup> conducted a user survey, to analyze the use of the Internet and related issues among the teachers and students of engineering colleges of Punjab, India. A well structured questionnaire was distributed to 960 teachers and students of all engineering colleges of Punjab. The response rate was 84.2 per cent. The present study demonstrates and elaborates the various aspects of Internet use such as frequency of Internet use, most frequently used place for Internet use, purpose for which the Internet used, use of Internet services, ways to browse the information from the Internet, problems faced by the users and satisfaction level of users with the

Internet facilities provided in the colleges. The result of the survey also provided information about the benefits of the Internet over conventional documents. It was found that the Internet had become a vital instrument for teaching, research and learning process of these respondents. Some suggestions have been set forth to make the service more beneficial for the academic community of the engineering colleges under study.

**Saibaba**<sup>6</sup> conducted a study on co-operating and networking among engineering and technological libraries in India. His study revealed that co-operating and networking among libraries facilitate in saving money and time, especially in the escalation of prices and shrinking of budget.

**Dowling**<sup>7</sup> made a study on the availability of technological information on the Internet.

**Bishop**<sup>8</sup> carried out a study on the role of computer networks in aerospace engineering. The study revealed that computer networks are helpful in the operation of aircrafts.

**Vasishta**<sup>9</sup> conducted a study to find out the status of library automation and networked services at six technological deemed university libraries in North India. The data was collected from the Librarian/Librarian-in-charge of the library through questionnaire method. The results show that 5 out of 6 (83.33%) libraries are using Libsys, only one library is using SOUL and not a single library is using automation package developed in-house. More than 83.33% (5 out of 6) responded that computerization of cataloguing is made priority in computerization of various library activities. Library OPAC provided speedy on-line access to all the library collection by means of computer terminal. Three out of 6 (50%) libraries are providing journals holding list. List of current journals is being offered by 3 out of 6 (50%) libraries. Four out of 6 (66.66%) libraries have their websites through which the service of Web-OPAC is provided. Four out of 6 (66.66%) libraries are offering Internet browsing facilities on its premises. Three out of 6 (50%) libraries have links to other useful sites for the easy access of information to the user community.

**Tadasad and others**<sup>10</sup> conducted a study on the use of Internet by 193 undergraduates in engineering. The Internet use is confined to general or recreational purposes and its potential in supporting curriculum requirements has not been realized by the students. The use of Internet at college is being made by every student and this needs to be increased. Internet facility should also be extended to library, as it has become an important source of information, facilitating effective communication and being a major information retrieving tool. Awareness is to be created among the students for using Internet in addition to the library facilities and training is to be provided to acquaint students with Internet and its resources.

**Sarasvady and Khatri**<sup>11</sup> made a study on the use of electronic resources for implementing library consortium.

**Singh and Bhaskar Rao**<sup>12</sup>, discussed library consortia about sharing resources and improving access to information. These resources are shared among libraries that have common missions, goals and clients (users) and act on these commonalties.

**Verzosa**<sup>13</sup> made an assessment of De La Salle University Library's computerization planning process through an analysis of the issues and concerns it had to face in developing automation programme, and gave a strategic plan for its implementation and future directions.

**Patra**<sup>14</sup> expressed in his article that the role of Information and Communication Technology has established its position through satellite connectivity between urban educational institutions and the large number of rural and semi-urban educational institutions. Convergence of technology has played a vital role to revolutionize the management and services of the libraries of above said institutions of our country.

**Bavakutty and Azeez**<sup>15</sup> discussed major consortia initiatives of India, developmental history of engineering colleges in Kerala, proposed model of consortium and aspects to be considered while designing a consortium.

**Parida**<sup>16</sup> describes the significance of digital libraries in the present information era, and their superstructure and technological requirements in his paper. It mainly depicts various aspects of digital library development and different types of reference services being provided in digital environment which include: personalized services, web-based reference and information services, search engine services, digital reference services for general public as well as academic community and co-operative digital library service. The initiatives taken by the INFLIBNET Centre, UGC, India, DELNET, IITs, RECs, National Research Organizations/Institutions of India in the digitization of libraries and information centres in order to provide digital library services. Further, it suggests that in a developing country like India where resources are limited and funds are inadequate, the library and information professionals should develop their skill and proficiency to meet the challenges of technological developments and changes emerging out of digital library services.

**Subramanian and others**<sup>17</sup> reveal the importance of the networking, sharing the resources and standards of various engineering college libraries located in Erode district, Tamil Nadu. The results show that Kongu Engineering College Library has more volumes (26.5%) of books followed by Library of Bannari Amman Institute of Technology (20.3%). Nandha Engineering College Library has least collection of books (5.2%). Library of Bannari Amman Institute of Technology is subscribing to 421 (29.9%) periodicals. Kongu Engineering College Library is subscribing to 300 (21.3%) periodicals. Nandha Engineering College Library is subscribing to 41 (2.9%) periodicals. Library of Bannari Amman Institute of Technology allotted more funds (Rs. 48 lakhs) for purchase of books, journals and non-book materials. All the libraries are accepting the resource sharing. Almost all the librarians are accepting the concept of union and co-operative cataloguing. Five engineering college libraries are subscribing to the ACM digital library. Library of Kongu Engineering College and Bannari Amman Institute of Technology are subscribing to more online journals i.e., IEEE and CSE, and PROQUEST.

## **5. Need for the APECLIBNET**

In view of the current developments in information technology, it is necessary that the Government of Andhra Pradesh should establish a network of engineering college libraries to pool and share the information sources and disseminate of information to the users.

## **6. Objectives of APECLIBNET**

The following objectives are proposed for the APECLIBNET.

- To evolve a state-wide network of engineering college libraries for an optimum utilization of information resources;

- To optimize the utilization of funds by minimizing duplication in all spheres;
- To provide access to e-document collection of all engineering college libraries in the state;
- To develop union catalogue of documents of all engineering college libraries in the state and provide access to it;
- To create separate data bases for question papers of various examinations in engineering, B.Tech. and M.Tech. Project reports, Ph.D. theses and publications of faculty members and provide access to them.
- To create a bibliographic data base of open access books and journals and provide links to them.
- To improve the inter-library loan services among the engineering college libraries with the smooth and speedy exchange of information through network links;
- To standardize library services and activities;
- To facilitate inter-communication among the engineering college libraries in the state;
- To encourage co-operation among engineering college libraries, technological university libraries, special libraries, and information centres in the state; and
- To provide access to other national and international networks.

## **7. Establishment of Governing Board for APECLIBNET**

A governing body for APECLIBNET is to be established with the representatives from engineering college libraries and technological university libraries. The board should consist of members comprising:

- a. Vice-Chancellor of JNT University, Hyderabad.
- b. Vice-Chancellor of JNT University, Anantapur.
- c. Vice-Chancellor of JNT University, Kakinada.
- d. Six Principals (selected on rotation basis for a period of two years).
- e. Six librarians from engineering colleges (selected on rotation basis for a period of two years).
- f. Librarian of JNT University, Hyderabad.
- g. Librarian of JNT University, Anantapur.
- h. Librarian of JNT University, Kakinada.
- i. Director of National Informatics Centre, Hyderabad.

The Vice-Chancellor of J N T University, Hyderabad will serve as the Chairman of the Board. The university librarian of J N T University, Hyderabad will act as Member-Secretary for governing of the APECLIBNET. The main function of this governing board is to see that the objectives of APECLIBNET are fully implemented.

## **8. Recommendations for suitable library software for engineering college libraries**

The INFLIBNET of UGC has developed a library software package known as SOUL (Software for University Libraries) and made available to all academic libraries and the R&D libraries in the whole country. The following are the important reasons for recommending the SOUL to the engineering college libraries of the Network.

- This software is prepared mainly for the benefit of university and college libraries and followed standards and formats such as the CCF, AACR-II, LCSH and MARC.
- It is now being used by so many university libraries in India, which have already been covered under financial assistance of the INFLIBNET.
- It enables maintenance of uniformity in database creation among technological universities and engineering college libraries for better information dissemination.
- This software also includes network feature, which is important for library network activities.
- This software is available at a lower cost compared to other commercial library software packages. INFLIBNET offers free technological advice to the librarians wherever the SOUL software is used, and
- The SOUL is also users-friendly software and does not need elaborated training to use.

#### 9. **Pre-requisites for engineering college libraries network**

In planning an engineering college libraries network, the following factors are to be considered as most important.

- Member technological university and engineering college libraries must have a memorandum of understanding to establish a network in the region. Further, the development of viable network demands planning not only among the network members but also between members and the users.
- Member engineering college libraries must agree upon a network policy, to be implemented. The policy must clearly state the objectives of the network, network structure, etc.
- Member engineering college libraries must identify the funding agencies and mobilize their financial resources in advance so that they freely flow, while implementing the system. If necessary, network fee may be collected from each of the member technological university and engineering college libraries. Experience of several libraries in the Western countries suggests that all networks based on a fee structure can be maintained without grant and are viable in the long run.
- If there is no adequate trained manpower in the member engineering college libraries, attempts should be made to provide training to the existing librarians/library staff.
- Member engineering college libraries must have a full-fledged automation programme and a machine-readable catalogue for their respective document collections for the purpose of creating databases.
- Member engineering college libraries must agree upon an indexing system to be followed. Each library may have the freedom to adopt an indexing system of its choice. In such cases, the software must be developed so as to enable the member libraries switching from one system to another while searching. However, in a centralized database system, it is preferable to adopt a single indexing, i.e. POPSI, Chain indexing or any other similar hierarchical system.

- In addition to the database (machine readable catalogue), hardware, software and trained manpower, it is preferable to have certain other communication facilities such as Internet and E-mail as part of the network, and
- It is necessary to develop and agree upon performance on certain procedures to evaluate the working of the network.
- Decide upfront about backup/contingency plans in case of bottlenecks or failure of network. Appropriate steps will be undertaken immediately to recover from the failure of the nodal centre.

## **10. Network architecture of APECLIBNET**

### **10.1 Communication**

There are three types of network viz., LAN, MAN and WAN. APECLIBNET comes under Wide Area Network (WAN), where the data transmission rate is 100 Kbps. The channel of communication can be categorized as:

- Leased Line.
- Broad Band.

The nodal centres contain the databases of all documents available in their respective engineering college libraries (nodes) in standard format. Updates pertaining to bibliographical details of latest documents acquired, are sent from nodal clients to their respective nodal centres for every fifteen days. The nodal centres update their databases after receiving these details from their respective nodal clients.

The user of an engineering college library (node) requests the nodal centre concerned for information regarding the availability of a document required by him. The nodal centre sends the information to the user if it is available in its server. If the information is not available, the nodal centre requests other nodal centres, gets the required information and provides the same to the user concerned.

When the user of an engineering college library came to know that the required document is available in a particular library, he requests the librarian concerned for getting the book through inter-library loan or he personally visits that library for using the book.

As APECLIBNET is a state wide network, it could begin operations with the telephone lines initially and later with the satellite based communication.

### **10.2 Topology**

#### **10.2.1 Star topology**

In Star topology, each computer is linked with the server. Therefore, whenever data is to be transmitted among any two, it should always be routed through the server. The networks are typically found in cases where a large scale central computer is connected to many terminals. Hence, star topology is the most preferred topology from the point of view of trouble shooting and suitability for newer networks. Some of the advantages are made below:

- Passing of data packets through unnecessary nodes is prevented by this topology.



- Each device is inherently isolated by the link that connects it to the switch.
- The central network also allows the inspection traffic through the network. This can help analyze all the traffic in the network and determine suspicious behaviour, and
- The topology is easy to understand, establish and navigate.

LAN or WAN are usually based on any one of the network topology like Star Network Topology, Ring Network Topology and Bus Network Topology. Star Topology is feasible and recommended for APECLIBNET. The entire Andhra Pradesh is divided into three sub-areas namely Andhra University area, Sri Venkateswara University area and Osmania University area. The districts of Visakhapatnam, Vijayanagaram, Srikakulam, East Godavari, West Godavari, Krishna, Guntur and Ongole fall under Andhra University area. The districts of Hyderabad, Nalgonda, Mahabubnagar, Ranga Reddy, Khammam, Warangal, Medak, Karimnagar, Nizamabad and Adilabad fall under Osmania University area. The districts of Chittoor, Kadapa Kurnool, Anantapur and Nellore fall under Sri Venkateswara University area. The nodal centre for Andhra University area is JNTUK. The nodal centre for Sri Venkateswara University area JNTUA, and the nodal centre for Osmania University area for JNTUH. Each engineering college or university library is a node.

The nodes in Osmania University area are connected to the nodal centre JNTUH. The nodes in Sri Venkateswara University area are connected to the nodal centre JNTUA. The nodes in Andhra University area are connected to the nodal centre JNTUK.

All the three nodal centres are to be connected to one another. Peer to Peer network is to be adopted. Hence, all the nodes in APECLIBNET are to be connected to the nodal centres i.e., JNTUH, JNTUA and JNTUK, as shown in Fig.1

**Fig.1 Structure of APECLIBNET**



## **11. Hardware and Software requirements for server at nodal centres**

### **11.1 Software requirements**

- Windows XP, Windows Server 2003, Windows 2007, Service Pack 2+ Security Rollup
- Microsoft SQL server 2007 or above
- MDAC 2.6 Service Pack 2
- Library Software Package
- Visual Studio Packages
- MS-Office 2007
- Multimedia software
- Networking tools
- MS Internet Explorer, and
- Oracle 9i or above
- Latest Antivirus Software and
- .Net

### **11.2 Hardware requirements**

- Intel Procure 2.7 GHZ
- Intel G 31 Mother Board
- 128 GB RAM
- 250 GB SATA Hard Disk
- Cabinet with SMPS
- Optical Mouse, Key Board
- Monitor
- Laser Printer
- DVD-RW
- Scanner
- Network Interface Card X2 10/100/1000 Mbps
- UPS at least 2 hours battery backup time or above
- Switch, Router, Network cabling and
- Broad Band Internet connectivity

## **12 Hardware and Software requirements of the network nodes (clients)**

### **12.1 Software requirements**

- Windows XP, Windows 2007 Professional or above
- MS-Office 2007
- Library Software Package, and
- Microsoft SQL Server 2007 or above
- .Net and
- Latest Antivirus Software

### **12.2 Hardware requirements**

- Intel Dual Core or Intel P IV Core 2000
- 2 GB RAM or above
- Network Interface Card X2 10/100/1000 Mbps
- DVD-RW
- Optical Mouse, Key Board and
- Network Compatibility

### **12.3 Monitoring and feedback at Nodal Centre**

To achieve the objectives of APECLIBNET, an effective monitoring of network is very essential. For the maintenance of it, sufficient funds should be made available and monitoring must also ensure that:

- Data conversion/generation in machine readable form.
- Memorandum of understanding should be signed by the members from libraries.
- Proper publicity is required so that the users get up-to-date services offered by APECLIBNET.

Updating and Maintenance of Union Catalogue.

## **13. Proposal for Implementation**

In the earlier part of the proposal, the structure of APECLIBNET has been presented with the requirements of hardware and software. Now a proposal for its implementation is presented.

Successful implementation of the proposal for engineering college libraries network depends upon the following factors:

- Computer facility in each technological university library and engineering college library.
- Adequate skills for the librarian to maintain computerizing activities and Internet services.

- Collection context and methods of database creation.
- Reliable telecommunication facilities such as phone and Internet connectivity, and
- Minimum infrastructure such as accommodation, furniture and equipment.

### **13.1 Phase-wise implementation**

Implementation of the proposal for engineering college libraries network is based on the following conditions:

- ❖ Introduction and development of computer awareness among the users i.e., students, research scholars and faculty members of the technological university libraries and engineering college libraries.
- ❖ Creating awareness about the benefits of resource sharing among the technological university libraries and engineering college libraries.
- ❖ Keeping to a minimum and within the reach of students and teachers, the cost of information or the cost of service charges so as to encourage their use of library networking to have information access.

The proposal may be implemented in three phases, as shown below:

### **13.2 Phase I of implementation**

- ❖ Establishing computers in the engineering college library or technological university library,
- ❖ Acquiring suitable library software,
- ❖ Data creation,
- ❖ Establishing offline queries through optical discs,
- ❖ Developing computer culture among students, research scholars and faculty of the college library, and
- ❖ Obtaining Internet connectivity through the DOT, VSNL, etc.

### **13.3 Phase II of implementation**

- ❖ Setting the nodal centres of JNTUH, JNTUA and JNTUK,
- ❖ Procurement of hardware required for the network and site preparation for each individual engineering college library,
- ❖ Creation of union catalogues, and
- ❖ Establishing network connectivity to all engineering college libraries situated in Andhra, Sri Venkateswara and Osmania University areas.

### **13.4 Phase III of implementation**

- ❖ The automation of engineering college libraries in Andhra University area can be undertaken and the necessary training facilities may be extended from time to time by JNTU Kakinada. Similarly the automation of engineering college libraries in Sri Venkateswara and Osmania areas can be undertaken and the necessary training facilities may be extended from time to time by JNTU Anantapur and JNTU Hyderabad

respectively.

- ❖ Connecting the nodal centres to one another.
- ❖ Conversion of offline query to online query for the users of libraries which have machines setup connected to the network.

## Conclusion

The resource sharing among libraries located in different geographical areas became a necessity. For better resource sharing, networking of libraries using Information Technology is essential. This proposal for engineering college libraries network is designed based on new technologies available for networking. This proposal will be of much use to any type of college library to go for networking, resource sharing and exchange of electronic information to meet the new challenges in the field of library and information services. A feasibility study to implement this networking and to identify the gaps must be taken up so that the existing model could be suggested to the Andhra Pradesh Engineering College Libraries.

## REFERENCES:

1. SAMMIREDDY (R). Development of central library at REC Warangal under UK-India RECs project 1994-1999: A case study. *IASLIC Bulletin*. 47; 2002; 77-95.
2. YADAGIRI (A). Application of information technology in library services in the central library, REC Warangal: A case study. *IASLIC Bulletin*. 44; 1999; 111-115.
3. HARISH CHANDRA. Resource sharing and networking of engineering college libraries. *In: <http://www.eprints.rclis.org/4588/1/resource.pdf>* (Visited on: 20.08.2007).
4. MAHAJAN (Preeti). Academic libraries in India: A present-day scenario. *Library Philosophy and Practice*. 8; 2005; 1-4. *In: <http://www.libr.unl.edu:2000/LPP/lppv8nl.html>* (Visited on: 25.08.2007).
5. RAJEEV KUMAR and KAUR (Amrit Pal). Internet and its use in the engineering colleges of Punjab, India: A case study. *In: <http://www.webology.ir/2005/v2n4/a21.html>* (Visited on: 25.08.2007).
6. SAIBABA (B). A study of co-operation and networking among engineering and technological libraries in India. Burdwan. Burdwan University, Ph.D. 1994 (Unpublished).

7. DOWLING (T P). Internet resources for engineering. *College and Research Libraries News*. 55; 1994; 352-353.
8. BISHOP (A P). The role of computer network in aerospace engineering. *Library Trends*. 42; 1994; 692-729.
9. VASISHTA (Seema). Library automation and networked services: A case study at the technological deemed university libraries in North India. *IASLIC Bulletin*. 52; 2007; 120-126.
10. TADASAD (P G) and others. Use of Internet by undergraduate students of PDA college of engineering, Gulbarga. *Annals of Library and Information Studies*. 50; 2003; 31-42.
11. SARASVADY (S) and KHATRI (N K). Study of the use of electronic resources for implementing library consortium. *In: <http://www.isical.ac.in/~serial/consortia/CBSOR-07.pdf>* (Visited on: 26.05.2009).
12. SINGH (Kunwar) and BHASKAR RAO (V). An overview of the library consortia in India. *In: Sixth Convention Planner. (Ahmedabad) (2008). 2008. INFLIBNET, Ahmedabad. P140–149. In: <http://www.ir.Inflibnet.ac.in:8080jspui/bitstream/123456789/790/1/10.pdf>* (Visited on: 26.05.2009).
13. VERZOSA (Fe Angela M). Library automation and its impact on strategic planning for academic libraries: A case study of De La Salle University Library. *In: <http://www.paarl.wikispaces.com/file/view/Library+Automation>* (Visited on: 26.05.2009).
14. PATRA (Bidyut K). The role of information and communication technology on management and services of academic libraries. *TIG Research Journal*. 1; 2008; 39-42. *In: <http://www.technoindiagroup.com/new/volume-1/Bidyut%20kumar%20patra%5B7%5D.pdf>* (Visited on: 16.05.2009).
15. BAVAKUTTY (M) and AZEEZ (Abdul T A). Consortium of engineering college libraries of Kerala: A proposal. *In: FOURTH CALIBER (International Convention on – ) (Ahmedabad) (2006). 2006. INFLIBNET, Ahmedabad. P 409-414. In:*

[http://www.ir.inflibnet.ac.in:8080/jspui/bitstream/123456789/619/1/CALIBER%202006%20\(44\).pdf](http://www.ir.inflibnet.ac.in:8080/jspui/bitstream/123456789/619/1/CALIBER%202006%20(44).pdf) (Visited on: 16.05.2009).

16. PARIDA (Baman). Emergence of digital library services in India. *In: CALIBER (International Convention on – ) (Ahmedabad) (2004). 2004. INFLIBNET, Ahmedabad. P199-205. In: http://www.ir.inflibnet.ac.in:8080/jspui/bitstream/1944/334/1/04cali\_26.pdf* (Visited on: 16.05.2009).
17. SUBRAMANIAN (N) and others. Networking of engineering college libraries in Erode district (ECLNET): A plan. *Indian Journal of Information, Library and Society.* 20; 2007; 208-215.