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Information Communication Technology (ICT) Infrastructure Facilities in Self-Financing Engineering College Libraries in Tamil Nadu

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Introduction

Information Communication Technology (ICT) are being increasingly used in library and information services for the acquisition, processing dissemination of information. Libraries and Information centers have been using ICT infrastructures and services to satisfy the diverse information need of their users. However, these infrastructures and services are not used fully. Under usation of these infrastructures and services has been a cause of concern to librarian world wide. The use of Information Communication Technology infrastructures has become increasingly important in self financing engineering college libraries. Self financing engineering college libraries are switching over to ICT infrastructures at an accelerated pace. E-Journals, CD-ROM databases, online data bases, e-books, web based infrastructures and a variety of other electronic resources are fast replacing the traditional resources of self financing engineering college libraries.

Review of Literature

N. Wijayasundara in his study , found that barriers in the application of Information Communication Technology and suggested techniques to overcome those barriers[1]. Chandrashekhra and Mulla studied the usage pattern of electronic information resources among the engineering research community especially in Karnataka. They found that the research community seemed to move towards a greater international

homogeneity. They have discussed why the developing countries like India was not fully using the benefit on-line electronic information resources[2].

Nagaraju, Ramesh and Vithal in their findings showed that in India most of the future library and information professionals would work in a digital or hybrid library environment[3]. Varadharajan in his study says that a series of training courses on digital libraries could provide a good balance of topics covering the technological, technical, management and social issues[4].

K. Haneefa conducted a study and came out that the services that has been used by the large percentage of users e-mail. The study adds that a good number of users are not satisfied with application of ICT in the libraries[5]. Rajput et al surveyed that a large number of users were dissatisfied with the infrastructure facilities available in IES, specifically in terms of hardware facilities[6].

Statement of the Problem

The present study aims at analysing the Information Communication Technology infrastructure facilities with reference to self-financing engineering college libraries in Tamil Nadu. This study traces out the status of electronic resources in terms of topology of library network, electronic access points, electronic database, e-journals and electronic resources in the libraries of engineering colleges. The electronic sources and such other infrastructure facilities and their extent of availability could be accessed.

Objectives

The following objectives are selected for the purpose of the present study:

1. To identify the libraries of self financing engineering college libraries in Tamil Nadu, which are adopting Information Communication Technology infrastructure facilities.

2. To assess the hardware and software facilities available in the self financing engineering college libraries

3. To assess how many information professionals are trained in handling Information Communication Technology

4. To assess the value and importance of library application software packages

5. To know the various computerized information services rendered by the libraries

6. To analyse the nature and topology of library network system structure and to compare the status of network environment in the libraries

7. To find out the total e-resource collection among the sample libraries

Methodology

The present study aims at analysing the use and availability of Information Communication Technology infrastructure facilities in self-financing engineering college (SFEC) libraries in Tamilnadu. In the year 2007 the Tamil Nadu government declared the list of the 224 self financing engineering colleges for the engineering admission purpose thorough Anna University, Chennai. Questionnaires were mailed to all the librarians of self financing engineering colleges. Out of 224, 140 librarians of the respected institutions responded which makes the response rate at 62.5%. The Anna University and Directorate of Technical Education has grouped the engineering colleges on the basis of location for the administration purpose. These are divided

into ten zones viz., Chennai – I, Chennai – II, Chennai – III, Chennai – IV, Vellore, Salem, Coimbatore, Trichy, Karaikudi and Tirunelveli.

Limitations

The findings of this study are applicable only to the self- financing engineering libraries of Tamil Nadu and they do not represent other institutions. Among the 224 Self-financing engineering college libraries in Tamil Nadu, only 140 Self-financing engineering college libraries have been taken for the study.

Profile of Tamil Nadu

Tamil Nadu State is situated at the southeastern extremity of the Indian Peninsula bounded on the north by Karnataka and Andhra Pradesh, on the east by Bay of Bengal, on the South by the Indian Ocean and on the West by Kerala State. There has been a rapid growth in the number of institutions imparting education at the college level. Today, there are 32 universities and in addition, there are four Anna University constituent colleges, six government engineering colleges, one Central government Institution (engineering), three government-aided engineering colleges, 224 self-finance engineering colleges, 135 polytechnics, 526 industrial institutes, 244 arts and science colleges, 27 Colleges of education , 15 oriental colleges, 5 physical education colleges and two schools of social work.

Analysis

Table 1 Status of Accreditation & ISO of SFE Colleges in Tamil Nadu

Sl.No	Zone	NBA	ISO	NBA ISO	Not have ISO& NBA	Total
1	Chennai – I	1 (11.11)	2 (22.22)	2 (22.22)	4 (44.45)	9
2	Chennai – II	1 (9.09)	1 (9.09)	3 (27.28)	6 (54.54)	11
3	Chennai – III	2 (18.18)	2 (18.18)	2 (18.18)	5 (45.46)	11
4	Chennai – IV	2 (11.11)	4 (22.22)	3 (16.67)	9 (50.00)	18
5	Vellore		2 (16.66)	2 (16.66)	8 (66.67)	12
6	Salem	4 (30.8)	3 (23.07)	1 (7.67)	5 (38.46)	13
		5	4	1	9	

#	Zone					Total
7	Coimbatore	(26.31)	(21.05)	(5.27)	(47.37)	19
8	Trichy	3 (20.00)	7 (46.66)	1 (6.67)	4 (26.67)	15
9	Karaikudi	2 (13.33)	3 (20.00)		10 (66.67)	15
10	Tirunelveli	4 (23.52)	6 (35.30)	1 (5.88)	6 (35.30)	17
	Total	24 (17.14)	34 (24.28)	16 (11.44)	66 (47.14)	140

Note*: NBA-National Board of Accreditation, ISO-International Standard Organisation*

Data presented in table-1 indicates the distribution of self financing engineering colleges according to their zone with the accreditation details. The institutions have got their accreditation either from ISO/NBA or both. It could be noted that out of140 colleges, 45.95 % of them have received their certification from ISO, 32.43 % of the colleges of different zones got their accreditation from NBA and 21.62% of the self financing engineering colleges have received the accreditation from both ISO and NBA. It is evident from the majority (45.95%) of the colleges got their certification from ISO.

Client/Workstations

Out of the 140 college libraries, 87.14 percent of them have client/ workstations in their libraries and the remaining 12.86 percent of the libraries do not have this facility .The zone wise analysis reveals the following facts. Majority of the institutions in Coimbatore (100%) Salem (92.31%) Chennai – I zone (88.89%), Karaikudi zone (86.67%) and Trichy zone (86.67%) have client / workstations facilities in the libraries.

Server

The availability of server facilities could be seen that more than 80 % of the colleges in each zone have got server facility in their libraries. In the Coimbatore zone all the institutions (i.e., 100%) possess sever in their libraries. Next in the order is the Salem zone which scores 92.31 percent. 88.89 percent of the libraries of the self financing engineering colleges in Chennai – I zone possess server facility in their libraries. It could be seen clearly from the above discussion that majority of institutions have IBM servers and 31.14% library network. In general institutions located in the cities have IBM and HCL servers.

CD-Rom server/ CD Tower

The 140 engineering colleges only 20 % of them possess CD Rom facility, but 90 institutions have CD-Tower in their respective institution libraries. All the zones have very less percentage of (20.0%) CD-Rom server facility in their libraries. Especially, in Vellore zone (8.33%) only one institution is CD-Rom facility. Majority of the institutions have (64.39%) CD Tower facilities.

Operating System

Out of the 140 engineering colleges, 42.14 percent of institutions have windows operating system in their libraries, 17.85 percent of them posses linux operating system in their libraries, 16.42 percent of them have sql server in their libraries, 7.85 percent of them have unix operating system in their libraries. The zone wise analysis reveals the following facts. Majority of the institutions are found in Coimbatore zone (68.42%), Karaikudi zone (66.67%), Chennai zone (44.44%), and Vellore zone (41.67%). The linux operating system the second novel operating system the third and unix operating system the last.

Library Application Software

The availability of library application software in the self financing engineering colleges could be noted that 24.28 percent of the college libraries have Autolib software and 22.85 percent of the college libraries have Libasoft software. Among the zone wise distribution of self financing engineering college libraries in Chennai II zone (45.45 percent) of the libraries use Autolib software. And also Chennai III (45.45%) zone college libraries also have 45 Libasoft software.
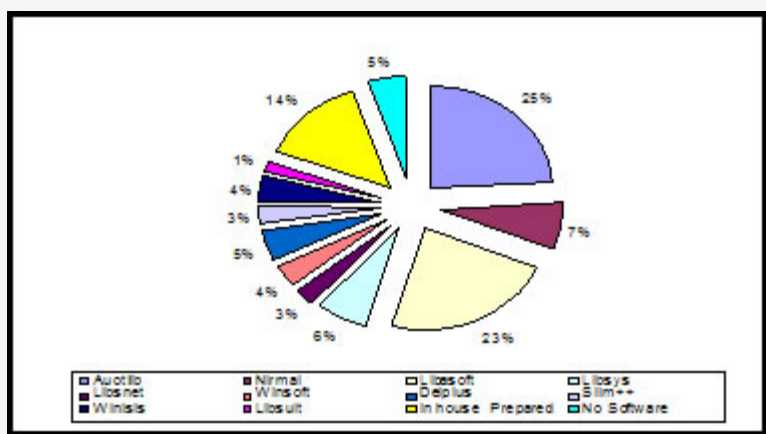

Figure 1 Library Application Software Used in SFEC Libraries in Tamil Nadu

Digital Library Software

Out of the 140 college libraries 72 (51.42%) libraries use digital library software. With regard to the rank position of the digital library software used in self financing engineering college libraries, the first place goes to Coimbatore zone (63.15%), second to Vellore (58.33%) third to Chennai –I zone (55.55%) and fourth to Salem (53.85%). It further presents the data relating the types of digital library software used in self financing engineering college libraries in Tamil Nadu. GSDL Dspace software has been used in more libraries and it takes the first position and the last position is given to ACADO and Fedora digital library software.

Database Software

The 30.39 percent of the institutions have Oracle database software, 36.28 percent of them have MS – Access data base software, 21.56 percent of them have SQL Server data base software and 11.76 percent of them have Sybase & FoxPro data base software in their libraries. The zone wise analysis reveals the following facts. Majority of the institutions in Chennai – I zone (44.44%), Chennai – II zone (22.22%), Chennai – III zone (22.22%) and Chennai – IV zone (21.42%) have Oracle data base software in their libraries. The MS – Access data base software has been in use in the libraries of Vellore zone (42.85%), Salem zone (57.14%), Coimbatore zone

(38.46%), Trichy zone (27.27%), Karaikudi zone (36.36%) and Tirunelveli zone (50%).It could be seen clearly from the above discussion that the presence of MS - Access data base software occupies the first position with respect to self financing engineering college libraries in Tamil Nadu, Oracle Data Base software the second, SQL server data base softwsare the third and Sybase & Foxpro Data Base Management System software the last.
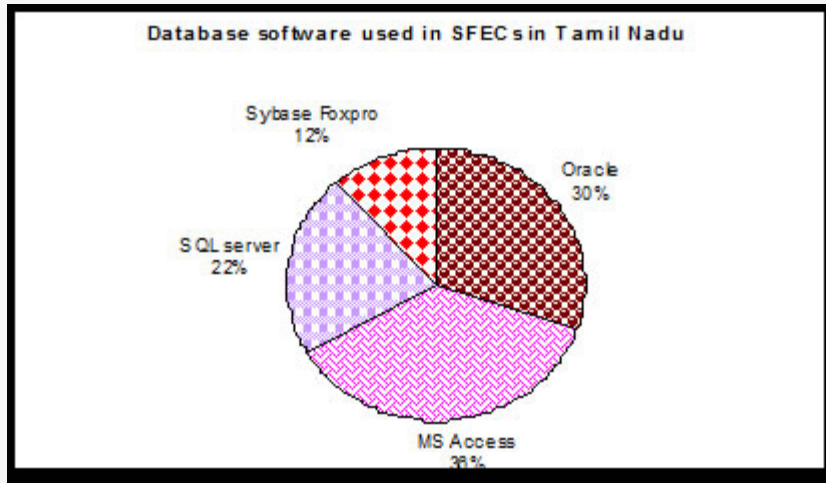

Figure 2 Database Software Used by SFEC Libraries in Tamil Nadu

DTP Software

The 85 libraries (60.70%) have DTP software. It is found that from the zone wise analysis shows the Vellore zone as the first (83.33%) Chennai IV as second (72.22%) and Salem zone (69.23%) the third the use of DTP software in their libraries. The Photoshop software used in Karaikudi zone (50%) and in Chennai –I and Chennai-III (40%). The Ventura DTP software (15.30%) is used in less number of libraries in Tamil Nadu.

CD Writer

95.71 percent of the engineering colleges possess CD writer and its facility in their library network and the rest of the institutions have no such facility. Though majority of the institutions in all zones have CD writer facilities in their engineering college libraries, the proportion of having such facility is 100% in Chennai – II zone, Chennai – III zone, Chennai – IV zone Salem zone and Trichy zone in relation to other selected institutions.

LCD Projectors

LCD projector in self financing engineering college libraries could be noted that out of the total 140 engineering colleges, 92.85 percent of them possess LCD projector facility in their library network and the rest of the institutions 7.15 percent have no such facility. Though majority of institutions in all zones have LCD projector facilities in their engineering college libraries, the proportion of having such facility is 100% percent in Vellore zone, Trichy zone and Karaikudi zone in relation to other selected institutions.This analysis confines to 105 institutions, which have LCD projector facilities. Out of the total 47 engineering colleges, 44.61 percent of them have only one LCD projector, 42 college have a maximum of 2 LCD projectors and the rest 30 colleges (23.07 percent) have more than 2 LCD projectors in their library network. The zone wise analysis reveals the following facts. It could be seen clearly from the above discussion that most of the self financing engineering colleges have LCD projector facilities.

Network and Type of Network

Out of the total 140 Engineering Colleges only 53 colleges have independent network and 47 colleges have part of network. 13.58 percent of them have Local Area Network, 42.86 percent of them posses Extranet 29.28 percent of them have WAN and 14.28 percent of them have wireless network in the in libraries. The zone wise analysis reveals the following facts. All the institutions have the maximum in Extranet facilities and also Chennai – III zone does not have wireless network.

Topology of Network

Topology of network in self financing engineering college libraries could be noted that out of the total 140 colleges, 40.00 percent of them have bus type of topology of network 24.59 percent of them possess ring type of topology of network and 35.71 percent of them have star type of topology of network in the in libraries. The zone wise analysis reveals the following facts. Half of the institutions in Chennai – I zone (44.45%), Chennai – II zone (45.45%), Chennai – III zone (36.37%), Chennai – IV zone (44.44%) and Vellore zone (41.67%), have bus type of topology of Network in the libraries. The ring type of topology of network is quite common in the self financing engineering college libraries of Chennai -III zone (45.45%), Coimbatore zone (36.84%), and Tirunelveli zone (23.53%). It could be seen clearly from the above discussion that the presence of bus type of topology of Network occupies the first position with respect to selected self financing engineering college libraries in Tamil Nadu, star type of topology of network the second and ring type of topology of network the last. In general, majority of the engineering colleges in Chennai – I zone, Chennai – II zone, Chennai – III zone, Chennai – IV zone, Vellore zone have bus type of topology of network.

Internet Facility

In Chennai – I zone all the libraries have internet connection. Among the ten libraries in Chennai – II, Chennai- III and Vellore zones the library in each zone does not have the internet facility. Out of the 16 libraries in Chennai –IV zone, 2 libraries do not have internet connection. Similarly, in the other zones also, a minimum number of libraries do not have internet connection. With respect to the number nodes available, 57 (44.88%) libraries have upto 10 nodes, 26 (20.47%) libraries have 10 to 20 nodes, 20 (15.57%) libraries have more than 20 but below 30 nodes in their libraries.It also shows the different types of browsers, like Netscape, Internet explorer, Mosaic, Linux, opera and Neoplanet used in the libraries. Internet explorer and Netscape are used in all the libraries of the ten zones. When compared to the others, 48 (37.85%) of the libraries use Internet explorer and 28 (22.04) of the libraries use Netscape navigator. Linux, Opera, Mosaic and Neoplanet are in the decreasing order of percentage.

Internet Connection

Out of the 140 colleges, only 13 (9.29%) colleges do not have internet facility. With respect to the internet connection, 48 (37.85%) libraries have BSNL connection, the second in the order is Satyam with a score of 28 (22.04%) libraries. The others namely VSNL, Reliance and Aircel are in the decreasing order of percentage.The types of internet connections are categorized into four groups, viz., Leased line, Dial up, ISDN and VSAT. Ordinary dial up type of connection is in more number of libraries i.e., 57 (44.88%), leased line in 26 (20.47%) libraries, VSAT in 24 (18.90%) libraries and ISDN in 20 (15.75%) libraries in all the ten zones.

E-Sources

The E-Sources available at the self financing engineering college libraries in Tamil

Nadu could be noted that out of the 140 libraries, only 29 (20.71%) institution libraries have access to international e-journals and 28(20.0%) libraries have access to Indian e-journals. 47.37% libraries belonging to Coimbatore zone dominate with respect to the subscription of both international and Indian e-journals. The last score belongs to the libraries in Vellore zone. That is out of 12 libraries in Vellore zone only one library has the on-line access for only one international journal and Indian e-journal. Out of 140 sample institutions, 67(47.86%) libraries have the on-line database. Again the libraries of Coimbatore zone dominate in the on-line database when compared to the libraries of other zones. The availability of CD-ROM database is also noted that only 50 (35.71%) libraries out of the 140 libraries have CD ROM data base. More than half of the institution library i.e., 64.39 percent does not have the CD ROM data base.
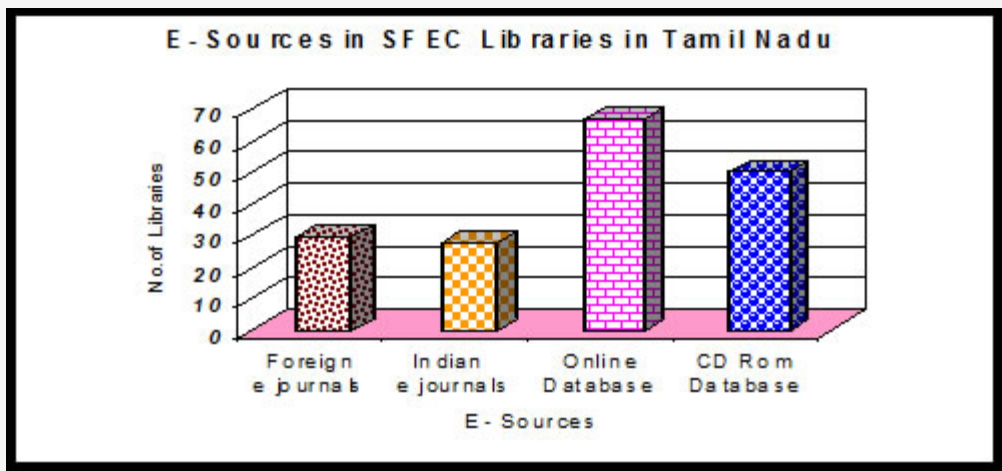

Figure 3 Availability of E-Sources at SFEC Libraries in Tamil Nadu

Bibliographic Databases & E-journals

Among the bibliographical data bases subscribed by the 140 self financing engineering college libraries, 69(49.29%) libraries subscribe to ASCE, 66(47.14%) libraries subscribe to ACM and 65(46.43%) libraries subscribe to IEEE. The other data bases listed like Inspec, Compendex, Chem.Engg., Elsevier are in the deceasing order of percentage.It is observed that out of the 140 institution libraries 65(46.43%) libraries subscribe to IEEE E-journals and the rest of them do not have IEEE e-journals. It is observed that out of the 140 institutions 28.57 percent of them have Compendex bibliographic database but the rest of them does not have Compendex bibliographic database. In general majority of institutions in Chennai – III (90.91%) and Chennai – I zone (64.67%) have Compendex bibliographic database.

Out of the 140 institutions, 20.71 percent of them have Chemical Engineering bibliographic database and the rest of them does not have Chemical Engineering bibliographic database. It reveals that out of the 140 institutions, 37.86 percent of them have ASME e-journals but the rest of them do not have ASME e-journal. In general, majority of the institutions in Chennai – I zone (44.44%), Chennai – II zone (63.64%), Chennai – III zone (27.27%) and Chennai – IV zone (50%) have ASME. It is noted that out of the 140 institution libraries, 37.86 percent of them have ASME and the rest of them do not have ASME.A keen observation reveals that out of the 140 institution libraries 49.29 percent of them have ASCE e-journals and the rest of them have no ASCE e-journals. In general majority of institutions in Chennai – III zone (54.55%) have ASCE e-journals.

Library Network Services

The 62.14 percent of them have Delnet service and the rest 37.86 percent of them have no such facility. Most of the institutions in Chennai – II zone (63.64%), Chennai – III zone (90.91%), Salem zone (92.31), Trichy zone (92.316%) and Karaikudi zone

(82.35%) have DELNET facility in their library network. Out of the 140 institutions, 23.57 percent of them have ERnet service and the rest 76.43 percent of them have no such facility. Majority of the institutions in Chennai-III zone (63.64%), and Chennai IV (38.89%) have the ERNET connection but the Vellore zone (91.67%) has no ERNET service. Out of the 140 institutions, only 33.57 percent of them have INFLIBnet service and only 17.14 percent of them have NICnet facility.

Library Services

From the zone wise distribution it could be noted that all the services listed are offered only in Chennai I zone and in the libraries of Tirunelveli zone. Other than the routine services, the translation service is being offered only in 8(5.71% libraries. Out of the 140 libraries, the internet service is in 68 (48.57%) libraries. Data base service in 102 (72.86%), On-line services in 37 (25.&1%) libraries. No library in Chennai IV zone offe OPAC service.

Electronic Access Points

Majority of the institutions in Vellore zone (91.67%) Chennai – IV zone (88.89%), Trichy and Karaikudi zone (86.67%), Tirunelveli zone (82.37%) Chennai – II & III zones (81.82%), Chennai – IV zones (57.14),and Salem zone (69.23%) have OPAC access point in their libraries.

Out of the 140 engineering college libraries, 35.71 percent of them have WEBOPAC in their libraries and 64.39 percent of them have to develop WEBOPAC in their libraries. More than 40 percent of the libraries which belong to Chennai III zone (54.55%), Chennai I zone (44.44%) and Karaikudi zone (40.00%) have WEBOPAC facility in their libraries when compared to the other seven zones.

Website

The web based services of the self financing engineering college libraries Tamil Nadu could be noted that as per the zone wise distribution, out of the 140 institution libraries, only 115 (82.14%) libraries have their own web site. A minimum number of 6 (17.86%) institution libraries alone do not have their own website. The availability of WEBOPAC is found only in 50 (35.71%) libraries and 64.39% of the libraries do not have WEBOPAC.

Findings

The findings of the study lead to the following concluding remarks.In the findings of the status of accreditation of the colleges, out of the 140 sample institutions, more than half of the colleges have been accredited by the ISO and NBA. From the result of the findings of the study it could be noted that 87.14 % of the libraries have client and work station facility. Among them the IBM , HP and Intel dominate.Most of the libraries do not have CD ROM servers in their libraries but majority of the libraries have CD Tower facility in their respective environment.

The presence of Windows operating system occupies the first position with respect to selected self financing engineering college libraries in Tamil Nadu, Linux operating system the second, Novel Nt the third and Sun solar operating system the last. In general, majority of the engineering college libraries have Windows operating system in their libraries. The findings of the study reveal that among the self financing engineering college libraries in Tamil Nadu, 95 per cent of the colleges use the library application software in their libraries. In the case of different commercial library software the Autolib takes the first position and Libasoft the second and In house prepared software the third position in the use of the library application software.

The findings of the digital library software used in the self financing engineering college libraries in Tamil Nadu reveal that more than half of the libraries use digital library software. The GSDLD Space software is used by most of the libraries and the use of Greenstaone software is in the second position. The presence of MS Access data base software occupies the first position with respect to the selected engineering college libraries, the Oracle data base software the second, SQL Server the third and Sybase & Foxpro the last. Majority of the institutions in Vellore zone, Salem zone, Coimbatore zone, Trichy zone Karaikudi zone and Chennai I zone have MS Access data base software in their libraries.

Presently, the Photoshop has been used in more number of libraries, Adobe takes the second position. But a minimum number of libraries use the Ventura software. Majority of the libraries have CD writer facilities and they have 2 to 5 CD writers in their libraries. All the libraries of Chennai region, Salem zone and Trichy zone have CD writer facilities. All the libraries of Vellore,, Trichy and Karaikudi zones have LCD projector facility in their respective libraries. Majority of the libraries have only one LCD projector and some of the libraries have two LCD Projectors in their libraries

The presence of bus topology network occupies the first position with respect to the selected self financing engineering college libraries in Tamil Nadu, star type topology of network the second and ring type topology network the last. In general, majority of the engineering colleges in Chennai I zone ,Chennai II zone, Chennai III zone, Salem zone, Karaikudi zone and Coimbatore zone have bus type topology of network. Majority of the libraries have internet facility and only a very few libraries do not have internet facility. The zone wise analysis reveals that all libraries of Chennai I zone,Trichy zone and Karaikudi zone have internet facility. Majority of libraries have upto 10 nodes and very less number of libraries have more than thirty nodes in their libraries.

BSNL connection takes the first position, Satyam the second and ERNET the last. Majority of libraries use ordinary dial up connection and leased line is in the second position. Majority of the libraries from Coimbatore zone, Trich zone , Karaikudi zone and Thirunelveli zone have BSNL internet connection. The result of the internet usage for library operation in the self financing engineering college libraries in Tamil Nadu reveals that most of the libraries use for library cataloging and circulation services. More than half of the libraries use internet for bibliography, SDI and CAS services to the users.

The less number of libraries subscribe to foreign and Indian e-journals. A few libraries have online database and CD ROM collection. Majority of the institution libraries have less number of Inspec Compendex and chemical Engineering databases.

The possession of DELNET occupies the first position, INFLIBNET the second, ERNET the third, INDONET the fourth, and NICNET the last. In general, majority of the institutions have DELNET and INFLIBNET. All the libraries provide circulation, reference services to the users, but less number of libraries provides the CAS, SDI and referral services to the users. 91(65.0%) libraries are the members of AICTE INDEST consortium which provides e-journals facility to the users. But very few libraries provide book exhibition services to the users. Majority of the institution libraries have OPAC. Contrastingly they are in the process of developing WEBOPAC, subject gateways and websites.

Conclusion

The information communication technology is a highly important one not for profit, but for individual academic institution to develop and promote technical improvement. The lack of adequate finance is the main reason for not developing information communication technology infrastructure especially in the case of libraries, those that do not receive financial aid from UGC of India or others like AICTE. The problem can be solved only through the aid from the state government or AICTE. In the view of

the findings it can be concluded that establishment of information communication technology infrastructure facilities in the self financing college libraries in Tamil Nadu can improve the efficiency of information support, the information retrieval and quality of education as a whole.

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