



AN ASSESSMENT OF ICT INFRASTRUCTURES IN MINORITY INSTITUTIONS LIBRARY IN TAMIL NADU

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Abstract- The role of engineering colleges in the technical manpower development is quite significant. They need rapid Information Communication Technology infrastructure and in this context, there is a need for adequate development of information communication technology infrastructures. This study reveals the information Communication Technology infrastructures in the self financing engineering college (SFEC) libraries in Tamil Nadu.

Keywords- ICT Infrastructures, Self financing Engineering Colleges, Resources

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Introduction

The growth and development of ICT is one of the most significant achievements of the academic libraries. Academic libraries have been facing the challenges of various external forces like explosion of information and knowledge, developments in ICT and resource crunch. The resource crunch is due to various factors and the solution meets the situation lies in resources generation and its proper use is absolutely essential in the academic libraries. The application of computer and telecommunication technology has greatly influenced the teaching and research community to get access to information irrespective of space and cost factors. The networking of libraries has dramatically changed the old concept of libraries in new information storage and retrieval mechanism has now become very faster, easier and specifically the computer to manual card system. The application of computer and networking technologies has improved the efficiency of library services. Information communication technology is not only highly important for profit, but for individual academic institution to develop and promote technological improvement. Hence the call of the day is to care and share not only information sources, but also the infrastructure facilities and skilled manpower resources among the libraries.

Review of Literature

Parameshwar and Patils (2009) paper highlights a large portion of user population in the university are aware about the internet, but they do not know all its techniques and applications. Further, a few users of the university still have no knowledge about the internet and related applications. For this purpose, there is need for effective user education, to develop awareness and knowledge of the users. More efforts by librarian at Gulbarga University are needed to educate users to effectively use the internet and its techniques and applications. Umesh Kumar Agarwal and Rajesh Kumar Dave (2009) have attempts to assess the frequency of use, location where used; search engine accessed; purpose of use, etc. The study revealed that the respondents accessed Google search frequently (100%) followed by Yahoo (85.29%). It is also observed that equally (97.06%) respondents use the internet for education and research. The strong desire of respondents is that the library initiate various functions and services like e-portals, on-line information, abstracts retrieval along with internet. Govinda raju (2010) found by his survey that the use of electronic resources is found to be significant among the users of the Andhra University. This is quite natural and expected in the present day implementation environment. Some of the resources such as

e-book, e-encyclopedias, e-dictionaries are less used. He also felt that to further maximize use of the e-resources, wide publicity and imparting trainings were found to be necessary. Kattimani and Kamble (2010) made a study on awareness of Internet and online information resources. His study is confined only to the Honey well library, Bangalore. Data collected from the administrative staff, supportive staff and software engineers. The response rate is 80%. The study revealed that about 80.2% of the library users have quality awareness on Internet information resources. Rai, Namrata (2011) discussed the progress of library management software and to trace out the characteristics and trends of software with special reference to packages that provide either web interface for some of their modules or total web-based solutions for all management modules. The paper also seeks to compare services and facilities and technologies incorporated in library automation packages. Breeding, Marshall (2011) looked at the development of library technology, focusing on library automation, integrated library systems (ILS), and the use of open source software. Additional topics discussed include the competition between supports of ILS and proprietary library services vendors, the decreases in library finance, and litigation between library service companies over the violation of antitrust laws

Statement of The Problem

Aim of this study is to identify Information Communication Technology infrastructure facilities and their extent of availability could be accessed 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, server, operating systems, electronic access points, server facilities, client server, automation software packages, electronic database, e-journals and electronic resources in the libraries of engineering colleges.

Objectives

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

1. To assess the hardware and software facilities available in the libraries
2. To assess the library application software packages and databases
3. To find out the various digital library software used by the libraries
4. To analyses the nature and topology of library network system
5. To find out the total E-resource collection among libraries

Methodology

There are 224 self financing engineering colleges are selected for this study in Tamil Nadu, Out of 224, 140 librarians of the respected institutions responded which makes the response rate at 62.5%. The self financing engineering colleges in Tamil Nadu are classified under three categories by the government, such as non-minority institutions, religious minority institutions and linguistic minority institutions. The non minority institutions denote the institutions which have non-minority status. The Religious minority indicates the institutions which were categorized as religious minority institutions by the Tamil Nadu state government and it includes Christian and Muslim minorities. The Linguistic Minority Institutions refers to the institutions which were categorized as

linguistic minority by the Tamil Nadu state government based on the language such as Telugu, Malayalam, etc.

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.

Analysis

Table 1- District wise Distribution of SFE Colleges Based on the Status of Minority

| Sr. No. | District | No. of Colleges | | | Sample Institution | | | Total |
|---------|-----------------|-----------------|--------------------|---------------------|--------------------|--------------------|---------------------|-------|
| | | Non Minority | Religious Minority | Linguistic Minority | Non Minority | Religious Minority | Linguistic Minority | |
| 1 | Chennai | 1 | 1 | | 1 | | | 1 |
| 2 | Dindigul | 3 | 1 | 1 | 1 | | 1 | 2 |
| 3 | Erode | 8 | | | 5 | | | 5 |
| 4 | Kancheepuram | 28 | 13 | 9 | 19 | 6 | 5 | 30 |
| 5 | Kanyakumari | 5 | 3 | 1 | 3 | 2 | | 5 |
| 6 | Karur | 2 | | | 1 | | | 1 |
| 7 | Madurai | 4 | | | 1 | | | 1 |
| 8 | Nagapattinam | 2 | | | 1 | | | 1 |
| 9 | Namakkal | 9 | 1 | | 5 | 1 | | 6 |
| 10 | Perambalur | 2 | | | 2 | | | 2 |
| 11 | Pudukottai | 4 | | 2 | 3 | | 1 | 4 |
| 12 | Ramanathapuram | 1 | 1 | | 1 | 1 | | 2 |
| 13 | Salem | 2 | | | 2 | | | 2 |
| 14 | Sivagangai | 4 | 1 | 2 | 2 | 1 | 1 | 4 |
| 15 | Thanjavur | 3 | | | 3 | | | 3 |
| 16 | The Nilgris | | 1 | | | 1 | | 1 |
| 17 | Theni | 2 | | | 2 | | | 2 |
| 18 | Thirunelveli | 6 | 5 | | 3 | 3 | | 6 |
| 19 | Thiruvallur | 6 | 3 | 18 | 2 | 1 | 9 | 12 |
| 20 | Thiruvannamalai | 2 | 1 | 3 | 2 | | 2 | 4 |
| 21 | Thiruvarur | 2 | | | 2 | | | 2 |
| 22 | Trichy | 8 | 2 | 1 | 4 | 1 | 1 | 6 |
| 23 | Tuticorin | 3 | 2 | | 1 | 1 | | 2 |
| 24 | Vellore | 8 | 1 | 1 | 6 | 1 | | 7 |
| 25 | Villupuram | 4 | 2 | | 4 | 2 | | 6 |
| 26 | Virudhunagar | 5 | | 1 | 5 | | | 5 |
| 27 | Coimbatore | 15 | | | 12 | | | 12 |
| 28 | Cuddalore | 2 | | 1 | 2 | | 1 | 3 |
| 29 | Dharmapuri | 2 | | 3 | 2 | | 1 | 3 |
| | Total | 143 | 38 | 43 | 97 | 21 | 22 | 140 |

The data in table -1 indicates the distribution of the number of the self financing engineering colleges in Tamil Nadu and the sample institution selected for this study. Tamil Nadu has 224 engineering colleges and among them 140 institutions have been selected as sample. Out of 224 self financing engineering colleges in Tamil Nadu, 143 institutions belong to non-minority status; 38 institutions belong to religious minority and 43 institutions belong to linguistic minority.

The sample institutions are selected from all the 29 districts of Tamil Nadu. The table also shows the distribution of engineering colleges based on the three minority status categories. Among the 143 non minority status self financing engineering colleges, 97

colleges are included in the sample; out of 38 religious minority status institutes, 21 colleges are considered in this study and out of 43 linguistic minority status institutions, 22 colleges are considered as sample in this work.

Table 2- Year of Establishment of SFE Colleges in Tamil Nadu

| Nature of Institution | 1981-85 | 1986-90 | 1991-95 | 1996-2000 | After 2001 | Total |
|-----------------------|--------------|-------------|---------------|---------------|---------------|----------------|
| Non-Minority | 9 (9.28) | 4 (4.12) | 17 (17.5) | 30 (31.05) | 37 (38.1) | 97 (100.00) |
| Religious Minority | 4 (19.04) | | 3 (14.3) | 10 (47.62) | 4 (19.04) | 21 (100.00) |
| Linguistic Minority | | 1 (4.54) | 3 (13.63) | 7 (31.8) | 11 (50.00) | 22 (100.00) |
| Total | 13 (9.29) | 5 (3.57) | 23 (16.43) | 47 (33.57) | 52 (37.14) | 140 |

(Figures in parentheses denote percentage)

Table - 2 shows the year of establishment of various self financing engineering colleges in Tamil Nadu with the status of minority. In total there are 97 non minority status, 21 religious minority and 22 linguistic minority status self financing engineering colleges in Tamil Nadu. Among the 97 non minority status colleges, 38.10% of the institutions have been established after 2001. Out of the 21 religious minority institutions, 47.62% of the institutions were started during the year 1996-2000 and 4 institutions after the year 2001. Out of the 22 linguistic minority institutions 50% of the institutions have been established after 2001. It is also evident from the discussion that more than 70% of the institutions were established after the year of 1996.

Table 3- Status of Accreditation of SFE Colleges in Tamil Nadu

| Sl. No | Status | Non-Minority | Religious Minority | Linguistic Minority | Total |
|--------|-----------|---------------|--------------------|---------------------|---------------|
| 1 | NBA | 17 (39.53) | 5 (33.33) | 2 (12.50) | 24 (32.43) |
| 2 | ISO | 20 (46.51) | 6 (40.00) | 8 (50.00) | 34 (45.95) |
| 3 | NBA & ISO | 6 (13.96) | 4 (26.67) | 6 (37.50) | 16 (21.6) |
| | Total | 43 (58.1) | 15 (20.3) | 16 (21.62) | 74 (100) |

(Figures in parentheses denote percentage)

The data presented in table-3 shows that 58.1 percent of non minority status self financing institutions of Tamil Nadu have got the accreditation from ISO/NBA or from both. 21.6 percent of linguistic minority status based self financing engineering colleges have acquired the accreditation either from ISO/NBA or from both, where as 20 percent of the religious minority status colleges have got the accreditation from ISO/NBA or from both.

Client/Workstations facilities at SFEC Libraries in Tamil Nadu

The client / work stations facilities based on status wise of self financing engineering college libraries in Tamil Nadu. It could be noted that non minority institution libraries have 90.72 percent client / work stations facilities in their library, and also IBM has the first position (28.41%) in the non minority college libraries. The religious minority college libraries have HP, Intel and HCL (17.64%) client / work stations.

Table 4- Server Facility in SFEC Libraries in Tamil Nadu

| Status | Yes | No | IBM | SUN | HP | Apple | HCL | Intel | Total |
|---------------------|----------------|---------------|---------------|--------------|---------------|--------------|---------------|---------------|-------|
| Non-Minority | 88 (90.72) | 9 (9.28) | 30 (34.09) | 4 (4.55) | 17 (19.32) | 7 (7.95) | 21 (23.86) | 9 (10.23) | 97 |
| Religious Minority | 17 (88.95) | 4 (11.05) | 5 (29.41) | 3 (17.65) | 1 (5.88) | 1 (5.88) | 3 (17.65) | 4 (23.53) | 21 |
| Linguistic Minority | 17 (77.27) | 5 (22.73) | 3 (17.65) | 2 (11.76) | 4 (23.53) | 2 (11.76) | 2 (11.76) | 4 (23.53) | 22 |
| Total | 122 (87.14) | 18 (12.86) | 38 (31.14) | 9 (7.38) | 22 (18.03) | 10 (8.2) | 26 (21.3) | 17 (13.93) | 140 |

(Figures in parentheses denote percentage)

Table - 4 indicates the server facility available in the self financing engineering college libraries being grouped according to the status of minority. 90.72 percent of the non minority status college libraries have server facility, 88.95 percent of the religious minority status college libraries have the server facility in their libraries and thirdly 77.27 percent of the linguistic minority status self financing engineering colleges libraries have the server facility in their libraries.

Chi-square Summary Result

| | |
|-----------------------------|-------|
| Chi square calculated value | 11.44 |
| Degrees of freedom | 10 |
| Chi square table value 5% | 18.3 |

Chi-square test is applied for further discussion. The computed Chi-square value is 11.44 which is less than its tabulated value at 5 percent level of significance. Hence the difference among the institutions is statistically identified as insignificant with respect to the server facility

The number of servers and clients available in the libraries of self financing engineering colleges in Tamil Nadu are categorized according to minority status and presented in table - 5. The table depicts that out of the 140 self financing engineering college libraries in Tamil Nadu, 90.72 percent of the non minority status college libraries possess high number of servers and clients which range from 2 to 8 servers and less than 5 to more than 25 clients respectively. Second in the order is 88.95 percent of the religious minority status college libraries which have their server and client facility and thirdly 77.27 percent of the linguistic minority college libraries have the server and client facility ranging from 2 to 8 servers and less than 5 to more than 25 clients respectively.

Chi-square Summary Result

| | |
|-----------------------------|-------|
| Chi square calculated value | 17.76 |
| Degrees of freedom | 14 |
| Chi square table value 5% | 23.7 |

Chi-square test is applied for further discussion. The computed Chi-square value is 17.76 which is lesser than its tabulated value at 5 percent level of significance. Hence the difference among the institutions is statistically identified as insignificant with respect to server and client facility.

Table - 6 presents data on the status wise distribution of engineering colleges possessing CD-ROM server and CD Tower facilities in their libraries. It could be noted that 16.5% non minority institutions have 18.66% CD-ROM server and 70.10 percent CD Tower facilities and 28.57% the religious minority institutions possess CD-ROM Server while 47.62 percent have CD Tower facilities in their

libraries. 18.19% linguistic minority institutions have in CD-ROM server and 55.55 percent CD Tower facilities in their library network.

Table 6- Availability of CD-ROM server/ CD Tower in SFEC Libraries in Tamil Nadu

| Status | CD-ROM server | | CD Tower | | Total |
|---------------------|---------------|----------------|---------------|---------------|-------|
| | Yes | No | Yes | No | |
| Non-Minority | 18 (18.66) | 79 (81.44) | 68 (70.10) | 29 (29.90) | 97 |
| Religious Minority | 6 (28.57) | 15 (71.43) | 10 (47.62) | 11 (52.38) | 70 |
| Linguistic Minority | 4 (18.19) | 18 (81.81) | 12 (55.55) | 10 (45.45) | 52 |
| Total | 28 (20.00) | 112 (80.00) | 90 (64.39) | 50 (35.71) | 140 |

(Figures in parentheses denote percentage)

Analysis of number of CD drive facilities in the selected colleges reveals the following facts. It could be noted that more than two-thirds of non minority institution libraries have CD-ROM server. In general, non minority institutions (70.10%) and religious minority institutions (47.62%) have CD Tower facilities in their library network.

Table 7- Operating System used in the SFEC Libraries in Tamil Nadu

| Status | Windows | Linux | Novel Nt | Sun Solar | Unix | Total |
|---------------------|---------------|---------------|---------------|---------------|--------------|-------|
| Non-Minority | 43 (44.32) | 16 (16.49) | 17 (17.52) | 15 (15.46) | 6 (6.18) | 97 |
| Religious Minority | 6 (28.57) | 7 (33.33) | 3 (14.28) | 2 (9.52) | 3 (14.28) | 21 |
| Linguistic Minority | 10 (45.45) | 2 (9.09) | 3 (13.63) | 5 (22.72) | 2 (9.09) | 22 |
| Total | 59 (42.14) | 25 (17.85) | 23 (16.42) | 22 (15.71) | 11 (7.85) | 140 |

(Figures in parentheses denote percentage)

A study of data in table-7 indicates the use of operating system based in status in self financing engineering college libraries. It could be noted that 44.32 percent of the non minority institutions have Windows network operating system. 33.33% of religious minority institution have of Linux operating system in their libraries. It could be seen clearly from the above discussion that non minority institutions mainly possess Windows operating system.

Chi-square Summary Result

| | |
|-----------------------------|-------|
| Chi square calculated value | 7.880 |
| Degrees of freedom | 8 |
| Chi square table value 5% | 15.5 |

Chi-square test is applied for further discussion. The computed Chi-square value is 7.88 which is less than its tabulated value at 5 percent level of significance. Hence, the difference among the institution is statistically identified as insignificant with respect to library operating system facility.

A study of data in table 8 indicates the status wise availability of library automation software facilities in the self financing engineering colleges in Tamil Nadu. Out of 97 non-minority institute libraries 22 institutions (22.68) are using the Libasoft But 7 (7.21) institutes are not using the automation software in their libraries. It

could be noted that 40.90 percent of the religious minority status college libraries have Autolib software 27.7 percent of the linguistic minority status college libraries have Libasoft and Autolib software. It could be seen clearly from the above discussion that the non minority institutions have mainly Libasoft library software and others have it in low proportion.

ANOVA Summary Result

| Source of Variation | ANOVA | | | | | |
|---------------------|----------|----|----------|----------|----------|----------|
| | SS | df | MS | F | P-value | F crit |
| Rows | 316.7222 | 2 | 158.3611 | 22.63118 | 4.58E-06 | 3.443361 |
| Columns | 440.8889 | 10 | 40.08081 | 5.727896 | 0.000258 | 2.258517 |
| Error | 153.9444 | 20 | 6.997475 | | | |
| Total | 911.5556 | 35 | | | | |

Anova two way model is applied for further discussion. At one point the computed anova value is 22.63 which is greater than its tabulated value at 5 percent level of significance. Hence variation with respect to library application software used in the libraries is statistically identified as not significant. At another point, the computed anova value is 5.27 which is greater than its tabulated value at 5 percent level of significance. Hence, it is found that the variation in the library application software in the libraries of self financing engineering colleges in Tamil Nadu is significant. A similar result has been observed with respect to duration of library application software in the library network of the selected self financing engineering colleges.

Table 9- Data Base Software Used by the SFEC Libraries in Tamil Nadu

| Status | Oracle | MS Access | SQL | My SQL | No | Total |
|---------------------|---------------|---------------|---------------|---------------|-------------|-------|
| Non-Minority | 31 (31.96) | 29 (29.90) | 25 (25.78) | 7 (7.21) | 5 (5.15) | 97 |
| Religious Minority | 7 (33.33) | 5 (23.81) | 3 (14.29) | 5 (23.81) | 1 (4.76) | 21 |
| Linguistic Minority | 10 (45.45) | 2 (9.09) | 3 (13.63) | 5 (22.72) | 2 (9.09) | 22 |
| Total | 59 (42.14) | 38 (27.14) | 33 (23.57) | 15 (10.71) | 7 (5.00) | 140 |

(Figures in parentheses denote percentage)

A study of data in table 9 indicates the status wise database software use pattern in the self financing engineering college libraries in Tamil Nadu. It could be noted that majority of the non minority institutions (29.33%) and religious minority institutions (28.57%) have Oracle database software in their libraries. Linguistic minority institutions (38.46%) have Oracle and Sybase Database software in their libraries.

Chi-square Summary Result

| | |
|-----------------------------|-------|
| Chi square calculated value | 15.63 |
| Degrees of freedom | 8 |
| Chi square table value 5% | 40.1 |

Chi-square test is applied for further discussion. The computed Chi-square value is 15.63 which is less than its tabulated value at 5 percent level of significance. Hence the difference among the institution status is statistically identified as significant with respect to database software facility.

Table 10- Availability of Digital Library Software Used SFEC Libraries

| Status of Minority | Yes | Percentage | No | Percentage | Total |
|---------------------|-----|------------|----|------------|-------|
| Non- Minority | 43 | 44.32 | 54 | 55.68 | 97 |
| Religious Minority | 15 | 71.42 | 6 | 28.58 | 21 |
| Linguistic Minority | 14 | 63.63 | 8 | 36.37 | 22 |
| Total | 72 | 51.42 | 68 | 48.57 | 140 |

Table 4 shows the status wise distribution of digital library used in the self financing engineering college libraries in Tamil Nadu. Out of 97 non-minority status institutions only 43 institutions has the digital library software in their libraries. Out of the 21 religious minority institutions, 15 (71.42%) college libraries are using the digital library and out of the 22 linguistic minority institutions, 14 (63.63%) college libraries are using the digital library.

Table 11- Type of Digital Library Software used the SFEC Libraries Tamil Nadu

| Status of Minority | E-Print | Green stone | Dspace | Fedora | ACADO | Total |
|---------------------|---------------|---------------|---------------|---------------|--------------|-------|
| Non-Minority | 9 (20.93) | 8 (18.60) | 16 (37.20) | 6 (13.95) | 4 (9.30) | 43 |
| Religious Minority | 3 (20.00) | 6 (40.00) | 3 (20.00) | 2 (13.13) | 1 (6.67) | 15 |
| Linguistic Minority | 2 (14.28) | 4 (28.58) | 2 (14.28) | 3 (21.42) | 3 (21.42) | 14 |
| Total | 14 (19.44) | 18 (25.00) | 21 (29.16) | 11 (15.27) | 8 (11.11) | 72 |

(Figures in parenthesis denote percentage)

The table 11 shows the status wise distribution of digital library software used in the self financing engineering college libraries in Tamil Nadu. Out of the 43 non minority institutions 16 libraries are using DSpace, but only four libraries are using ACADO. Among the linguistic minority institution 28.58 percent are using GSDL. In the case of linguistic minority institutions Green Stone digital library software ranked the first position and E-Print and DSpace ranked last position. So, all the libraries are using free open source software but never using in-house and commercial digital library software.

ANOVA Summary Result

| Source of Variation | ANOVA | | | | | |
|---------------------|-------|----|------|----------|----------|----------|
| | SS | df | MS | F | P-value | F crit |
| Rows | 108.4 | 2 | 54.2 | 6.81761 | 0.018695 | 4.458968 |
| Columns | 36.4 | 4 | 9.1 | 1.144654 | 0.401843 | 3.837854 |
| Error | 63.6 | 8 | 7.95 | | | |
| Total | 208.4 | 14 | | | | |

The ANOVA two way model is applied for type of digital library software used in the self financing engineering college libraries in Tamil Nadu. At one point the computed anova value is 6.81 which is greater than its tabulated value at 5 percent level of significance. Hence the variables with respect to digital library used in the libraries are statistically identified as significant. In another point the computed ANOVA value is 1.14 which less than its tabulated value at 5 percent level of significance. Hence the variation in institution status wise is statistically identified insignificant as with respect to digital library used in the libraries of the selected engineering college libraries.

Chi-square Summary Result

| | |
|-----------------------------|-------|
| Chi square Calculated value | 6.984 |
| Degrees of freedom | 8 |
| Chi square table value 5% | 15.5 |

The Chi-square test is applied for type of digital library software used in the self financing engineering college libraries in Tamil Nadu. The computed Chi-square value is 6.984 which less than its tabulated value at 5 percent level of significance. Hence the difference among the institution status wise is statistically identified as insignificant with respect to digital library software facility.

From table 12 it could be noted the internet facility available among libraries of self financing engineering colleges in Tamil Nadu. Based on the duration of the institutions, all the long duration institution libraries possess the internet facility. Only 5 (7.14%) libraries of medium duration libraries and 8 (15.38%) of the libraries of the short duration institution do not have the internet facility. The available nodes and browsers used are also listed in the table. Internet explorer scores 37.85 percent and Netscape navigator scores 22.04 percent. The other browsers are in the ascending percentage.

The data presented in table 63 shows the availability of internet facility categorized on the basis of status minority of self financing engineering college libraries in Tamil Nadu. Out of the 97 non minority institutions, only 6 (6.12%) libraries do not have internet facility. But the religious minority 14.28% and linguistic minority 18.18% libraries do not have internet facility.

The table also discusses the number of nodes and browsers of the internet facility in the libraries of self financing engineering colleges in Tamil Nadu. 16.48% of non minority college libraries have the more than 30 nodes in their libraries. The internet explorer is used in non minority institutions 41.76%, religious minority libraries 33.33% and linguistic minority college libraries 22.22%. The Opera and Neoplant browsers are in less percentage in the college libraries.

Internet Connection

The availability of internet connection and the type of connection available among the self financing engineering college libraries in Tamil Nadu based on the minority status are listed in table 66. Out of the 140 institutions, only 13 (9.29%) libraries do not have the internet facility. Out of these 13 libraries, 4 (18.18%) are from linguistic minority institutions and 3 (14.28%) are libraries of religious minority institutions.

Table 13- Availability of E-Sources at SFEC Libraries in T.N.

| Status | e-Journals | | e-Books | | Online Database | | CD ROM Database | | Total |
|---------------------|----------------|---------------|----------------|---------------|-----------------|---------------|-----------------|---------------|-------|
| | Yes | No | Yes | No | Yes | No | Yes | No | |
| Non-Minority | 81 (83.50) | 16 (16.50) | 79 (81.4) | 18 (18.66) | 39 (40.20) | 58 (59.80) | 68 (70.10) | 29 (29.90) | 97 |
| Religious Minority | 15 (71.43) | 6 (28.57) | 15 (71.43) | 6 (28.57) | 14 (66.67) | 7 (33.33) | 10 (47.62) | 11 (52.38) | 21 |
| Linguistic Minority | 15 (68.18) | 7 (31.82) | 18 (81.81) | 4 (18.19) | 14 (63.64) | 8 (26.36) | 12 (55.55) | 10 (45.45) | 22 |
| Total | 111 (79.29) | 29 (20.71) | 112 (80.00) | 28 (20.00) | 67 (47.86) | 73 (52.14) | 90 (64.39) | 50 (35.71) | 140 |

The table 13 shows that the availability of e-resources in the self financing engineering colleges in Tamil Nadu. Out of 140, 81

(83.50%) libraries of non minority status institutions library subscribed to e-journals. But in the religious minority institution libraries 15 (71.43%) libraries are subscribed e-journals. Out of 22 linguistic minority institutions, 15 libraries are subscribed e-journal to institutes. Out of 140 self financing engineering college libraries, 79 (81.4%) non-minority institutes are having the e-book facility in their library. 15 libraries in religious minorities and 18 (81.81%) libraries in linguistic minority institutions are having e-books facility. In the case online database out of 140 non-minority institutes only 39 (40.20%) libraries are subscribing online database in their library. But in the religious and linguistics minority institutes the maximum (14) libraries are subscribing the online database. The 68 Libraries of non-minority institute of self financing engineering colleges are having CD ROM database in their library. Nearly fifty percent of the religious and linguistic minority institute libraries are having the CD ROM facility.

ANOVA Summary Result

| ANOVA | | | | | | |
|---------------------|----------|----|----------|----------|----------|----------|
| Source of Variation | SS | df | MS | F | P-value | F crit |
| Rows | 4524.333 | 2 | 2262.167 | 23.07773 | 3.70E-05 | 3.73889 |
| Columns | 1318.292 | 7 | 188.3274 | 1.921241 | 0.141346 | 2.764196 |
| Error | 1372.333 | 14 | 98.02381 | | | |
| Total | 7214.958 | 23 | | | | |

Sources: Computed

ANOVA two way model is applied for e-resources among engineering colleges. At one point, the computed ANOVA value is 23.07 which is greater than its tabulated value at 5 percent level of significance. Hence variation with respect to possession of number of available of E-Sources in the libraries is statistically identified as significant. At another point the computed ANOVA value is 1.92 which is less than its tabulated value at 5 percent level of significance. Hence the status wise variation among the institutions is statistically identified as insignificant with respect to distribution of E-resources in the libraries of the selected self financing engineering colleges.

Table 14- Electronic Access Points Available SFEC Libraries in Tamil Nadu

| Status | OPAC | | WEB OPAC | | SUBJECT GATEWAYS | | Web sites | | Total |
|--------------|---------|---------|----------|---------|------------------|---------|-----------|---------|-------|
| | Yes | No | Yes | No | Yes | No | Yes | No | |
| Non-Minority | 85 | 12 | 29 | 68 | 13 | 84 | 54 | 43 | 97 |
| | (87.63) | (12.37) | (29.90) | (70.10) | (13.40) | (86.60) | (55.68) | (44.32) | |
| Religious | 15 | 6 | 11 | 10 | 4 | 17 | 6 | 15 | 21 |
| | (71.43) | (28.57) | (52.38) | (47.62) | (11.05) | (88.95) | (28.58) | (71.42) | |
| Linguistic | 15 | 7 | 10 | 12 | 5 | 17 | 8 | 14 | 22 |
| | (68.18) | (31.82) | (45.45) | (55.55) | (22.73) | (77.27) | (36.37) | (63.63) | |
| Total | 115 | 25 | 50 | 90 | 22 | 118 | 68 | 72 | 140 |
| | (82.14) | (17.86) | (35.71) | (64.39) | (12.86) | (87.14) | (48.57) | (51.42) | |

(Figures in parentheses denote percentage)

A study of data in table 14 indicates institution status wise distribution of electronic access mode availability in the libraries. It could be noted that most of the non minority institutions (87.63%) have OPAC, WEBOPAC in 29 (29.90%) libraries, and 13 libraries only out 97 have subject gateways. More than 60 percent of the religious and linguistic minority institution libraries have OPAC. 11

(52.38%) religious minority institution libraries and 10 (45.45%) linguistic minority institution libraries have WEBOPAC which is found to be less than half of the libraries. Very few libraries belonging to religious minority institution libraries and linguistic minority institution have subject gateways. Only 4 religious minority institutions out of 21 and 5 linguistic minority institution libraries out of 22 have subject gateways.

ANOVA Summary Result

| ANOVA | | | | | | |
|---------------------|----------|----|----------|----------|----------|----------|
| Source of Variation | SS | df | MS | F | P-value | F crit |
| Rows | 7601.333 | 2 | 3800.667 | 16.94205 | 0.000183 | 3.73889 |
| Columns | 3155.333 | 7 | 450.7619 | 2.00934 | 0.126226 | 2.764196 |
| Error | 3140.667 | 14 | 224.3333 | | | |
| Total | 13897.33 | 23 | | | | |

Source :Computed

ANOVA two way model is applied for Access mode and E-resources. At one point, the computed ANOVA value is 16.94 which is greater than its tabulated value at 5 percent level of significance. Hence, variation with respect to possession of electronic access points in the library is statistically identified as significant. At another point, the computed ANOVA value is 2.00 which is greater than its tabulated value at 5 percent level of significance. Hence it is found that the distribution of electronic access points in the libraries of the selected self financing engineering colleges is statistically identified as insignificant.

Conclusion

This study is to assess the status of information communication and technology infrastructure facilities in self financing engineering college libraries in Tamil nadu. The networking of libraries has dramatically changed the old concept of libraries in new information storage and retrieval mechanism has now become very faster and easier. The application of computer and networking technologies has improved the efficiency of library services. The information communication technology is a highly important one not for profit, but for individual academic institution to develop and promote technical improvement.

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Table 5- Servers and Clients Facilities in SFEC Libraries in Tamil Nadu

| Status | Yes | No | Number of Servers | | | | Number of Clients | | | | Total |
|---------------------|----------------|---------------|-------------------|---------------|---------------|---------------|-------------------|---------------|---------------|--------------|-------|
| | | | 2 | 4 | 6 | 8 | Upto 5 | May-15 | 15-25 | Above 25 | |
| Mon-Minority | 88 (90.72) | 9 (9.28) | 40 (45.45) | 24 (27.27) | 18 (20.45) | 6 (6.81) | 42 (47.72) | 28 (31.81) | 12 (13.63) | 6 (6.81) | 97 |
| Religious Minority | 17 (88.95) | 4 (11.05) | 4 (23.53) | 5 (29.41) | 4 (23.53) | 4 (23.53) | 5 (29.41) | 4 (23.53) | 4 (23.53) | 4 (23.53) | 21 |
| Linguistic Minority | 17 (77.27) | 5 (22.73) | 5 (29.41) | 3 (17.65) | 6 (35.29) | 3 (17.65) | 5 (29.41) | 5 (29.41) | 5 (29.41) | 2 (11.76) | 22 |
| Total | 122 (87.14) | 18 (12.86) | 49 (40.16) | 32 (26.22) | 28 (22.95) | 13 (10.65) | 52 (42.62) | 37 (30.32) | 21 (17.21) | 12 (9.84) | 140 |

(Figures in parentheses denote percentage)

Table 8- Library Automation Software Used by the SFEC Libraries in Tamil Nadu

| Status | Autolib | Nirmal | Libasoft | Libsys | Libs I-net | Winsoft | Delplus | Slim++ | Winisis | In house Prepared | No Software | Total |
|----------------------|---------------|--------------|---------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------------|-------------|-------|
| Non- Minority | 19 (19.58) | 8 (8.24) | 22 (22.68) | 8 (8.24) | 3 (3.09) | 5 (5.15) | 5 (5.15) | 6 (6.18) | 4 (4.12) | 10 (10.30) | 7 (7.21) | 97 |
| Religious Minority | 9 (40.90) | 1 (4.54) | 4 (18.18) | 1 (4.54) | 1 (4.54) | | 2 (9.09) | | | 3 (13.63) | | 21 |
| Linguistics Minority | 6 (27.27) | 1 (4.54) | 6 (27.27) | | | | | | 2 (9.09) | 7 (11.54) | | 22 |
| Total | 34 (24.28) | 10 (7.14) | 32 (22.85) | 9 (6.42) | 4 (2.85) | 5 (3.60) | 7 (5.00) | 4 (2.86) | 6 (4.28) | 20 (14.28) | 7 (5.00) | 140 |

(Figures in parentheses denote percentage)

Table 12- Internet Facility in the SFEC Libraries in Tamil Nadu

| Minority | Internet | | No. of Nodes | | | | Available Browsers | | | | | Total | |
|----------------------|----------------|--------------|---------------|---------------|---------------|---------------|--------------------|-------------------|--------------|---------------|--------------|--------------|-----------|
| | Yes | No | Upto 10 | 10 to 20 | 20 to 30 | Above 30 | Nets-cape | Internet Explorer | Mosaic | Linux | Opera | | Neoplanet |
| Non- Minority | 91 (93.88) | 6 (6.12) | 48 (52.75) | 13 (14.28) | 15 (16.48) | 15 (16.48) | 25 (41.76) | 38 (41.76) | 5 (5.49) | 10 (10.98) | 6 (6.59) | 7 (7.69) | 97 |
| Religious Minority | 18 (85.78) | 3 (14.28) | 4 (22.22) | 7 (38.38) | 2 (11.11) | 5 (27.28) | 1 (5.55) | 6 (33.33) | 2 (11.11) | 5 (27.78) | 3 (16.67) | 1 (5.55) | 21 |
| Linguistics Minority | 18 (81.88) | 4 (18.18) | 5 (27.28) | 6 (33.33) | 3 (16.67) | 4 (22.22) | 2 (11.11) | 4 (22.22) | 3 (16.67) | 5 (27.78) | 2 (11.11) | 2 (11.11) | 22 |
| Total | 127 (90.71) | 13 (9.29) | 57 (44.85) | 26 (20.47) | 20 (15.75) | 24 (18.98) | 28 (22.04) | 48 (37.85) | 10 (7.87) | 20 (15.25) | 11 (8.66) | 10 (7.87) | 140 |

(Figures in parentheses denote percentage)