Chapter 6
Major Findings /
Observations and
Suggestions
CHAPTER – 6

MAJOR FINDINGS/ OBSERVATIONS AND SUGGESTIONS

6.1 INTRODUCTION

In chapter 4, an overview of the libraries of the sample Engineering Educational Institutions in Rayalaseema Region of Andhra Pradesh has been presented. In chapter 5, the analysis and interpretation of the data collected from sample librarians under study has been discussed. In both these chapters the data represents background information about the Engineering Educational Institutions and their libraries covering collection development, man power, library automation, database support services and the digital initiatives taken by the libraries under study and constraints and solutions in digital library initiatives have been discussed. In this chapter an attempt has been made to highlight the major findings, observations and suggestions based on the results of the data analysis discussed in chapters 4 and 5.

6.2 MAJOR FINDINGS AND OBSERVATIONS

6.2.1 Engineering Educational Institutions in Rayalaseema Region

1) The Engineering Educational Institutions in Rayalaseema Region have been grouped as University Engineering Institutions, Minority Engineering Institutions, and Private Engineering Institutions (Chapter 4).

2) Out of 99 Engineering Educational Institutions in Rayalaseema Region of Andhra Pradesh, 90 belongs to Private Institutions (Table 4.4).

3) Out of 99 Engineering Educational Institutions in Rayalaseema Region, the study has concentrated on 92 Institutions, which were established before 2010 (Chapter 4).
6.2.2 Sample Size

Out of 92 Questionnaires distributed to the Engineering Educational Institutions all over Rayalaseema Region which were established before 2010, a total of 81 respondents responded and the response rate is 88.04%.

6.2.3 General Information about the Engineering Educational Institutions

1) About 84.65% of the sample institutions where established between 2001 and 2010.

2) A majority of institutions (60.49%) offer engineering courses at Under Graduate level, while 35.80% institutions offer engineering courses at Post Graduate level.

3) About 61.72% of the sample institutions have obtained institution certification issued either by International Organization for Standardization (ISO) and 23.46% Sample institutions obtained for National Board of Accreditation (NBA), while 13.58% sample institutions are approved by NAAC. (Table 5.4 and 5.5).

6.2.4 Library Collection

1) It is found that in majority of the sample libraries, book collection has not gone below 10,000 and 50 electronic books (Table 5.9 and 5.10).

2) It is interesting to note that nearly 29.63% of the samples are building students’ project reports in their collection (Table 5.18).

3) It is also found that most of the libraries are building e-resources/digital resources such as CD collections, e-books, e-journals and students’ project reports in e-form (Table 5.13-5.16).
6.2.5 Library Manpower

1) A majority of the respondent librarians (81.48%) are male (Table 5.20).

2) About 65.43% of the librarians' manpower age falls above 31 years (Table 5.21).

3) Nearly 49.38% of the user possess M.Phil Degree in Library and Information Science (Table 5.22).

4) A majority of the librarians (27.16%) has an experience of 11 years and above (Table 5.23).

6.2.6 Skills of the Library Manpower

1) It is found that a majority of the librarians' possess' compartmentally better skills on operating systems such as 'Windows' and 'Unix' (Table 5.24).

2) It is found that, the level of knowledge in use of 'Windows' is significant among the to librarians irrespective of institution on the other hand there exists no significant relationship between the age of the librarians and experience with knowledge in operating systems, which have been proved through chi-square test and cluster analysis (Table 5.26 to 5.29 and Figure 5.8).

3) It is found that there exists no relationship between the age and experience of the respondent librarians and their level of knowledge in programming language such as 'Net'. However, there exists significant relationship between the institutions of respondents and their level of knowledge in programming language which has been proved through chi-square test and cluster analysis (Table 5.32 - 5.35 and Figure 5.9).

4) It is found that a majority of the librarians expressed their level of knowledge in application software packages such as 'MS-Word' and 'MS-Excel' (Table 5.36 and 5.37).
5) A majority of the librarians expressed their level of knowledge in database management systems such as 'Oracle and 'SQL/My SQL' either 'good' or 'satisfactory' (Table 5.43).

6) It is observed that there is no significant relationship between the variables of Database Management Systems, age and experience of the respondent librarians, which has been proved through chi-square test (Table 5.44).

7) It seems that there is significant relationship between the respondents and their knowledge in other utilities such as 'WinZip', where as, there is no significant relationship between and utilities such as 'Nero Smart' and 'WinRAR that are proved by chi-square test (Table 5.47).

8) It is significant to note that most of the respondent librarians have expressed their level of knowledge in library management software either 'good' (33.34%) or satisfactory (49.38%) (Table 5.51).

9) There exists no significant relationship between the age of the respondents and their level of knowledge in library management software. On the other hand, it is found that types of institutions and the respondents’ level of knowledge in library management software (Table 5.53).

10) It is found that there is no significant relationship between age and experience of the respondents and their level of knowledge in Web design, which has been proved through chi-square test (Table 5.56).

11) It is found that there is no significant relationship between the age and experience of the respondents and their level of knowledge in online utilities / services. On the other hand, a significant relationship has been noticed between the types of institutions and online utilities / services, which have been proved through a chi-square test (Table 5.62).
12) It is found that there exists significant relationship between the respondents and level of knowledge in technical skills and their institutions but no relationship between their age and experience, which has been proved through chi-square test (Table 5.68).

13) It is found that there exists significant relationship between the institutions and the respondents' level of knowledge in managerial skills, but not with their age and experience (Table 5.71).

14) There exists significant relationship between the types of institutions of the respondents and their level of knowledge in subject skills. It is also found that there is no significant relationship between the age and experience of the respondents and the level of knowledge in subject skills, which has been proved through chi-square test (Table 5.77).

15) The aspects of ICT and other skills were analyzed by factor-analysis. Based on the various solutions, three factor models were chosen. Varimax rotated factor analysis of the ICT and other skills done, which shows that librarians lack in some skills of operating system, programming language etc. (Table 5.78).

6.2.7 Means/Methods of Acquiring of IT Skills

1) It is found that 'through academic education', 'self study' and 'learning through private training programme' have rated as the most preferred means / methods of acquiring IT skills (Table 5.79).

2) It is found that majority of Male and Female acquire IT skills through academic education (Table 5.80).

3) There exists significant relationship between the variables concerning means / methods of acquiring of IT skills and type of institutions and experience of respondent librarians. On the other hand, the age of the respondents are not
related 'significantly' with the means / methods of acquiring IT skills, which has been proved through the chi-square test (Table 5.81.)

4) Two clusters have been grouped over the variables concerning means / methods of acquiring IT skills, which have been named as 'most preferred mode of acquiring IT skills' and 'Least preferred mode of acquiring IT skills'. (Table 5.83 and 5.84) and Figure 5.15.

6.2.8 Library Supporting Staff Members and Skills

1) It is found that majority of supporting staff members are Male (72.84%) (Table 5.86).

2) Most of the supporting library staff members are undergraduate degree holders (Table 5.87).

3) It is found that majority of supporting staff members of library have knowledge of ICT skills (Table 5.88).

6.2.9 Library Services

1) It is observed that three broader categories of services are rendered by the libraries such as traditional services, document delivery services and electronic services.

2) Circulation services have been ranked first followed by internet service, reservation of books and reprography services have been ranked sound, third and fourth respectively (Table 5.89).

3) Majority of colleges libraries do not have their own website (Table 5.90).

4) In most of the college library websites services such a library opening hours, access to library OPAC and links to digital library resource are offered (Table 5.91).
6.2.10 ICT Facilities for Libraries

1) There exists significant relationship between the variables comprising of the dependence on Hardware faculty and the institution which has been proved through ANOVA (Table 5.93).

2) It is found that operating system such as ‘Windows Xp’, ‘Web Browsers – Mozilla Firefox’, Netscape’, ‘Google Chrome’ have been given due significance with respect to software resource availability which is proved through Two-Way ANOVA Test (Table 5.95).

3) It is observed that variables such as ‘V Sat’ internet service provider, ‘shard internet service to communication service and institution (Table 5.97). This has been proved through Two-Way ANOVA Test.

4) It is noticed that ‘DELNET’, ‘ERNET’ and ‘INFLIBNET’ are given due significance with regard to information network service and institution, which is proved by Two-Way ANOVA Test (Table 5.100).

6.2.11 Library Automation

1) It is found that 59.26% librarians are ‘partially automated’, 20.99% libraries are ‘completely automated’ while 19.75% are manually operated (Table 5.101).

2) A majority of libraries 43.21% are using ‘own preparation’ software, while 33.33% uses ‘open source’ software for library automation (Table 5.102).

3) It is found that 59.79% library follow manual system for circulation, while 39.51% follow ‘Barcode system’ for circulation (Table 5.104).

4) It is noticed that 86.42% library automation project funded by ‘management’, while 6.71% financed by ‘free library systems’ (Table 5.105).
6.2.12 Digital Library Initiatives

1) It is found that 34.57% of libraries are in the process of building digital collections, which is mainly based on the 'access to LAN' and 'Users interest towards' digital form of documents' (Table 5.107).

2) It is found that information about the various works done in library field and computer programme information Vs Theoretical background is significant, which is analysed through Bivariate Analysis (Table 5.109).

3) It is found that 'born digital' materials are mostly used in building digital materials (Table 5.110).

4) Two clusters have been formed in grouping the different modes of acquiring digital materials, which have been named as 'most of preferred mode of acquiring digital materials' and 'least preferred mode of acquiring digital materials' (Table 5.112 to 5.114).

5) It is found that majority of institutions (56.79%) subscribe 'INDEST-AICTE Consortium' (Table 5.116).

6) It is observed that 66.67% institutions are provided with 'open source software' (Table 5.119).

7) A majority of libraries are concentrating on 'conversion of students' project reports' and 'theses in digital form (Table 5.121).

8) Two clusters have been formed in grouping method for preferring digital collection, which has been named as 'best practice of digital collection preferred and 'least practice of digital collection preferred (Table 5.122 to 5.124).

9) A majority of librarians adopt 'scanning' method (74.07%) for converting conventional data into digital media (Table 5.125).
10) Most of the librarians (62.96%) are unaware of metadata standards. (Table 5.127)

11) Majority of institution prefer ‘refreshing’ and ‘simulation technique’ for preserving digital materials, which is proved through K-Mean Cluster analysis (Table 5.129).

12) Two clusters have been formed while grouping different formats used for page layout, which are named as ‘best practice of page layout’ and ‘least practice of page layout’ (Table 5.138 – 5.140 and Figure 5.21).

13) It is observed that ‘Windows’ (58.02%) found to be best operating system for digital library (Figure 5.141).

6.2.13 Constraints in Digital Library Initiatives

1) It is found that seven broader categories of constraints such as ‘legal problems’, ‘lack of users’ interest’ and lack of interest in top management are influencing the digital library initiatives (Table 5.142).

2) On clustering the variables of constraints two clusters have been formed, which have been named as ‘major constraints in digital library initiatives’ and ‘minor constraints in digital library initiatives’ (Table 5.143 to 5.145 and Figure 5.22).

6.2.14 Suggestions to Digital Library Issues

1) Ten suggestions to overcome digital library issues were identified, out of which dissemination of document in digital form using ‘CD/DVD’ have ranked first, followed by ‘encouraging librarians’ for digital library issues (Table 5.146).

2) There exists strong relationship between variables concerning the suggestions towards digital library issues and types of institutions of the respondents, which has been proved through chi-square test (Table 5.147).
3) The distance and proximity measures of the variables towards suggestions to digital library issues are tested with the use of Proximity Matrix, which shows the variables ‘to store document in digital form’ and ‘encourage librarian in digitization’ are similar (Table 5.149).

6.3. FINDINGS IN RELATION TO HYPOTHESES

1) The hypotheses one is read as

   “Most of the educational institutions in Rayalaseema Region are opting for digital library initiatives”.

   Is found valid as proved in Chapter 4 and 5

2) The hypotheses two to five which reads as

   “All the engineering educational institutions in Rayalaseema Zone have Information and Communication Technology infrastructure facilities”.
   “There exists heterogeneity in the motives for gaining ICT skills, among library professionals in engineering educational institutions at Rayalaseema Region”.
   “Managerial skills, subject skills and technical skills are at satisfactory level among the library professionals”.
   “Librarians adopt varied means and methods to acquire ICT skills and face a few obstacles in acquiring ICT skills”.

   Is found valid as proved in Chapter 5

3) The hypotheses six and seven which reads as

   “There exists consensus among engineering educational institutions in Rayalaseema Region in developing a policy for establishing a digital library”.
   “There exist some constraints in establishing a digital library among engineering educational institutions in Rayalaseema Region”.

   Is found valid as proved in Chapter 5

   Based on the above findings and observations, in the next section, a few suggestions have been listed.

262
6.4. SUGGESTIONS

6.4.1. Towards a Systematic Approach in Establishing Digital Library System in India

In view of the recommendations of the National Task Force on IT and Software Development for the development of digital libraries in India, it is suggested to establish a distributed network of digital libraries, which would constitute a purposeful and systematic strategy to integrate the already existing and on going discrete projects on digitization. In this context, it is highlighted and recommended that the vision of Indian digital libraries should be to create an information infrastructure in which the resources of universities, government, business and industry are linked to form a cohesive national digitized information service. Such service will provide seamless access across different systems using a variety of formats and thereby achieve cost effective development of a more competitive Indian research enterprise.

6.4.2. Efforts towards the Creation of Digital Libraries

In view of the majority of Engineering Educational Institutions have initiated steps towards the creation of digital libraries as observed in this study, it is suggested that the other libraries also should venture upon to provide necessary both financial, infrastructure and manpower needed in this direction.

6.4.3. Digital Resources Organization

Realizing the importance of digital resources collection building, it is suggested that the libraries in general and Engineering Educational Institution libraries in particulars shall develop information resources collection and development policy in consistence with activities of the parent organization. These resources shall satisfy through content, currency, format, organization and quality. Further, it is suggested that the librarians shall, beyond in-house collections and in-house expertise, draw the resources from other institutions, collect and provide information by tapping external information resources.
6.4.4. Library Manpower Skills Development

Considering the necessity to possess and acquire various types of skills required for the library manpower to design, develop and maintain digital libraries, it is recommended that managements of Engineering Educational Institutions in Rayalaseema Region have to launch human resources development programmes to monitor the changing trends and dimensions in information handling, processing, storing and dissemination. For this purpose it is suggested to strengthen the existing manpower by appointing well qualified staff as per the suggestion laid down by All India Council for Technical Education (AICTE). Further it is stressed to depute the library staff periodically for in-service training programme, such as short term courses, workshops, symposium and seminars on current trends in Library and Information Science (LIS) by providing necessary leave with pay and other benefits.

6.4.5. Towards the Redesigning of Library and Information Science (LIS) Curriculum

The challenges of technology-mediated education in Library and Information Science (LIS) are formidable. The need for restructuring the LIS programme has became more acute in the face of fierce competition both at institutions and within the profession. In the present environment of IT application in library and information centres, it is imperative to introduce IT based courses in the education and training of Library and Information professionals. Further, there is a need for rejuvenating the LIS courses in India in the light of happenings in the interdisciplinary areas and the adoption of modular approach, is a way a meeting the present and future needs of a dynamic curriculum.

6.4.6. Towards the Development of Institutional Repositories (IR)

An Institutional Repository (IR) is a digital collection or achieves of an academic/research institutes, collect, organize, preserve and make accessible the knowledge generated by them to others over Internet.

In order to capture, collect, manage disseminate and preserve the scholarly communication among the faculty and research in Engineering Educational Institutions in
Rayalaseema Region, it is suggested to initiate and develop institutional repository by each and every engineering institutions with the following functions:

- To publish and archives scholarly work of an institutions locally, using authentic information sources.
- To enable long-term preservation of scholarly work.
- To facilitate constituent members of an institution an easy and rapid way to publish and archives their research locally.
- To provide an integrated view of and act as a single entry point to scholarly work of an institution.
- To provide wider accessibility, visibility and distribution of the scholarly work of an institution.
- To act as a self-evaluation tool for the management.

6.4.7. Digital Preservation

Digital preservation refers to a series of managed activities, which are necessary to ensure continued access of digital materials for as long as they are required. The term digitization created in another form to digital form (i.e. which use a binary numerical code to represent variables). The ultimate goal of preservation is to make the intellectual content to remain in fact as long as possible. The idea of protecting the original documents by reproducing it on a stable media gave rise to digitizing the maps, manuscript, moving images, music and sounds etc. Digitization of the old and fragile materials will not only provide long time preservation but also offers the users to find, retrieve, study and manipulate the information in a colourful environment.

Keeping in view the recent development in the information handling and management, it is urged that the benefits of digital preservation and digitization could not be overlooked and augmented effectively in order to preserve and disseminate for the future generations to come.
6.4.8. Role of All India Council for Technical Education (AICTE)

In view of the fact that in Engineering Educational Institutions in India are coming under the preview of All India Council of Technical Education (AICTE), an autonomous body, it is suggested that the libraries are encouraged to take up projects on digital libraries for which the All India Council of Technical Education (AICTE) shall render necessary financial support. It is to be mentioned here that already a number of Engineering Educational Institutions have been granted projects by AICTE and it is urged to extend the same support and encourage other libraries.

6.4.9. Digital Library Research

In recent years ‘being digital’ is no longer radial or new concepts. The emergence of digital libraries in the early 90’s and their overwhelming growth has open up the horizons and vistas in a broad array of issues related to design, Implementation, development and evaluation of digital libraries. In view of these, it is suggested that library and information professionals shall under take research on digital libraries on the areas such as architecture, systems, tools and technologies; digital content and collections; metadata; usability; and legal, organizational, economic and social issues.

6.4.10. Towards the Design and Development of Digital Library for Engineering Science and Technology

In view of the developments of digital library for various organizations for different disciplines and the possible benefits that are acquired from such initiatives and in view of the present research wherein Digital Library Initiatives of Engineering Educational Institutions of Rayalaseema Region of Andhra Pradesh and the results of the analysis of the study, it is suggested to develop a digital library exclusively for the discipline of Engineering Science and Technology. Such prototype design will include links to resources such as e-books, e-journals, e-database, e-projects, e-tutorials and similar resources in digital form.
6.5. SUGGESTION FOR THE FURTHER RESEARCH

The following areas are suggested for further research and may be undertaken by the future scholars.

a) Digital initiatives in the university libraries in India.
b) A study of digitization activities in the manuscript libraries in India.
c) A comparative study of digital initiatives in academic and special libraries in Rayalaseema Region.
d) Manpower skills of special libraries and academic libraries with special reference to digitization activities.
e) A study of digitization activities in the private libraries in Rayalaseema Region: problems and prospects.
f) Design and development of digital libraries for science and technology libraries: A prototype model.

6.6. CONCLUSION

Digital library is a complex process involving many components, technical informational and human. A large number of digital libraries have been developed throughout the world in the recent years, which have emerged in digital library research, development and initiatives. Therefore in the next chapter an attempt has been made to develop a prototype design model for digital library for Engineering Science.