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# CHAPTER-VII

## SUMMARY OF FINDINGS, SUGGESTIONS AND CONCLUSION

### 7. 1. Introduction

An attempt has been made in this chapter to summarize the research data collected from the university libraries in Maharashtra in order to assess the extent of technology utilized in rendering library resources, facilities and services to the users. The findings are highlighted in eight sections covering Profile of Universities, Library Collection, Library Budget, IT Infrastructure, Library Automation and Networking, Library services offered by University Libraries, ICT Based Library services, Implication of IT on Libraries and Best Practices in University Libraries. This is followed by Testing of Null hypothesis so framed and then suggestions, future research and conclusion.

### 7.2 Summary of Findings

The summary of findings of the study are

#### 7.2.1 Profile of university libraries in Maharashtra

- Mumbai University library in the oldest university library establishment in 1857 and then followed by Pune University (1949), Dr.BabasahebAmbedkarMarathwada University (1958) and Shivaji University (1962).
- Shivaji University has highest seating capacity of 1805 users followed by Pune University with 1000 seating capacity of users.
- Pune university has the highest number of library staff followed by RashtrasantTukadojiMaharaj Nagpur University (19), Dr.BabasahebAmbedkarMarathwada University (16), Swami RamanandTreetnMarathwada University (12), Shivaji University (11) andSantGadageBaba Amravati University (10)Among deemed universities, MGM Institute of Health Science has highest staff of 11 members.
- Among the 36 universities libraries covered in the study, 55.6% of librarians possess PhD qualification where as in the remaining 16 Universities, librarians do not have PhD.

- Dr.D.Y.Patil Mumbai and Dr. D.Y.PatilVidyapeeth Pune works day and night during examinations for the benefits of users and Indira Gandhi institute of Development Research is kept open for 20 hours during examination.
- Majority of university libraries (55.5%) are closed during Sunday and holidays and only 44.5% of university libraries are working during holidays and Sunday's.

### 7.2.2 Library collections

- Book collection is dominated by university of Mumbai (751837) followed by SavitribaiPhule Pune University (4426275), RashtrasantTukadojiMaharaj Nagpur University (398397) and Dr. BabashebAmbedkarMarthwad University (368347).
- Regarding collection of E-books in State and Deemed university libraries, very few universities are subscribing or digitized books in e-format and these university libraries are Dr. Baba SahebAmbedkarMarathwada University (121000), NarseeMonjee Institute of Management studies (109363) and Gokhale Institute of Political & Economics (16500).
- 23 universities have access to UGC infonet and 4 university libraries have access to INDEST/CeRA Consortia and nine university libraries don have access to consortia.
- Dewey decimal classification scheme for classifying documents (77.8%) and only (16.7%) of libraries are using colon classification scheme.

### 7.2.3 Library budget

Annual Budget when compared in all eighteen state university libraries in Maharashtra, the annual budget of SavitribaiPhule Pune University is the highest budget (7 Crore) and BabashebAmbekdar Technological University library is (Rs-1.36 Lakhs) and it is followed by DrPanjabraoDeshmukhKrishiVidyapeeth (1.25 lakhs),YashwantraoChavan Maharashtra Open University (Rs.1.11 lakhs) and Swami Ramanad Teeth Marathwada University (Rs.1.6 lakhs ) during 2013-14. When compared to annual budget of state universities in 2011-12 to that of 2013-14, there is an increase in the library budget and minimum budget of Shivaji University is Rs.40 lakhs.

### 7.2.4 ICT infrastructure

- All the state university libraries has main server i.e. Dr.BabasahebAmbekdarMarathwada University and SavitribaiPhule Pune

University has four servers. Mahatma PhuleKrishiVidyapeeth has 80 computer systems.

- Out of 18 state universities, 10 University libraries have CD-server and majority of university libraries have LDC Projector.
- Bar code scanner and Printer is available in most of the libraries and Laminating Machine is available in Shivaji University.
- Electronic Attendance register is available in swami RamanandTreeth University, RashtrasantTukadojiMaharaj Nagpur University, Mumbai university, Mahatma PhuleKrishiVidyapeeth, and Dr. Babasaheb Ambedkar Technological University, Solapur university only.
- CCTV is available in seven in state university libraries only and majority of libraries have battery backup (N=50), only six University library have the facility of five alarm systems.

### **7.2.5 LIBRARY AUTOMATION**

- Majority of the university libraries have fully automated its library activities and services using library software (58.%, N=21). However the remaining 15 Libraries have carried out partial automation (41.7%).
- SLIM and Libsys are widely used software's by the university libraries in Maharashtra amounting to 27.8%.
- Among various modules or utilities available in the library software, cataloguing (97.2%) Circulation (97.2%) and acquisition (94.4%) are the areas of library automation which are fairly utilized for library automation by university libraries in Maharashtra state.
- Majority of the libraries are using MARC (94.7%) format and AACR- II (100%) for creation of bibliographical records.
- Only two state university libraries are using cloud technology out of 36 libraries covered in the study.

### **7.2.6 Networking of university libraries**

- 33 Universities have a campus wide area network (91.7%) and there is not much difference between state university and deemed university in campus wide area network.
- 86.1 % of university branch libraries are connected to network and only 1.9 % are not connected to the network.

- Only seven libraries indicated more than 100 users visiting libraries per day for using Internet and four libraries indicated that on an average 61-80 users and 81 to 100 users visit library for using Internet per day.
- 83.3 % of university libraries use internet for cataloguing, followed by classification (75%), Acquisition (66.7%), serial control (61.7%) and Circulation (52.5%).
- University librarians opined that most of the users who are using library for Internet spend 1-2 hours (36.1%) and 2-4 hours (41.7%) respectively.
- E-mail (83.3%) Social Networking (like Face book) (80.6%), Online searching (77.8%) and www (75%) are the popular internet services used.
- Out of 36 university libraries, 15 libraries have created blog while the rest 21 libraries do not have blog (58.3%) and these created blogs are personal blogs.
- 55.6% of university libraries are member of LIS- Forum (N=20), which is popular discussion forums in library an information science for sharing and exchanging current information.

#### **7.2.7. Library services offered by university libraries**

- Home lending services (100%), Reading room services (100%) reference services (94.7%) and current awareness services (91.7%) are the popular services offered by the university libraries in Maharashtra state.
- 69.4% of university libraries are not extending remote access facility (N=25) which is desired from the perspective of users.
- Only 8 universities libraries (22.2%) are offering mobile services applications.
- Barcode is essentials for library automation and 91.7% of university libraries (N=33) are using barcode technology.
- Nine university libraries have adopted RFID technology and among them seven state university libraries and two deemed university libraries are using RFID technology.
- 44.4% university libraries have developed institutional repository (N=16), 27.8% of university libraries are in the process developing institutional repository.
- Majority of the university libraries are providing electronic document delivery service (N=30,83.3%) electronic current awareness services (N=083.3%) and web based reference tools like dictionary, encyclopedias, translation, map etc (N=27,75%).

- 52.8% of university libraries facilitate status of knowing circulation data online and however very few libraries facilitate status of reserving documents or renewal requests.
- In 33 university libraries access to electronic journals is provided including searching WEB-OPAC (83%,N=30), accessing online databases (80.6% N=29).
- 24 libraries are providing electronic article delivery services and 17 university libraries are rendering journal article alert services.
- More than one third of university libraries are providing web enabled services - online feedback form (38.9%), and followed by online library news (36.1%).

### **7.2.8 Implication of information technology**

- 44.4 % of university libraries strongly agree that inadequate financial assistance is the major constraints faced in modernizing university library and 27.8 % strongly agree that there is lack of support from the management.
- More than half of university libraries strongly agree that after the adoption of information technology, users are more satisfied with library automation activities (6.9%) and increased frequency of user visit to the library.
- 94.4 % are willing to accept the change brought by using IT in the library and 29 university libraries agree to introduce new IT tools in the library with the existing professional staff (69.4%).

### **7.2.9 Best practices**

Best practices adopted by the university libraries are inclusion of sufficient information about the library in the university prospects (97.2%) computerization of library using open source software (94.4%), Arranging information literacy programme (91.7%), Organizing competitions annually (88.9%), career/employment information services (86.1%), Suggestion box and timely response (86.1%), collection development policy -print and E- Resources (69.4%) and signage system (66.7%).

## **TESTING OF NULL HYPOTHESIS**

In order to test the null hypothesis, results reported based statistical applications of Chi-Square Test are as follows indicating acceptance or rejection of null hypothesis.

1. The null hypothesis “There is no association between types of university in Maharashtra state and qualification of librarian” is accepted.

2. The null hypothesis “There is no association between types of university and working hours of the library during Sunday an holidays” is rejected.
3. The null hypothesis “There is no association between types of university and access to UGC Infonet consortia among Universities” is accepted.
4. The null hypothesis “There is no association between types of university” and classification schemes” is accepted.
5. The null hypothesis “There is no association between type of university and library software used” is accepted.
6. The null hypothesis `There is no association between Types of University and its application of Cloud Technology in University libraries of Maharashtra state” is accepted.
7. The null hypothesis “There is no association between types of university and campus wide area network in university” is accepted.
8. The null hypothesis “There is no association between types of university libraries and blog creation” is accepted
9. The null hypothesis “There is no association between types of university and membership to LIS forum’ is accepted.
10. The null hypothesis “There is no association between types of university and remote access facilities extended by libraries” is accepted. .
11. The null hypothesis “There is no association between types of university and application of mobile technology” is accepted.
12. The null hypothesis “There is no association between types of university and application of bar code technology” is accepted.
13. The null hypothesis “There is no association between types of university and use of Institutional repository” is accepted.
14. The null hypothesis “There is no association between establishment of university in Maharashtra state and qualification of librarian” is accepted.
15. The null hypothesis “There is no association between establishment of university and working hours of the library during Sunday an holidays” is rejected.
16. The null hypothesis “There is no association between establishment of university and access to UGC Infonet consortia among Universities” is accepted.
17. The null hypothesis “There is no association between establishment of university” and classification schemes” is accepted.
18. The null hypothesis “There is no association between of university and library software used” is accepted.

19. The null hypothesis “There is no association between establishment of University and its application of Cloud Technology in University libraries of Maharashtra state” is accepted.
20. The null hypothesis “There is no association between establishment of university and campus wide area network in university” is accepted.
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24. The null hypothesis “There is no association between establishment of university and application of mobile technology” is accepted.
25. The null hypothesis “There is no association between establishment of university and application of bar code technology” is accepted.
26. The null hypothesis “There is no association between establishment of university and use of Institutional repository” is accepted.

### **7.3 Suggestions**

Based on the results of the study, following suggestions have been made.

#### **7.3.1 Library staff**

Strength of library staff is found to be on an average below 10 in both state and deemed universities and when compared with total collections and users strength, there is a need for increased library staff to carry out in-house activities and render various services to the users.

As regards to qualification of librarians 20 possessed PhD and the rest 16 librarians out of total 36 universities do not have PhD qualification. Hence there is a need to improve the qualification head librarian in a university setup.

#### **7.3.2 Working hours of library**

In a university setup, due to the pre-occupied classes of the students and research scholars, there will be a rush for use of library before and after classes and further it becomes obligation to open libraries especially during holidays for the benefit of users to study in the library. But unfortunately 20 university libraries do not function during a

holiday which is a hindrance in usage of library resources and therefore thus it is suggested to keep the library open during holidays.

### **7.3.3 IT Infrastructure, Web Enabled Resources and Services**

#### **7.3.3.1 Collection of E-Books**

The university libraries surveyed have very poor collections of e-books and hardly few libraries subscribe e-books in an era where the users wish to prefer e-information. It is suggested to start procuring e-books from various vendors which offers Indian content like Tata McGrawhill, Mint book etc.

#### **7.3.3.2 National Consortia's and Subscription of e-journals and databases**

University Grants Commission, Indian Council of Agricultural Research and Veterinary Council of India through its program providing various e-journals and databases like UGC Infonet Consortia, INDEST, CeRA consortia in different subjects to support academic and research activities. It is the responsibility of libraries to ensure its subscription and give orientation to the users for optimum utilization of e-resources available under national consortia, as the results found that few universities are not subscribing to these consortia.

### **7.3.4 ICT Infrastructure – ICT Lab**

Today consortium purpose is shifted from mere sharing of resources to sharing of expertise between libraries and also explores the need for libraries to make the most effective use of their funds collectively. This proposed model focuses on establishing strong networks for universities in the country with a view to modernize and setup Veterinary Learning Resource Centers as the most logical site to integrate and distribute a wide variety of both electronic and human information resources for learning, teaching and research. This national network provides information service with a focus on access to high quality information and lifelong learning in the 21st Century knowledge economy providing various e-Services on the web.

The objective of Virtual Learning Resource Centre (ICT Lab) is to build up libraries to support educational, social, cultural activities of the academicians and contribute to the information needs to support learning, teaching and research activities by providing e-resources, indigenous databases, research productivity, learning course instructional materials, academic computing software's in a networked environ using ICT. This will help the users in accessing e-journals and databases both subscribed and




available under national consortia in addition to library e-resources. Hence it is essential to have strong ICT infrastructure for providing access to e-information. A sample picture of Virtual Learning Resource Centre (ICT Lab) and Digital library of Gulbarga University that contains more than 100 computers under network environment is shown below.



**Picture:7:1 ICT center Gulbarga university**

### **7.3.5 Remote access facility**

Remote Access Facility facilitates remote access to web-based licensed content of e-resources from library to the remote users and available for servers platform using either Linux (x86 and x86\_64), Solaris (SPARC and x86) and Windows (2000, 2003, 2008, XP and XP Professional). The screenshots of accessing e-resources from remote location using EZproxy are shown. On the other hand, Virtual Private Network (VPN) utilizes public telecommunications networks to conduct private data communications wherein Internet as the public infrastructure. It follows a client and server approach and facilitates VPN clients authenticate users, encrypt data, and manage sessions with VPN servers utilizing a technique called tunneling. In an academic university environment, Post Graduate centres located in different places may use VPN network for accessing e-resources from the main campus library. VPN clients and VPN servers are typically used to support remote access to an intranet, and help to join networks between two organizations, forming an extranet. This would definitely promote the use of e-journals and databases available under UGC Infonet consortia or INDEST or CeRA consortia.



The screenshot shows the website header for Sir Dorabji Tata Memorial Library, Tata Institute of Social Sciences. The navigation bar includes 'Home' and 'Ask Librarian'. The main content area is titled 'Off-campus Online Access' and provides instructions for remote access via Ezproxy. It includes a 'Your Login' section with a list of steps: 1. You must have a valid Remote Access Username & Password. 2. Click here to Login to Ezproxy to access E-Resources subscribed by TISS. 3. For quick guidance, please refer the User Manual. A note states: 'The E-Resource Gateway will log you out after 15 minutes of inactivity.'

Image: - 7: 1 (<http://library.tiss.edu/using-remote.html>)

### 7.3.6 Campus network

Taking into consideration the existing situation of network facilities and consortium facilities available and accessed in the university Libraries in Maharashtra, the first and foremost requirement is to have sound Information and Communication Technology infrastructure among each and every university Library.

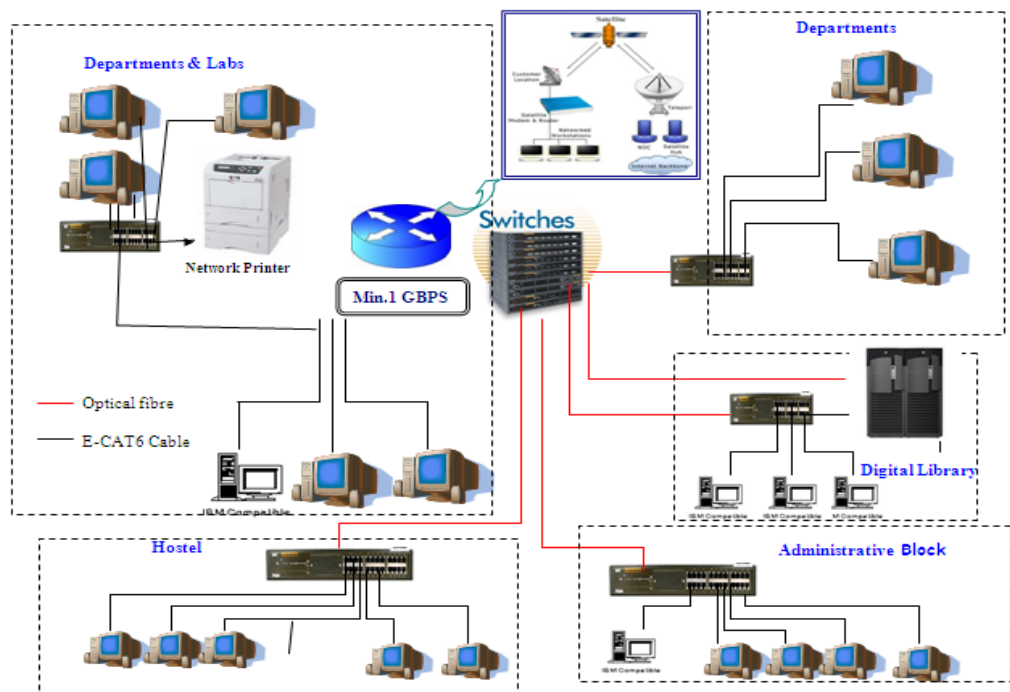


Figure 1: Campus Network of universities

Figure 1 depicts the proposed campus network of university library which needs to be established in every college for networking and resource sharing and this in turn leads to national network. The campus network should be connected to campus clinical blocks, Departments, Digital Library, Administrative blocks and Hostels by drawing Fiber optics using dedicated leased line which may range from 1 GBPS and above. Each

block should have a terminated data switch for extra connectivity of nodes and CAT 6 cable may be used within the unit/ block. This will ensure smooth flow of data, effective communication, database management, e-governance and thereby contribute for establishing national network.

### **7.3.7 Library automation and services**

There are as many as forty two universities that include state, deemed and central universities and institutions of National importance in Maharashtra. Each one of these institutions has distinctive features. Some of these institutions are quite old and well established and few are the recently established ones. While some universities are general in nature, few are specialized in areas like agriculture, science and technology, management, health science, engineering and so on. While some are managed under the control of the Government as autonomous institutions, others are managed by private managements. These distinctive features of the institutions certainly reflect on the growth and development of the libraries and all their activities. In other words automation of these university libraries basically reflects the background of their management and other characteristics. Though almost all university libraries (except few) have taken steps to computerized library activities. Some have completed automation projects and are fully providing computerized services, some are in the midst of automating their activities, and some are yet in the beginning stage of library automation. Each one of these libraries has different experiences and problems encountered in initiation of automation activities.

The results of library automation in the study calls for complete automation, which is very basic for modernization of university libraries in the Maharashtra state. It is proposed to have uniform library software or as desired provided it is compatible with CCF format and facilitates for exchange of data, for which library staff has to take seriously. As library automation changes the outlook of library, it is fundamental for modernization of library system.

### **7.3.8 Cloud technology**

Hardly very few libraries thought of cloud technology in the libraries of Maharashtra and probably this is one of the best methods of preserving the safety of data and access around the clock. The issues of backup and maintenance of data would be minimized.

Today the library software's especially KOHA or other commercial software's has the provision of cloud technology and it is the right time with the limited library staff availability among university libraries, to go for cloud technology in the libraries.

### **7.3.9 RFID technology and 3M security systems**

The current development in the academic libraries has been 3M self issue/ return/ reserve offering self-issue and security technology. The Self Check System is a fully integrated hardware and software solution that can swiftly and efficiently checkout all library materials that carry barcodes. It offers the flexibility to customize receipts, screen graphics and text, and is extremely easy to use by staff and customers. The benefits are multiple i.e. Building security systems and stock security equipment and materials, Self Issue Systems and RFID (Radio Frequency Identification) system will help a lot though costly. The University libraries in Maharashtra almost 27 university libraries do not have RFID technology.

This in turn enables Library staff time is now spent on much higher level activities such as more effective presentation and management of stock, dealing with administrative tasks - helping with customer enquiries and assisting with people's network machines. Self-service has many benefits for the borrower and should be considered by librarians everywhere.

### **7.3.10 Virtual reference services**

Virtual reference can deliver a reference service by electronic means, from asynchronous via e-mail and web forms to real-time via chat, web push, etc. An ideal Virtual Reference Service (VRS) should provide professional reference service to patrons anywhere, any time, but in most cases, no single library will have the staff resources to operate a 24/7 VRS and answer all kinds of questions. Such goals might be achieved, however, if large groups of libraries collaborate to provide support for virtual reference. Librarians can establish a virtual reference service with relatively little expense or technical expertise for extending virtual reference services using Instant Messaging tools like Google Talk or Yahoo Messenger etc. In India or even Question Point service from OCLC, USA to provide value added services.

### **7.3.11 Mobile technology**

Today there is a decline in use of library sources and smart mobile phones have been found in almost all the student of universities and hence application of M-Service (Mobile based information services) would be an added advantage and thus there is a need to use mobile technology in rendering library activities and services. The study

revealed that 28 university libraries in Maharashtra has no mobile based services and for modernization of libraries and to provide technology based services, mobile based services be provided.

### **7.3.12 Institutional repository**

There are many digital initiatives in preserving electronic records which need a wide range of commitment from every unit in the institution. In Universities of Maharashtra, there are many research articles produced by the academicians and information professionals who need a medium to store those articles to support the teaching, learning and research purposes. Besides, question papers, regional heritage, lesson plans etc. have to be preserved through digitization. The trusted digital repository should be able to preserve all those local research articles and maintain its existence as an “infrastructure of information”.

Almost 20 university libraries do not have Institutional repository and there are live CD’s which are very user friendly in installing digital library software’s like DSpace and little bit exposure and commitment, it is suggested to develop institutional repository in the university libraries of Maharashtra state.

### **7.3.13 Best practices**

Best practices means way of doing something that is usual or expected way in a particular organization or situation, guidelines for good practices and these best practices in libraries reflect quality of high standard and excellence. National Assessment and Accreditation Council (NAAC) concerns for quality of library practices have to be best practices in academic libraries and these are tested in the survey of university libraries in Maharashtra and it was found that libraries have been in the process of adopting best practices but still there is a long way to go. Hence some of the best practices to be adopted by university libraries in Maharashtra are suggested below.

- Library Website incorporating all the information and links as one stop point for information to the users.
- Best Book Review Contest
- Book Talk Programme
- Best User of the Library
- Useful websites for Educationists and Researchers:
- Book Fairs and Exhibitions:
- Gold Card Facility for students who have scored more than 75% in semester exams are eligible to borrow one more additional book along with their regular borrowings.

- Training programme as a regular feature
- Best practices already practiced needs to documented containing
  - Goal of the practice:
  - The process:
  - Impact of the practice:
  - Resources required:

#### **7.4 Future Areas of Research**

The results of this research work gives direction for future researchers to be undertaken on the following research topics in pursuance of doctorate study.

- InfoTech Based Services of R & D Institutions in Maharashtra
- Library Website Analysis of universities/ Research Institutes in Maharashtra
- Design and Development of Social Networking Applications in University Libraries
- Users preference towards Technology based services in academic and Research Institutions in Maharashtra
- Evaluation of National Consortia among Research and Development Institutions
- Comparative study of Open Source Softwares used by academic and Research Institutions in Maharashtra
- Analytical study on Design and Development of Institutional repositories in Maharashtra

#### **7.5 Conclusion**

Developmental aspects of library are a continuous process to keep in tune with current developments in Information and Communication Technology and also changing user's information behavior. Efforts have to be made to incorporate and strengthen the existing library facilities and services. Innovation and creativity are the continuous drives of life and owing to technological developments and it's obsolescing in a short period; there is a need to upgrade and improve the value added services to the users. With positive approach, librarians must facilitate users with desired information on time and provide the best possible information services and thereby strive to build the image of librarianship.