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February 2013

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## Abstract

The Information and Communication Technology (ICT) has affected the libraries to the great extent. Libraries use ICT to maintain housekeeping operations, services, uniformity and extension of library facilities. University libraries of Rajasthan (India) are using computer and associated technology for library activities. This study attempts to reveal the basic infrastructure, use, and privation during the implementation of ICT in University libraries of Rajasthan. The data have been collected using the survey method. The paper encompasses the information about the staff, collection, financial sources, hardware, software, networking infrastructure, housekeeping operations, user's services, training and problems areas encountered during implementation of ICT in university libraries. It is revealed that ICT activities are under developing stage in the university libraries of Rajasthan. The lack of basic management and proper planning and frequently change in ICT are the basic hurdles for successful implementation and development of ICT.

## Key Words

ICT, University Libraries, Rajasthan, Hardware, Software, E-resources

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## 1. Introduction

The application of technology in library activities is not new phenomenon. Libraries are adopting latest technology to manage the different form of information, its communication and increasing use by patrons. The newly derivate technology that is called Information and Communication Technology (ICT) makes the tremendous impact on library's operations, services, users and staff. In broad term the ICT consists of all modern technical means used to store and handle information, its communication through computer and related hardware, communication networks technology and necessary software etc.  ICT is significant to the libraries to achieve its goals for management of information, effective services and extension of boundaries from the four-walls to the globe.

ICT presents an opportunity to libraries to provide value-added information services and access to a wide variety of digital-based information sources to their clients. Libraries are using modern ICT to automate their core functions, implement efficient and effective library cooperation and resource sharing through networks. They use ICT to implement the management information systems (MIS), develop institutional repositories (IR) of digital local content, and digital libraries. Libraries are also initiating ICT-based capacity building programmes for their staff and information literacy programmes for library users. However, for most libraries in India, use of ICTs is largely restricted to traditional library automation, i.e. replacing manual operations by computerized methods **(Rana, 2008)**.

## 2. Review of Literature

A huge volume of literature is available focusing the gradual development of computerization and use of ICT in university libraries in India. At the very first time in India **Kumar (1987)**  had surveyed the university libraries of India and found that the

Delhi University library conducted stocktaking using computer in 1970, Andhra University produced the list of additions in 1970s, SNDT University obtained computer in 1985 and Marathawara University library acquired minicomputer for library operations in 1985. In 2001, 36.84% state agricultural university libraries and 56.75% ICAR libraries of India were developing their own computerized bibliographic databases (**Jain and Goria**, **2001).** During the year 2002, libraries of the central universities of India had developed the basic infrastructure for the use of ICT for the house keeping operations and online services to the users **(Venkata Raman and Chandrasekhar Rao, 2003)**. University libraries of Punjab, Haryana, and Chandigarh in India had initiated their automation project in early nineties. All university libraries of these states are using ICT for library and information management, services to users, resources sharing through networking and creation of bibliographic database **(Dabas and others**, **2003)**. **Vyas (2003)** has made a survey of 12 university libraries of Rajasthan and IIT library Delhi**.** His findings reveal that, most of the libraries have implemented the technique of ICT to their in-house activities and services, to automate and digitize resources and to share resources at local and national level. Central library of university of Jammu has implemented the modern ICT including RFID technology. Library is following National Assessment and Accreditation Council (NAAC) Standards and obtained ISO Certification for the better services (**Malhan, 2006**). In the conclusion of **Babel (2011)** Rajasthan University libraries have been applying ICT for providing efficient services and resources, but efforts are yet not enough. INFLIBNET is providing the financial and technical assistance to Indian university libraries to create basic infrastructure, networking, training and use of ICT for library operations and services. University libraries of Rajasthan are getting e-resources with the help of INFLIBNET. **(INFLIBNET, 2012).**

### 3. Aims and Objectives of the Study

Following are the main objectives of the study:
   (i) To study the basic ICT infrastructure developed in the university libraries of Rajasthan.
   (ii) To study the various areas of library operations and services those are performed through ICT in university libraries of Rajasthan.
   (iii) To identify the basic problems those hinder the development and use of ICT in university libraries.

### 4. Importance of the Study

Rajasthan is a largest geographical state of India. Economy of the state is based on tourism and livestock developed in low education and ICT practices. With the efforts of the Government and corporate families belonging to the state, peoples now have started to use IT for the different purposes. Government of India has started funding since 1995-1996 for ICT activities in universities. There were some small studies **(Vyas, 2003), (Gupta, Gupta and Rawtani, 2008), (Babel, 2011)** cover the introductory scenario of the application of ICT in university libraries of the state. The present study is a first keen effort to show the real sketch of entire infrastructure, use and problems in development of

ICT in university libraries of Rajasthan. Findings and suggestions of the study may help to the government, management of the universities and librarians to improve their current management and planning of ICT projects and the financial resources for this purpose.

## 5. Scope

The study covers the development, use and problems of ICT in university libraries of Rajasthan. There are 17 university level institutions in Rajasthan. Out of these, following 8 leading university libraries established up to the year 2002 and that have started the use of ICT in their activities were selected for the study:

(i) Rajasthan University (RU) Jaipur (1947)
(ii) Mohanlal Sukhadia University (MSU) (Udaipur) (1962)
(iii) Jai Narayan Vyas University (JNV) Jodhpur (1962)
(iv) Birla Institute of Technology and Science (BITS) Pilani (Estt. as college in 1963) (Deemed University, 1964)
(v) Banasthali Vidhyapitha, (BV) Banasthali (Estt. as college in 1935) Deemed University, 1983)
(vi) Rajasthan Agriculture University (RAU) Bikaner (1987)
(vii) Maharshi Dayanand Saraswati University (MDSU) Ajmer (1987)
(viii) Malvia National Institute of Technology (MNIT) Jaipur, (Estt. as college in 1963) (Deemed University, 2002)
    The study is limited to the libraries point of view. A separate study may be conducted to reveal the user's views regarding the services providing through the use of ICT in the university libraries of Rajasthan.

## 6. Methodology

The present study is based on the survey method. The questionnaire and observation methods have been used to collect data for the study. In order to gather data, a structured questionnaire was designed and mailed to collect all exhaustive information regarding ICT infrastructure, its use in library operations and services and problem area in all university libraries of Rajasthan. Responses obtained from the different university libraries were analyzed in the light of the criteria (a) Availability of ICT hardware; (b) Availability of software; (c) Development of library databases and electronic resources; and (d) Networking infrastructure. Eight university libraries of the state were found having the state of ICT activities as per the criteria and finally they were selected for the study. All the selected university libraries have been surveyed in detail to study the development of ICT infrastructure, and its utilization in library activities.
    The non-comparative method of scaling technique has been used to measure the ICT services in the libraries. The information collected from the university libraries was analyzed using simple statistical methods such as percentages, averages, etc. for meaningful conclusions as per the objectives of the study.

## 7. Findings and Discussion

### 7.1 Communication Facilities

Communication facilities are the basic requirement of every organization. In the age of ICT, the telephone, fax, email and World Wide Web (Website) etc. are the very common tools for fast and smooth communication and dissemination of information.

Table 1 Automated Communication Facilities

| Sr. No. | Communication Tools | % of Libraries |
|---|---|---|
| 1 | Library Phone | 100% |
| 2 | Library FAX | 100% |
| 3 | Library on University Website | 100% |
| 4 | Library Independent Website | Nil |
| 5 | Library Email Address | 100% |

As indicated in table 1, all university libraries of Rajasthan have telephone and fax facilities. While none of the university libraries have independent website, however all university libraries use university's website for display of information about the library and they have their E-mail addresses as means of electronic communication.

### 7.2 Staff for ICT Management

It is expected that all the university libraries should have ICT experienced full time Librarians, Full time ICT professional to look after the ICT activities' ICT advisory committee having the members of ICT experts and clearly written ICT policy for proper development and use of ICT in library activities.

Table 2 Staff for ICT Management

| Sr. No. | ICT Management | Position |
|---|---|---|
| 1 | In-charge of Library ICT Activities | Librarian -3 (37.5%) DeputyLibrarian-2(25%) Assistant Librarian -2 (25%) Inf. Sct./Comp. Profe. -0 (0%) Technical Assistant -1 (12.5%) |
| 2 | ICT Experience Staff / Total Staff (%) | 35/199 (17.58%) |
| 3 | ICT Advisory Committee (%) | Exist-5 (62.5%) Not Exist-3 (37.5%) |
| 4 | ICT Development Policy (%) | Exist-6 (75%) Not Exist-2 (25%) |

Inf. Sct -Information Scientist. Comp. Profe.- Computer Professional

As shown in table 2, the ICT activities in the university libraries are with the hands of the non-computer professionals i.e. mostly by the library professionals. None of the university libraries have computer professional to look after the ICT activities. In India, it is very clear that Information and Library Network (INFLIBNET) had made the provision to support the post of computer professional as an Information Scientist by providing the salary for first five years and advised the universities to request their respective governments for the regularization of the post. As the governments did not approve the same proposal, the university libraries have not filled the post of Information Scientists.

However, University libraries of Rajasthan have a small number (17.58%) of computer oriented library personnel. Thus, majority of library staff (82.42%) does not possess any formal degree or sound experience in the field of ICT. There are 62.5% university libraries those have the automation/ICT advisory committee and 75% university libraries have automation/ICT policy. In the absence of ICT advisory committee and policy, the remaining university libraries of the state are facing problems relating to proper planning and controlling the ICT activities.

### 7.3 Collection of Information Sources

The table no. 3 indicates about the print v/s electronic and non-print documents ratio available in the libraries to measure the requirement of electronic resources.

Table 3 Collection of Information Source

| Sr.No. | Collection | No. |
|--------|------------|-----|
| 1 | Total Print Collection | 1503658 (97.37%) |
| 3 | Non Print A/V, CDs/ Floppies etc. | 10625 (0.69%) |
| 4 | Total On-line Resources | 29939 (1.94%) |
| | Total | 1544222 (100%) |

All university libraries of Rajasthan have collection of non-paper documents in the form of Floppies, CD-ROMs and DVDs etc. and subscribe the online electronic documents especially foreign research journals. As shown in table 3, out of total collection available in university libraries of Rajasthan, 97.37% collection is print collection while only 2.63% (0.69% and 1.94%) resources are available in electronic and non-print form. However libraries are showing their interest to purchase more electronic resources to develop non-paper collection.

### 7.4 Grant for ICT Activities

Indian university libraries receive recurring and non-recurring financial assistance from the Parent University, State Government, Central Government and also

from World Bank through the University Grant Commission (UGC) of India, Indian Council of Agricultural Research (ICAR), All India Council of Technical Education (AICTE) and similar agencies.

Table 4 Grant (Approx.) Received for ICT Activities (in Lacs Rs.)

| Funding Agency | | First Grant | |
|---|---|---|---|
| Agencies | Libraries | Rs. (Lakhs) | Libraries |
| INFLIBNET | 6 (75%) | 01-05 | 2 (25%) |
| NATP | 1 (12.5%) | 06-10 | 5 (62.5%) |
| TEQIP | 1 (12.5%) | 11-15 | 0 (0%) |
| Parent Univ. | 1(12.5%) | 16-20 | 0 (0%) |
| Other | 0 (0%) | 21 and above | 1 (12.5%) |

All university libraries of Rajasthan under study have received special grant for implementation of ICT. As shown in table 4, out of total university libraries under study, 75% received grant from INFLIBNET (UGC), 12.5% from Technical Education Quality Improvement Programme (TEQIP/AICTE) and 12.5% from National Agriculture Technology Project (NATP/ICAR). Only 12.5% university library received funds for ICT from their parent university. University libraries of Rajasthan have no permanent source of funds for ICT activities. They depend on the non-recurring grants provided by the INFLIBNET and other similar agencies. Due to the higher cost of the electronic resources, hardware, software, maintenance, training, and Internet charges etc., majority of university libraries those had received first grant up to Ten Lakhs Rupees, are unable to meet their total financial requirements under the funds available for the ICT purpose.

**7.5 Initiation of Library ICT Activities**

Table 5 Initiation of Library ICT Activities

| Initiation Year | Initiation Software and Libraries | Total Libraries |
|---|---|---|
| Before 1997 | - | Nil |
| 1997 | Without Software -1(12.5%)<br>CDS/ISIS-　　　1(12.5%)<br>Libsys-　　　1(12.5%) | 3 (37.5%) |
| 1998 | - | Nil |
| 1999 | Without Software -1(12.5%)<br>SOUL-　　　1(12.5%) | 2 (25%) |
| 2000 | SOUL -　　　2(25%)<br>Libsys-　　　1(12.5%) | 3 (37.5%) |
| After 2000 | - | Nil |

Table 5 provides the information regarding initiation of ICT activities in university libraries of Rajasthan. It is revealed that the ICT activities were first initiated in 37.5% university libraries of Rajasthan in the years 1997. The remaining 62.5% university libraries initiated such work during 1999 to 2000. It is remarkable that 25%

university libraries had started ICT activities without use of Library Application Software.

## 7.6 Hardware

No ICT activity is possible without computer and associated ICT hardware. The available number and variety of hardware in a university library can easily indicate the status of development of ICT infrastructure in libraries.

Table 6 depicts that about 22 types of ICT equipment are available in the university libraries of Rajasthan. The university libraries are absolving the computers and equipment having old technologies. Out of total number of equipment available in the university libraries of Rajasthan, 89.49% are working condition. While a significant number of hardware is found in non-operational condition. The presence of 10.51% non-working hardware in university libraries of Rajasthan indicates the lack of proper maintenance and post installation support from vendors and companies. It is also revealed that more stress has been given to purchase of computers rather than other relevant ICT hardware such as barcode scanner, barcode printers, cameras and RFID equipment etc., which are equally important to execute the operations for library management and users' services. These peripherals have not been purchased in most of the university libraries.

Table 6 Availability of Hardware

| Sr. No. | Hardware Available | Working | Non-working | Total |
|---|---|---|---|---|
| 1 | Total Computers | 124 (87.32%) | 18 (12.68%) | 142 (100%) |
| 2 | Printer | 29 (87.87%) | 4 (12.13%) | 33 (100%) |
| 3 | Scanners | 6 (100%) | 0 (0%) | 6 (100%) |
| 4 | Modem / Network switch | 12 (80%) | 3 (20%) | 15 (100%) |
| 5 | Bar Code Printer | 0 (0%) | 0 (0%) | 0 (0%) |
| 6 | Bar Code Readers | 6 (100%) | 0 (0%) | 6 (100%) |
| 7 | R/W/Combo Drive | 19 (90.47%) | 2 (9.53%) | 21(100%) |
| 8 | Digital /Web Camera | 0(0%) | 0 (0%) | 0 (0%) |
| 9 | Speakers | 14 (100%) | 0 (0%) | 14 (100%) |
| 10 | Micro-phones | 4 (66.66%) | 2 (33.34%) | 6 (100%) |
| 11 | Telephone | 9 (100%) | 0 (0%) | 9 (100%) |
| 12 | Telex | 0 (0%) | 0 (0%) | 0 (0%) |
| 13 | Fax | 3 (100%) | 0 (0%) | 3 (100%) |
| 14 | TV | 11 (100%) | 0 (0%) | 11(100%) |
| 15 | VCR/VCP | 6 (100%) | 0 (0%) | 6 (100%) |
| 16 | OHP | 1 (50%) | 1 (50%) | 2 (100%) |
| 17 | Film Projector | 0 (0%) | 1 (100%) | 1 (100%) |
| 18 | Micro film reader | 2 (66. 66%) | 1 (33.34%) | 3 (100%) |
| 19 | Micro fiche reader | 0 (0%) | 2 (100%) | 2 (100%) |
| 20 | LCD Projector | 1(100%) | 0 (0%) | 1 (100%) |
| 21 | Photocopy Machine | 11 (91.67%) | 1(8.33) | 12 (100%) |
| 22 | Sec. Sys./ CCTV Camera | 40 (100%) | 0 (0%) | 40 (100%) |
| | Total | 298 (89.49%) | 35 (10.51%) | 333 (100%) |

## 7.7 Software

The software plays very important role in the success of ICT in libraries. The Different type of software tools like operating system and networking software indicate the quality and performance of technology being used by the library. Efficient library application software reveals the effective operations and procedures of the library. The multi-functional, integrated, modular, multi-user, multi-security level and user-friendly library software having the facility of integration with RFID technology are found more useful to the libraries.

Alternate Table 7 (Raj) Available Software

| Operating /Networking System | | | Library Application Software | | |
|---|---|---|---|---|---|
| Software | Available | Use | Software | Available | Use |
| DOS | 3 (37.5%) | 0 (0%) | In-house | 1 (12.5%) | 0 (0%) |
| Windows | 8 (100%) | 6 (75%) | CDS/ISIS | 5 (62.5%) | 0 (0%) |
| Unix | 5 (62.5%) | 0 (0%) | SOUL | 6 (75%) | 4 (50%) |
| Linux | 5 (62.5%) | 2 (25%) | LIBSYS | 4 (50%) | 4 (50%) |

It is found from the table 7 that out of four operating and networking software available in the university libraries of Rajasthan, 75% university libraries are using the Windows operating and networking software while Linux is used in 25% university libraries. Similarly out of four library management software available in university libraries of Rajasthan, only two are being used. The both software i.e. SOUL and LIBSYS are being used in 50% and 50% university libraries respectively. Some of the university libraries have more than one operating and networking software and library management software. It is revealed that only 12.5% of the university libraries of the state have tried to develop in-house library software. Therefore majority of the libraries preferred to purchase ready-made library software available through various agencies and firms.

## 7.8 Selection of Library Software

Availability of suitable library software in a library makes an easy and comfortable journey for implementation of ICT activities in the library. Such availability of software depends on the criteria followed by the library for the selection of particular library software.

Figure 1 Criteria for Selection of Library Software
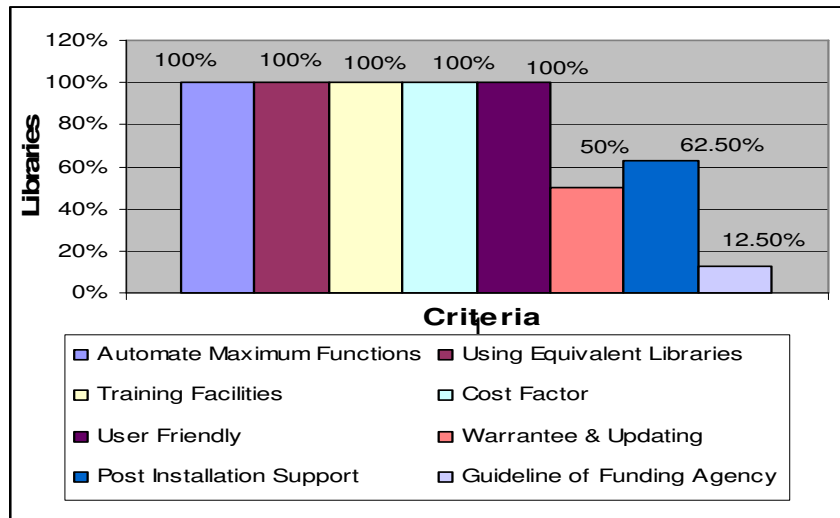


As presented in the figure 1, during the study, eight criteria were employed to test, how many of them are considered at the time of selecting the library automation software package in university libraries of Rajasthan. The In-charges of the university libraries of the state are shown the awareness about the criteria for selection of library software. The criteria related to the capacity to automate maximum functions of the library procedures, software used by the equivalent libraries, training facilities, cost of the software and user friendliness of the software were kept in mind by the authorities of all university libraries of the state. Though equally important criteria i.e. 'Warranty and updating', and 'Post installation support for the software' were followed by 50% and 62.5% respectively of the university libraries of Rajasthan.

**7.9 Efficiency of the Library Software**

Every library-software may not be useful to every library. It depends on the nature and services of the library and facilities available in the library software. Absence of any particular function in library software tells upon the efficiency of software. The strengths and weaknesses of the library software directly affect the library management and services.

Figure 2 Views about Change of Existing Library Software
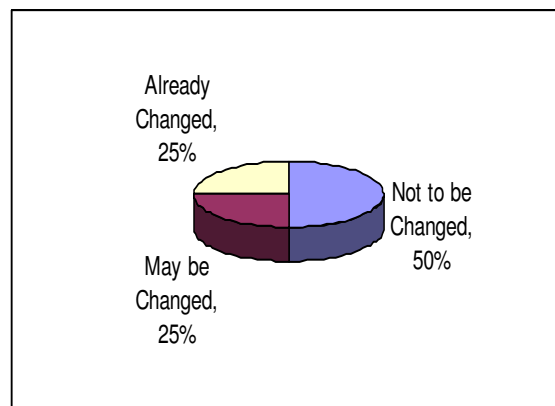
It is revealed from figure 2 that majority of university libraries are not satisfied with their library software. Only 50% libraries are satisfy with their library software while other fifty percent university libraries of Rajasthan have felt the problem of non-availability of one or more functions in the library software used by them. Consequently 25% libraries have changed their library software while same percentage of libraries is willing to change their existing library software. The availability of multiple library management software (table 7) also indicates the movement of libraries from one to another software.

## 7.10 Networking Infrastructure and Facilities

Networking is the backbone of all ICT activities in a library. Use of latest technology for networking infrastructure always makes a good indication for fruitful development of the library. Local Area Network, the Intranet and Internet facilitate the effective dissemination of information to library clients.

Table 8 Infrastructure of Library Network

| LAN | CWN | Connect Type | Speed | Date of Commencement | Membership NETWORK | Membership Consortium |
|---|---|---|---|---|---|---|
| 8 (100 %%) | 7 (87.5 %) | Lease-5 (62.5%) VSAT-3 (37.5%) | 256 kb.-2 (25%) 512Kb.-2 (25%) 2 mb. -3 (37.5%) 10 mb-1 (12.5%) | 2004-5 (62.5%) 2005-3 (37.5%) | INFLIBNET-7 (87.5%) DELNET-4 (50%) ERNET- 2 (25%) | INFONET-6 (75%) INDEST- 2 (25%) |

As indicated in table 8, the networking facilities are in developing stage in the university libraries of Rajasthan. All university libraries of the state have Local Area Network (LAN) and Internet while Campus Wide Network (CWN) is available in 87.5% university libraries. Only fifty percent university libraries of Rajasthan have Internet speed in mbps. However all libraries are in the process to increase their Internet speed up to 10 mbps. The higher cost of electronic resources specially the international research journals is exerting ever-increasing financial pressure on the university libraries. In order to overcome such financial pressure, the university libraries prefer the 'shared subscription' or 'consortia based subscription' to the journals and other resources available in electronic form everywhere in the world. For this purpose 100% university libraries of Rajasthan are the members of library networks and consortium. INFLIBNET and its Infonet consortium are found as the most preferred library network and consortium for the university libraries of the states.

### 7.11 Use of Computers

Table 9 Use of Computers in University Libraries

| Sr. No. | Availability of Computers | Nos. of Computers |
|---|---|---|
| 1 | Total Computers in University Libraries | 142 (100.0%) |
| 2 | Total Computers in Working condition | 124 (87.32%) |
| 3 | Total Computers in non-working condition | 18 (12.68%) |
| 4 | Total Computers in Use | 112 (78.87%) |
| 5 | Total Computers Not in Use | 30 (21.13%) |
| 6 | Total Computers with Internet | 78 (54.93%) |
| 7 | Computers with Internet available to Users | 43(30.28%) |
| 8 | Computers with Internet using by Library staff | 35(24.65%) |
| 9 | Computers without Internet using by Library staff | 34(23.94%) |

As presented in table 9, computers were found in three conditions i.e. number of computers available in the libraries; number of computers in working condition (87.32%); and number of computers being actually used by the libraries (78.87%). The figures in the table 9 reveal that all computers available in the university libraries Rajasthan are not in the working condition; also libraries do not use all available computers that are in working condition. It is also important to state that the Internet facility is available in 54.93% computers and only 43% computers with Internet connectivity are available to users. Such a situation clearly indicates that libraries have to improve the proper maintenance and planning for the use of computers. They have to also increase computers with Internet facilities to library users.

### 7.12 Computerized House Keeping Operations

Table 10 Use of ICT in Library House Keeping Operations

| Sr. No. | (A) Acquisition in Libraries | (B) Cataloguing in Libraries | (C) Circulation in Libraries | (D) Serial Ctrl. in Libraries | (E) Others Operations in Libraries |
|---|---|---|---|---|---|
| 1 | a-8 (100%) | a-8 (100%) | a-3 (37.5%) | a-2 (25%) | a-8 (100%) |
| 2 | b-4 (50%) | b-7 (87.5%) | b-3 (37.5%) | b-5 (62.5%) | b-0 (0%) |
| 3 | c-6 (75%) | c-8 (100%) | c-2 (25%) | c-4 (50%) | c-0 (0%) |
| 4 | d-7 (87.5%) | d-2 (25%) | d-3 (37.5%) | d-1 (12.5%) | d-0 (0%) |
| 5 | e-5 (62.5%) | e-5 (62.5%) | e-2 (25%) | e-1 (12.5%) | e-6 (75%) |
| 6 | f-4 (50%) | f-1 (12.5%) | f-4 (50%) | f-4 (50%) | f-0 (0%) |
| 7 | g-7 (87.5%) | - | - | g-6 (75%) | g-6 (75%) |
| 8 | - | - | - | h- 8 (100%) | - |
| Avg. Value | 41/7= 5.86 | 31/6= 5.16 | 17/6= 2.83 | 31/8= 3.87 | 20/7 = 2.86 |

(A) Acquisiti1on – (a) Database of Collection/Retro-conversion. (b) Document Selection. (c) Prepare Purchase Order. (d) Accessioning. (e) Documents Bar-coding. (f) Invoice Processing. (g) Reporting.

(B) Cataloguing - (a) Database for Catalogue (b) Maintain Authority File. (c) OPAC (d) Export/Import Cataloguing Data (e) Printing of Catalogue Cards (f) Stock Verification

(C) Circulation - (a) Database of Users. (b) Member Registration. (c) Circulation of Documents. (d) User Bar-coding. (e) Fine Management. (f) Statistics.

(D) Serial Control - (a) Database of Serials. (b) Serial Selection. (c) Ordering/Renewal (d) Bar-coding of loose Issues.(e) Bindery Management. (f) Accessioning of Bound Vols. (g) Reporting. (h) Online Journals.

(E) Others - (a) Word Processing/Printing (b) Classification, (c) In-house Scanning/Digitization of Documents (d) Use of RFID/Similar Technology (e) Close Circuit TV Cameras (f) Budgeting Purchase/Tender Procedure. (g) System Administration

Broadly ICT in house-keeping operations encompasses the areas of Acquisition, Cataloguing, Circulation control, Serials control and Online searching of library database i.e. OPAC. University libraries of Rajasthan were expected to use the ICT at different levels of applications, viz. (i) Only typing, word processing and printing applications; (ii) Maintaining the databases through standard library management software and partial user services; and (iii) Well developed and standard library house- keeping operations and services.

Table 10 shows that more or less all university libraries of Rajasthan have started to use ICT in their acquisition, Cataloguing, Circulation and Serial control systems. The maintenance of database and retrospective conversion for acquisition, cataloguing and OPAC purpose are computerized in all university libraries of the state. All libraries also manage serials in the electronic form and provide to users through networking technology. The key function of circulation system i.e. issue and return of documents and an important operation of serial system i.e. 'database of current print serials' have been started using ICT only in 25% university libraries.

The average values indicate that the level of use of ICT is highest in acquisition system while it is lowest in circulation system. It may also be concluded that the use of ICT in house-keeping operation is in its initial stage.

**7.13 User's Services through ICT**

Figure 3 ICT for User Services
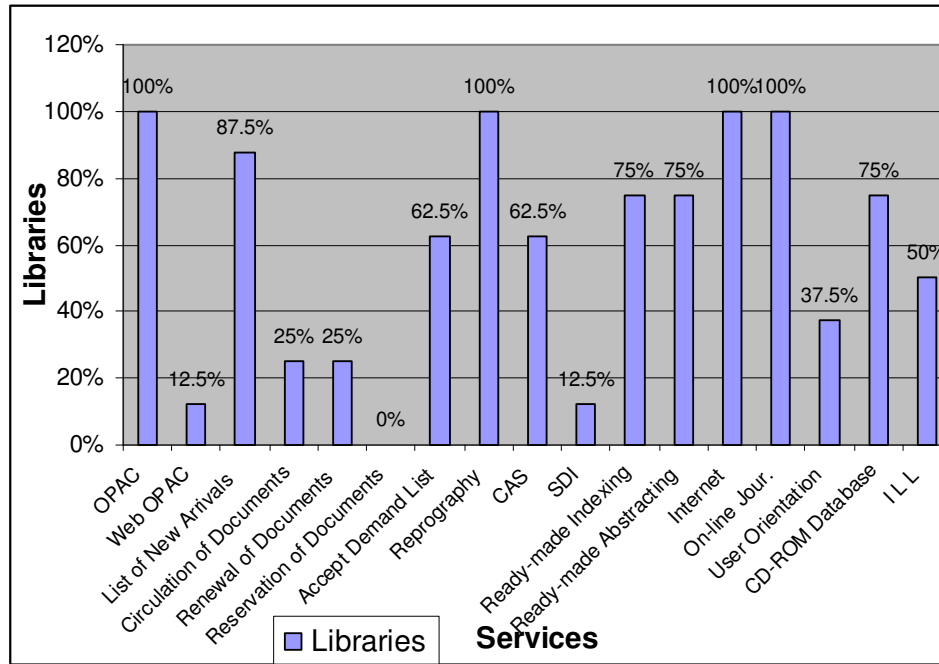


One of the main objectives to use of ICT in library is to provide better facilities and opportunities to users to get the desired information in users' define format and time. Figure 3 presents the level of ICT based services being provided to users in the university libraries of Rajasthan**.** More or less, a total of fifteen computerized services are available to users in the university libraries. The OPAC, Reprographic services and Internet facility and online searching of journals are available in 100% university libraries. While Reservation of documents, is not provided in any of the university libraries. Though the issue-return and renewal of documents are treated as the most important and most demanded services for the users but it is surprising that, these services are computerized only in 25% university libraries.

**7.14 Problems in Implementation of ICT**

Table 11 Problems Experienced in Implementation of ICT Activities

| Sr. No. | Problems | Problem in No. of Libraries |
|---|---|---|
| 1 | Inadequate Finance | 6 (75%) |
| 2 | Lack of Planning | 4 (50%) |
| 3 | Inadequate Management Support | 4 (50%) |
| 4 | Lack of IT Trained Staff | 8 (100%) |
| 5 | Lack of Willingness of Staff | 5 (62.5%) |
| 6 | Lack of Consultancy Service for ICT | 5 (62.5%) |
| 7 | Lack of Well Accepted Standard of LMS | 2 (25%) |
| 8 | Lack of Less Expensive Standard Software | 3 (37.5%) |
| 9 | Inadequate Hardware | 7 (87.5%) |
| 10 | Lack of Training Facility | 8 (100%) |
| 11 | Taken More time for Retro-Conversion & Bar-coding | 8 (100%) |
| 12 | Lack of Awareness/ Hesitation in Users ICT | 3 (37.5%) |
| 13 | Low Priority to ICT | 2 (25%) |
| 14 | Lack of Control Over Library Staff | 2 (25%) |
| 15 | Lack of Motivation | 8 (100%) |
| 16 | Vacant Post of Librarian and Staff | 3 (37.5%) |
| 17 | Frequently Change in IT | 8 (100%) |
|  | Total Problems |  |

The significant obstacles and the factors that are affecting the use of ICT in university libraries are presented in table 11. More or less a total number of seventeen problems have been identified in university libraries of the state. The problems of lack of ICT trained staff, lack of training facilities, delay in retrospective conversion of documents, delay in bar coding of documents, lack of motivation to staff for better performance and frequent changes in ITC used in libraries are faced in the all (100%) university libraries. The problem of inadequate hardware is experienced in 87.5% university libraries, while the sufficient financial resources for ICT implementation are not available in 75% libraries. Half of the university libraries experience the inadequate management support and lack of effective planning for ICT activities.

**8 Conclusions**

Innovative use of ICT in university libraries of Rajasthan is not widespread. It is in developing stage. These university libraries need proper ICT infrastructure including hardware, software and library staffs have to be trained properly. ICT is going to change the whole environment of the libraries and their users. Looking to the faster rate of information explosion, user's need and their expectations, every library has to go through the ICT. The library management including Librarians is clearly realizing that, the ICT is the necessity of present day libraries. It is an unavoidable phenomenon and there is no

way to escape from it **(Yogendra Singh, 2003)**. Though the problems of hardware and software are very common in implementation of ICT, but most of the problems seem to go through the basic management of ICT infrastructure and operational staff. University authorities have to appoint well experienced and full time Librarians. Full time computer professionals should be available to look after the all technical matters and problems related to ICT. Authorities have to frame a sound written policy for periodically evaluation and time bound completion of the ICT projects. However, the library authorities and computer experts have expressed their concern for frequent changes in ICT being used in the library and information field. Such frequent changes lead to greater requirement of finance, continuous training of staff and up-gradation of basic infrastructure available for ICT in the libraries.

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