

An Analytical Study of Information Technology Application in the University Libraries of Gujarat State

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***Abstract.** An earnest attempt has been made in this study to present both conceptually and empirically the aspects of IT application in libraries based on primary investigation. The Paper presents an analytical study of Information Technology (IT) application in the University libraries of Gujarat State. It states the objectives, scope and significance of the study. Further, it discusses the research methodology done by the investigator applicable for the present study and collection of data through various sources. Finally, data collected have been analyzed and findings have been enumerated with a few suggestions.*

Keywords: Information Technology, University Library, INFLIBNET

1. Introduction

Information Technology has revolutionized the information handling activities in academic libraries of India. The university libraries, as centers of information services, have largely benefited from the rapid changes in IT. In fact, it is difficult for the libraries to escape from the revolution in the IT sector as it has revolutionized the way of working of the entire society. The advancement of IT, digital telecommunication technology, CD-ROMs, multimedia, computer networks and the internet have paved the way towards electronic publishing and changed the traditional libraries to digital libraries.

However, in the Indian context, especially in case of Gujarat, only a few university libraries have adopted the new technological changes. There seems to be relatively less effort in the direction of introducing the technological development in the university libraries of the State. This may be due to lack of motivation and awareness on the part of the librarians, non-availability of skilled personnel, lack of training opportunities to handle sophisticated tools and machineries and lack of desirable financial assistance.

The university libraries of Gujarat have developed their databases and also a few university libraries are providing services through the library software, invariably SOUL, developed by INFLIBNET at the Gujarat University, Ahmedabad in 1991. The programme is directed towards the modernization of existing university libraries by introducing the installation of computers and implementation of the nationwide network using 'State of the Art Technologies' for connecting all the university libraries within the country.

Relatively less number of systematic studies have been conducted to investigate the use of IT in university libraries in India. With the result, no clear insights are available as to how this new technology has been perceived, introduced and

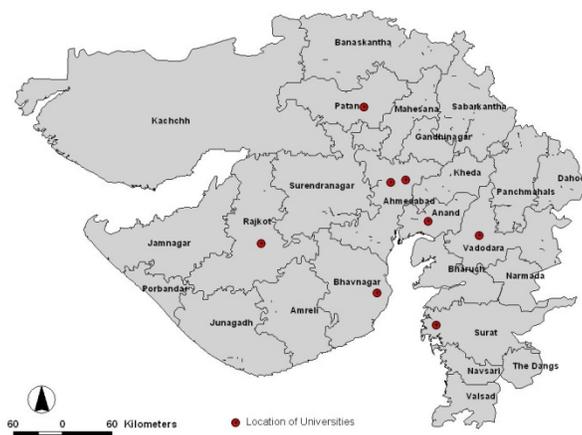
used in the library environment, and what effect IT would have on the Library and Information Science (LIS) profession in the years to come.

2. University Libraries of Gujarat under Study

Since the formation of Gujarat State in 1st May'1960, university education has marked a significant progress. Out of the nineteen State universities only nine universities impart general education and the remaining ten are specialised universities. For the present study, only the State Universities imparting general education have been considered. Detailed information pertaining to these nineteen universities is provided in the table below.

Sr. No	Name of the University	Year of Establishment	Specialization
1	The Maharaja Sayajirao University of Baroda, Vadodara.	1949	General
2	Gujarat University, Ahmedabad.	1950	General
3	Sardar Patel University, Vallabh Vidyanagar.	1955	General
4	Gujarat Vidyapeeth, Ahmedabad.	1963	General
5	Veer Narmad South Gujarat University, Surat.	1965	General
6	Saurashtra University, Rajkot.	1967	General
7	Gujarat Ayurveda University, Jamnagar.	1968	Ayurveda
8	Gujarat Agricultural University, Sardar Krushinagar.	1972	Agriculture
9	Bhavnagar University, Bhavnagar.	1978	General
10	Hemchandrachrya North Gujarat University, Patan.	1986	General
11	Dr. Babasaheb Ambedkar Open University, Ahmedabad.	1995	Distance
12	Gujarat National Law University, Gandhinagar.	2003	Law
13	Anand Agricultural University, Anand.	2004	Agriculture
14	Krantiguru Shyamji Krishna Verma Kachchh University, Bhuj.	2004	General
15	Centre for Environmental Planning and Technology University, Ahmedabad.	2005	Architecture
16	Dharmsinh Desai University, Nadiad.	2005	Technical
17	Shree Somnath Sanskrit University, Veraval.	2005	Sanskrit
18	Gujarat Technological University, Ahmedabad.	2007	Technology
19	Gujarat Forensic Sciences University, Gandhinagar.	2008	Forensic Sciences

Table 1. Year-Wise Establishment of State Universities of Gujarat



3. Objectives of the Study

The study aims at accomplishing the following objectives with special reference to selected university libraries of Gujarat.

1. To assess the extent and coverage of IT application in the libraries.
2. To study the attitude and aptitude of library professionals towards implementation of IT in the libraries.
3. To examine the initiatives taken towards implementation of IT for the university library services.

4. Scope of the Study

The study has been restricted to the libraries of general category State Universities. From among the nine general category university libraries, eight universities established before the year 2000 have been selected for detailed investigation. The library of Krantiguru Shyamji Krishna Verma Kachchh University, Bhuj has been excluded from this study as it is in its infancy stage.

The remaining ten non-general university libraries have also been kept outside the scope of the present study as their nature of reading materials, equipments, clientele are different and are thus not comparable. Besides, if studied together irrespective of their differences, it may tend to introduce distortion and misbalance in the results. Therefore, these ten university libraries have also been excluded from the present study.

The eight state university libraries of general education in Gujarat, for which information pertaining to the last three years (2007-2008 to 2009-2010) have been collected, are the following.

1. Smt. Hansa Mehta Library, The Maharaja Sayajirao University of Baroda, Vadodara (SHML).
2. Gujarat University Library, Ahmedabad (GUL).
3. Bhaikaka Library, Sardar Patel University, Vallabh Vidya Nagar (BLSPUL).
4. Veer Narmad South Gujarat University Library, Surat (VNSGUL).
5. Saurashtra University Library, Rajkot (SUL).
6. Hemchandracharya North Gujarat University Library, Patan (HNGUL).
7. Gujarat Vidyapith Library, Ahmedabad (GVL).
8. Bhavnagar University Library, Bhavnagar (BUL).

5. Significance of the Study

The application of IT in library and information services plays a vital role in information handling due to developments such as reduction in computing time, capabilities of resource sharing, economic storage capacities of files on video discs, telecommunication and satellite communication facilities. Besides, it also supports the technical functions associated with technical processing and circulation work. Secondly, it supports information storage, retrieval and dissemination systems. Thirdly, it supports management of information services by librarians, especially analyzing library statistics. Fourthly, it can best be used in service and orientation courses for practicing librarians, continuing education programmes for teachers of LIS, correspondence studies and library extension service. Thus, the new science and technology rest firmly on the foundation laid by the information generated in the past, effectiveness of future and efficiency of present information transfers. Further, the need for this technology arose partly due to the concept of multimedia documents, i.e. the conventional printed book is taking up other forms such as microfilms, cassettes, computer tapes, which require special equipments for their processing, and to meet the requirements of accurate and speedy retrieval of information and their transmission over long distances.

The present research aims at providing knowledge and practical perspectives on the application of IT in libraries and information services by drawing first hand field information and contributions of distinguished National and International scholars in the discipline. Keeping in mind the infancy stage of IT application in the university libraries of

the State, the study has great relevance. Besides, in concurrence with the timing of the study, the findings and conclusions of the study are expected to prove extremely valuable for the librarians of university libraries of the State, especially those imparting general education. The study has brought out several intricacies and the finer nuances of the IT implementation process in the general university libraries, which could help developing understanding and deciding the correct direction of managing the library or information service cost effectively, while meeting the needs of its users.

6. Research Methodology

Research methodology is a critical core of constructing and accumulating knowledge in all scientific disciplines. It plays an important role in the expansion and revision of the knowledge frontier. Research methodology mostly involves straight reporting of what the investigator actually did in her research study. In methodology, the investigator needs to communicate clearly and concisely as to how she went about investigating her research problem.

The present study is primarily aimed at examining the status of the university libraries of Gujarat in terms of application of IT in their various library activities and services. In order to achieve the set objectives of the study, the methodology adopted covers the formation of the questionnaire, selection of samples, data collection and computation, analysis of the data using suitable statistical techniques and testing of proposed hypotheses.

6.1 Formation of the Questionnaire

The questionnaire was designed keeping in view the set objectives of the present study. It was designed in structural form and based on the nature, scope and objectives of the research. The questionnaire was divided into different sections. Each section of the questionnaire consisted of 5-10 questions, covering both objective and descriptive type. The major portion of the questionnaire was 'Yes' or 'No' type questions and multiple choices in format to choose items from the list. The questionnaire method remained the primary source of collecting data. Eight questionnaires were circulated to eight university librarians through the post as well as through e-mail.

6.2 Data Collection

The tool used for collecting data was the questionnaire method. In general, various research methods such as literature searches, personal interviews, structured and unstructured questionnaire survey, telephone surveys and e-mail surveys are used for collecting data. The questionnaire was the pivotal data collection process. It was prepared in a lucid and simple manner for eliciting the suitable, correct and relevant data from the librarians of the eight university libraries under study. It is one of the most popular and convenient method for obtaining data, views and opinions of the respondents. Besides, some secondary sources (documentary or non-documentary) were consulted. After obtaining the relevant data through the questionnaire, these were tabulated, computed, represented and analysed.

The interview method was also employed to discuss and gather preliminary, general as well as specific information about IT application in the university libraries. The personal visits to the libraries and discussion with the librarians greatly helped the researcher to formulate basic ideas pertaining to IT application and its implications on library management in the libraries of the universities imparting general education in the State. The researcher could also telephonically contact and clarify doubts with the librarians pertaining to different aspects as and when required. The discussion also equipped the researcher to design suitably the research frame and the questionnaire of the study.

Keeping in view the set objectives of the research, the questionnaire was framed so as to incorporate the following facets; such as (a) Library Background (b) Information Support System aspects. (c) Modernization of Library and Information Services.

7. Analysis and Interpretation Of Data

During the recent decades, the contemporary world has changed characteristics. Through the processes of liberalization and globalization the world has shrunk into a global village, wherein immediate and easy access to information in each and every sphere has become a prerequisite. Under the situation, the requirements and demands of the library users have

drastically altered making the library profession much more socially relevant but highly challenging. Technological innovations in the tools for dissipation of information have been taking place in an unprecedented manner.

Sl. No.	University Library	Financial Year	Category of Users						Total (Avg. Per Year)
			Faculty Members	Research Scholars	Students		Admn. Staff	Others	
					PG	UG			
1	SHML	07-08	479	238	18,684 (incl. UG)		22	NM	19,423 (18,605)
		08-09	163	194	7,774 (incl. UG)		39	NM	8,170 (7,444)
		09-10	151	131	7,645 (incl. UG)		16	NM	7,943 (7,366)
2	GUL	07-08	85	100	1,206	1,471	27	04	2,893 (2,400)
		08-09	79	98	1,256	1,416	22	460	3,331 (2,736)
		09-10	97	123	1,370	1,145	30	583	3,348 (2,604)
3	BLSPU	07-08	103	97	1,700 (incl. UG)		---	---	1,900 (1,700)
		08-09	14	203	1,599 (incl. UG)		05	333 (Reading Room)	2,154 (1,657)
		09-10	14	---	1,507 (incl. UG)		16	350 (Reading Room)	1887 (1,500)
4	VNSGUL	07-08	335	250	1,870	400	49	10	2,914 (2,068)
		08-09	54	255	1,868	355	48	8	2,588 (2,046)
		09-10	87	310	1,994	350	48	7	2,796 (2,091)
5	SUL	07-08	307	250	1,047	---	292	---	1,896 (NM)
		08-09	150	260	1,250	---	292	---	1,950 (NM)
		09-10	307	250	1,352	---	299	---	2,208 (NM)
6	HNGUL	07-08	NM	NM	NM	NM	NM	NM	836 (250)
		08-09	NM	NM	NM	NM	NM	NM	750 (250)
		09-10	NM	NM	NM	NM	NM	NM	850 (250)
7	GVL	07-08	50	15	580	NM	60	NM	705 (600)
		08-09	75	90	600	NM	75	NM	840 (735)
		09-10	82	103	731	NM	83	NM	999 (705)
8	BUL	07-08	59	27	838	-	40	-	964 (874)
		08-09	77	42	758	-	47	15374	2,571 (1,936)
		09-10	76	41	928	-	52	12899	2,777 (2,177)

Table 2. Category-Wise Number of Users in the University Libraries (2007-2010)

NM = Not Mentioned.

Present day librarianship demands not only proper grasping of these modern tools but also their application and utilisation in information dissipation. Traditional methods to provide library services are increasingly being redundant and require to be replaced by the newly invented technologies for information dissipation. In the final analysis, the application of IT in the library and information centres has acquired great significance in the contemporary period and cannot be dispensed with.

It is pertinent, therefore, to evaluate the status of application of IT. An attempt is made in the present chapter in this direction based on the study of the university libraries of Gujarat. For the purpose, an in-depth study of eight general university libraries of the State has been conducted using a structured questionnaire along with the personal interview method. The questionnaire was administered to the librarians of all the eight general university libraries, which were received by and large in complete form. Interview and observation methods were also applied as and when required for authentic and detailed information.

8. Background Information about the Libraries

Automation of libraries, to a very great extent depends upon the existing and prospective characteristics of the library itself. Among all, availability of funds is the first and foremost requirement for automation of any library. Without the availability of sufficient financial grants it would absolutely be difficult even to dream of automation work in a library. The library would not only require funds for procuring hardware, software and other accessories along with training of professionals, but also for creating digitized databases of the existing materials and getting linked to different national and international agencies for the procurement of digitized data.

A completely automated library would be in a position to perform all the functions and render all the services with the help of IT. It would therefore not be wrong to assume that after completion of the automation of the libraries in all respects, every library would require by and large a similar financial assistance. However, as the sample university libraries of the State are not yet fully automated and still perform many of the functions and render many of the services manually following traditional methods, their financial requirements would greatly be dependent upon their respective size in terms of number of users. It is therefore pertinent to posit the financial assistance status of the university libraries in relation to their respective number of users.

8.1 Number and Category of Users

The university libraries are used by their faculty members, research scholars, post-graduate and under-graduate students, and administrative staff. Some university libraries also permit membership to individuals and organizations on a temporary basis only for purposes of consultation of library materials.

The table 1 provides the statistics pertaining to the number of different categories of members during the three years under study in the sample university libraries of Gujarat.

It is evident from the above figure 1 that there is by and large a pattern of consistency in the number of different categories of members in all the university libraries excepting for the Smt. Hansa Mehta Library, Vadodara (SHML). Gradually decreasing the number of users over the three year period of study in the SHML could perhaps be due to the increasingly easier access to the library materials through the university internet server. The year-wise variation in the total as well as average number of users in the libraries may be related to the fluctuations in the number of admissions in different years. The SHML emerges out as the largest among all the university libraries of the State in terms of number of users as the parent university, i.e. The M. S. University of Baroda is of unitary type. The remaining universities are affiliating in nature, thus their libraries cater to a relatively small number of users belonging mostly to the postgraduate and research departments.

8.2 Financial Status / Assistance

The libraries of the State are funded by the appropriate agencies through their respective universities. The survey conducted for the present study revealed that, based on the requirements, funds are earmarked on a yearly basis for the

libraries of the respective universities. The survey tried to extract information on the financial status of the university libraries during the last three financial years, starting from 2007-08.

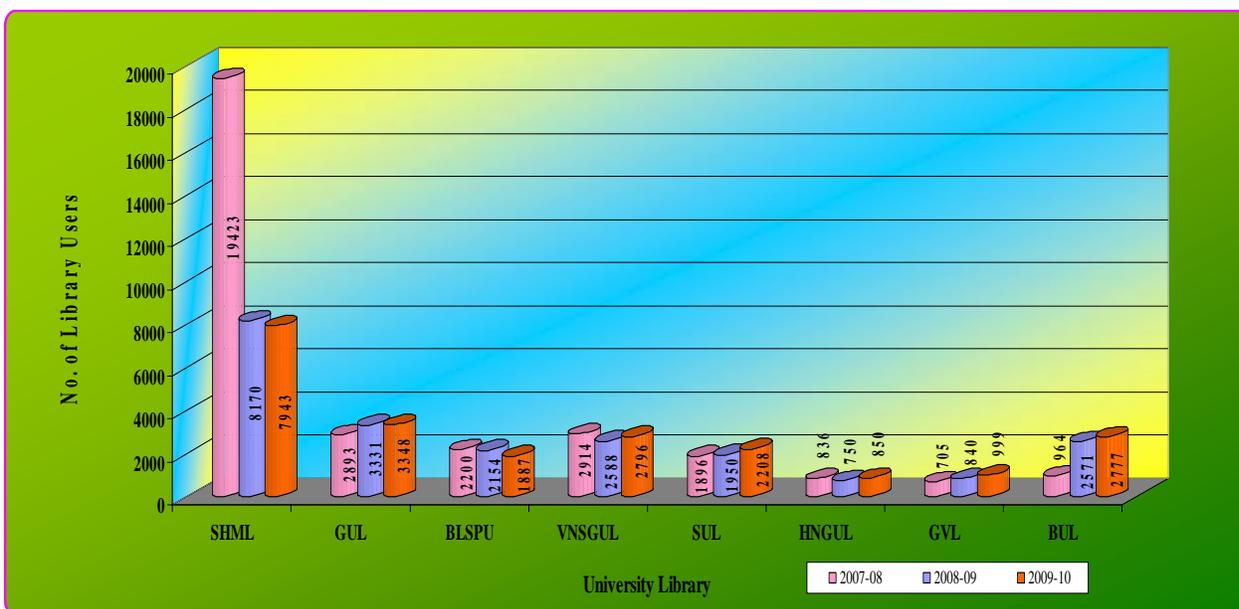


Figure 1. Year-Wise Number of Users in the University Libraries (2007-2010)

Sl. No.	University Library	2007-2008	2008-2009	2009-2010
		Total (Per Capita)	Total (Per Capita)	Total (Per Capita)
1	SHML	1,65,00,000 (849.51)	1,63,00,000 (1995.18)	1,62,50,000 (2045.83)
2	GUL	74,55,000 (2576.91)	82,00,000 (2461.72)	92,99,000 (2777.48)
3	BLSPU	42,00,000 (2210.52)	42,00,000 (1949.86)	42,00,000 (2225.75)
4	VNSGUL	9,80,000 (336.30)	640,000 (247.30)	7,05,000 (252.14)
5	SUL	9,00,000 (474.68)	9,00,000 (461.53)	9,00,000 (407.60)
6	HNGUL	24,10,000 (2882.77)	36,70,000 (4893.33)	15,50,000 (1823.52)
7	GVL	96,000 (136.17)	1,10,000 (130.95)	98,000 (98.09)
8	BUL	15,00,000 (1556.01)	15,00,000 (583.43)	20,00,000 (720.20)

Table 3. Total and Per Capita Financial Status /Assistance (in Rs.) of University Libraries (2007-2010)

Note: Per capita status has been calculated by dividing the total assistance (Table-2) received during a year with the number of total users (Table -1) of the library in the same year.

The information tabulated and presented in the above table-2, reveals that, while the amount of funds allocated to the Gujarat University Library, Ahmedabad (GUL), the Veer Narmad South Gujarat University, Surat (VNSGUL) and the Hemchandaracharaya North Gujarat University Library, Patan (HNGUL) has remained fluctuating, for the SHML, the Bhaikaka Library Sardar Patel University, Vallab Vidyanagar (BLSPU) and the Saurashtra University Library, Rajkot (SUL) it has remained by and large unaltered during the study period.

The fluctuation during the last three years is in a positive direction in the case of the GUL with an enhancement in the allocated amount by around 25 percent. The VNSGUL and the HNGUL have, of course not been that fortunate as in their case the same has been reduced approximately by around 30 and 50 percent respectively.

Viewed in terms of library-wise per capita financial assistance, the SHML however, loses its top position among the university libraries. Rather in comparison to the SHML, the GUL, the BLSPU and the HNGUL are better placed with higher per capita financial assistance during almost all the three years under study. On the other hand, it is important to note that the per capita financial assistance is indeed extremely meagre for the VNSGUL, the SUL and the GVL. The HNSGUL and the BUL also suffered from the small grants excepting for one year out of the three years under study. On the whole, it may not be wrong to say at this juncture that there is a great discrepancy in the financial allocation to the university libraries of the State. This is definitely true if the comparison is undertaken on the basis of per capita financial assistance.

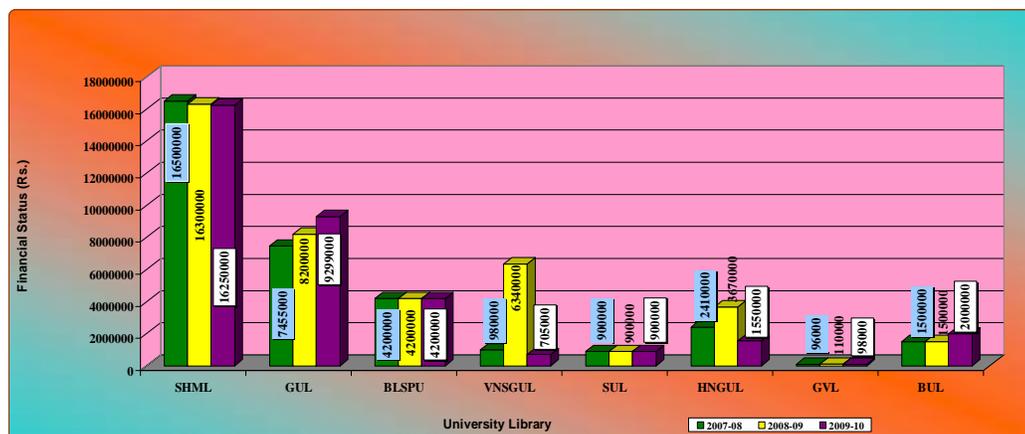


Figure 2. Financial Status /Assistance (in Rs.) of University Libraries (2007-2010)

It may be noted from the figure 2 that the SHML receives the largest financial assistance among all the university libraries.

Sl. No.	University Library	2007-2008	2008-2009	2009-2010
1	SHML	1,62,83,302 (98.69)	1,62,92,833 (99.96)	1,61,75,743 (99.54)
2	GUL	53,71,307 (72.05)	60,75,734 (74.09)	49,86,774 (53.63)
3	BLSPU	21,00,000 (50.00)	40,00,000 (95.24)	33,50,000 (79.76)
4	VNSGUL	9,39,393 (95.86)	63,79,893 (100.63)	7,04,495 (99.03)
5	SUL	8,47,860 (94.21)	8,78,340 (97.59)	6,87,824 (76.42)
6	HNGUL	2,41,192 (100.01)	3,478,634 (94.79)	1,450,011 (93.55)
7	GVL	98,000 (102.08)	99,000 (90)	1,00,000 (102.04)
8	BUL	14,74,595 (98.30)	14,12,005 (94.13)	19,38,227 (96.91)

Table 4. Amount and Percentage of Budget Utilised by the University Libraries (2007-2010)

Figures in parentheses indicate percentage of utilisation to total budget mentioned in Table 2.

The libraries have of course, not utilised the available funds optimally. There is also no evidence of a uniform utilisation pattern of the available funds. A perusal of table -3 clarifies that excepting the SHML and the VNSGUL, no other university library of the State has made the optimum utilisation of the grant during the study period. Their utilisation pattern also does not reveal any consistency. Inconsistency is, however, much more pronounced in case of the BLSPU. The utilisation of funds by the GUL has been rather miserable low (53.63%) during the last financial year. While the SUL displays a remarkable 18 (97.59 – 76.42 = 17.79) point percent decrease between the last two financial

years, the HNGUL is recording a gradual decrease in the level of utilisation from 100.01 percent in 2007-08, 94.79 percent in 2008-09 to 93.55 percent in 2009-10. The GVL, excepting for a decreases level of utilisation (90.00%) during the 2008-09 financial year, seems to have been over spending. The BUL, however, displays a by and large consistent pattern of budget utilisation.

The data pertaining to utilisation of library budget for the three periods under study for the university libraries are presented in figure 3 (a), 3(b) and 3 (c)for a graphical clarification.

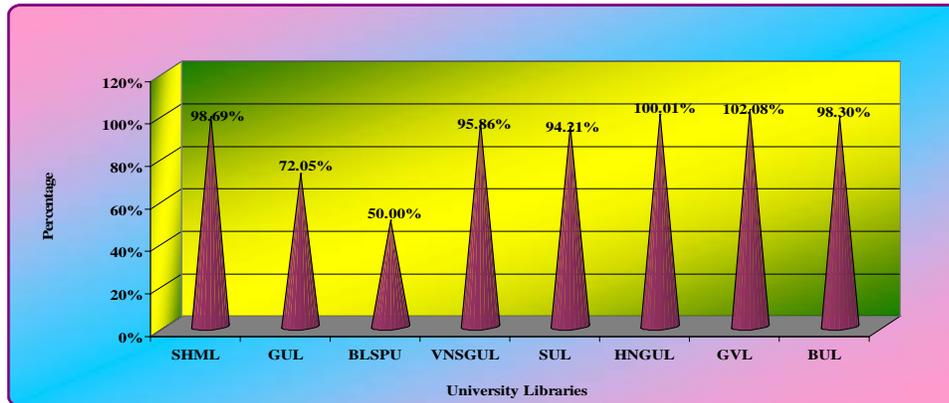


Figure 3(a). Utilisation of Library Budget by the University Libraries (2007-2008)

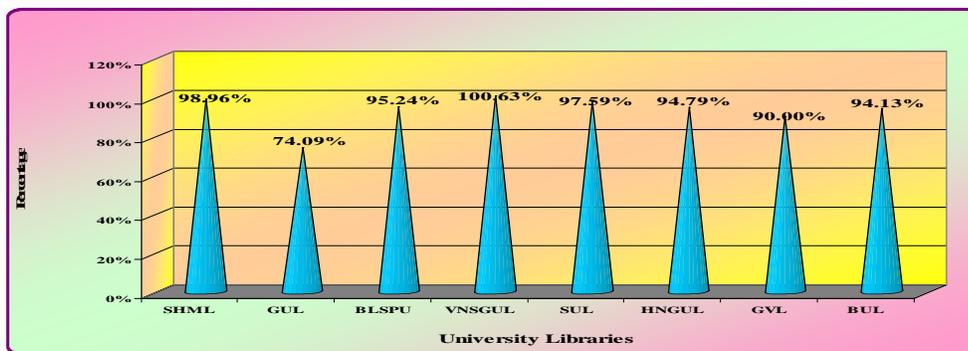


Figure 3(b). Utilisation of Library Budget by the University Libraries (2008-2009)

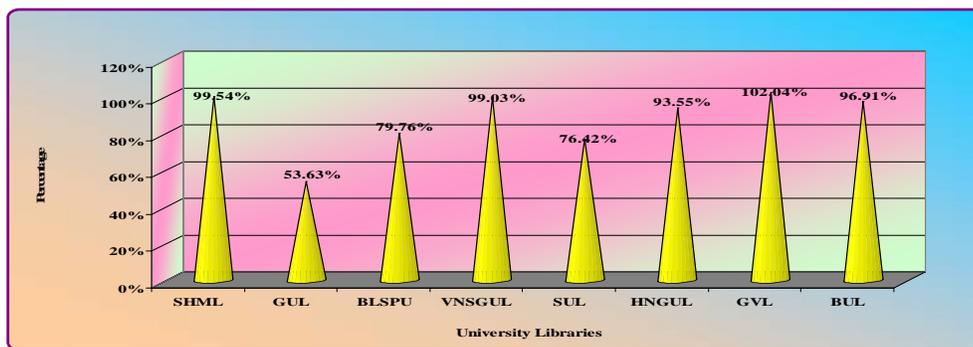


Figure 3(c). Utilisation of Library Budget by the University Libraries (2009-2010)

9. Circulation and use of Internet

Circulation of materials in the university libraries involves issue and return of books, consultation of books and

journals, and use of internet facility available within the library.

Sl. No	University Library	Financial Year	Circulation Statistics				
			Attendance of Users (per year)	Issue of Books	Return of Books	Consultation of Books	No. of Internet Users
1	SHML	07-08	3,082	70,716	70,716	1,670,000	----
		08-09	2,500	72,358	72,300	1,617,328	----
		09-10	1,990	71,599	71,599	1,605,670	----
2	GUL	07-08	68,725	7,021	----	----	----
		08-09	76,899	7,161	----	----	88(OPAC)
		09-10	74,999	7,416	----	----	559(OPAC)
3	BLSPU	07-08	NM	6,714	6,266	----	----
		08-09	----	12,720	9,727	----	----
		09-10	----	10,650	10,339	20,000	20,000
4	VNSGUL	07-08	NM	20,683	----	----	2983(+30 wifi)
		08-09	----	20,466	----	----	279 (+41 wifi)
		09-10	----	22,918	----	----	3,245 (+55 wifi)
5	SUL	07-08	NM	31,075	31,075	4,260	7,200
		08-09	NM	29,908	29,908	NM	7,500
		09-10	NM	31,075	31,075	NM	7,200
6	HNGUL	07-08	Average per day > 100				
		08-09	Average per day > 100				
		09-10	Average per day > 100				
7	GVL	07-08	NM	2500	2100	1050	2300
		08-09	NM	2750	2525	1101	2520
		09-10	NM	2957	2890	1325	2690
8	BUL	07-08	15,374	5,703	5,703	NM	--
		08-09	30,936	6,129	6,129	NM	--
		09-10	12,177	9,493	9,493	NM	--

Table 5. Circulation Statistics of University Libraries (2007-2010)

NM = Not Mentioned

As is evident from Table 4, circulation statistics in the university libraries have been more or less consistent excepting in the BLSPU, which has registered an increasing trend. The consistency in the circulation statistics of the SHML is rather surprising and confusing in view of the decrease in the number of members over the three years recorded earlier. It is interesting to note that the number of internet users in the libraries is gradually increasing. Non-availability of statistics on the number of internet users for the SHML is due to the fact that the library has been made accessible through the university server since year 2004.

10. Information Support Systems Available with the Libraries

Availability and provision of proper support system for the application and utilisation of IT is a prerequisite. The basic requirements for making use of IT involve laying of connection cables and installing server etc. However, over and above these provisions, certain electronic gadgets do play important role in the efficient utilisation of IT. With this understanding and in concurrence with the objectives of the research, it was decided to gather information on the availability of a few essential electronic gadgets in the university libraries under study.

9.1 Electronic Gadgets Available for Automation and Networking Services

The electronic gadgets generally involved in IT application are telephone, barcode scanner, scanner, internet connectivity with email service, multimedia computers and teleconferencing facility.

Sl. No.	University Library	Support System									Total
		Tel.	Fax.	Repro. Machine	Barcode Scanner	Scanner	e-mail facility	Internet connectivity	Multimedia Computer	Tel. Conferencing Device	
1	SHML	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	7/9
2	GUL	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	6/9
3	BLSPU	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	6/9
4	VNSGUL	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	7/9
5	SUL	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	6/9
6	HNGUL	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	9/9
7	GVL	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	9/9
8	BUL	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	7/9
Total (%)		8(100)	6(75)	6(75)	8(100)	8(100)	7(87.50)	8(100)	3(37.50)	3(37.50)	

Table 6. Availability of Support System for Automation & Networking Services in the University Libraries (2009-2010)

Information gathered on the availability of such electronic gadgets in the libraries has been presented in Table 5. It is heartening to notice that all the libraries are equipped with internet connectivity and are also in possession of telephone, scanners and barcode scanners. Email facility is also available in all the university libraries excepting the SUL. While multimedia computer facility is available only in the VNSGUL and the GVL, teleconferencing devices are installed in three libraries, viz. the HNGVL, the GVL and the BUL.

On the whole, it would not be wrong to suggest that the university libraries of Gujarat have acquired by and large most of the electronic gadgets required for the application of IT which clearly emerges out from figure 4. It may not be therefore wrong to view the prospects of IT application in these libraries optimistically.

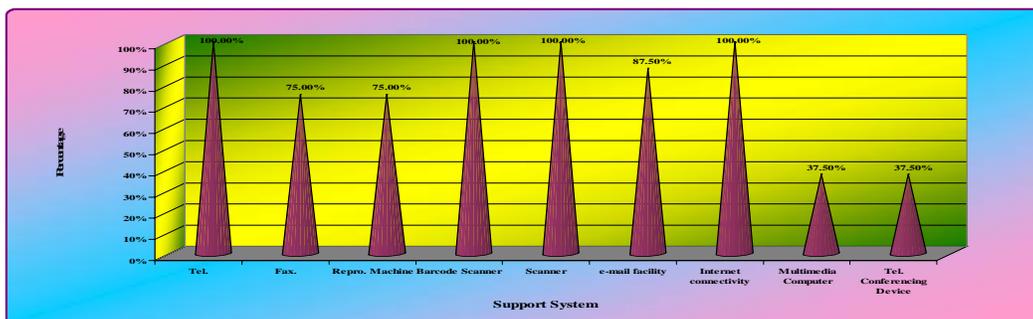


Figure 4. Availability of Support System for Automation & Networking Services in the University Libraries (2009 2010)

10.2 Facilities Available

Along with the computer systems, the libraries do require other technical facilities for the application of IT. Such facilities include LAN, network, online access, CD-ROM drive and CD Net.

Sl. No.	University Library	Facility					
		LAN	Network	Online Access	CD-Rom Drive	CD Net	Any Other
1	SHML	Yes	Yes	Yes	Yes	Yes	No
2	GUL	Yes	Yes	Yes	Yes	No	No
3	BLSPU	Yes	Yes	Yes	Yes	Yes	No
4	VNSGUL	Yes	Yes	Yes	Yes	No	Yes (wifi)
5	SUL	Yes	Yes	Yes	Yes	No	No
6	HNGUL	Yes	Yes	Yes	Yes	Yes	No
7	GVL	Yes	Yes	Yes	Yes	Yes	No
8	BUL	Yes	Yes	Yes	Yes	Yes	No
Total (%)		8 (100)	8 (100)	8 (100)	8 (100)	5 (62.50)	1 (12.50)

Table 7. Facilities Available in the Libraries

The table 6 reveals that all the university libraries are having these technical facilities with minor deviations. The GUL, the VNSGUL and the SUL still remain deprived of CD Net facility. However, it is interesting to note that the VNSGUL has acquired wifi system.

The data further gets clarified through graphical representation in figure 4. As is evident, 100 percent or all sample libraries have LAN, Network, Online access and CD-Rom Drive facilities. However, CD Net is restricted to 62.50 percent of the libraries and only one library or 12.50 percent have an additional facility, i.e. wifi facility.

10.3 Software Used for Database Creation and Library Services

For the purposes of database creation and their dissemination to the users, appropriate and efficient software are essential.

This table 7 depicts the software used by different university libraries. The operating systems used by the libraries mostly include CD-Rom, MS-DOS, LINUX and Windows. While the SHML, the HNGUL and the VNSGUL use at least three operating systems for database creation and library services, the GUL, the BLSPU and the SUL manage only

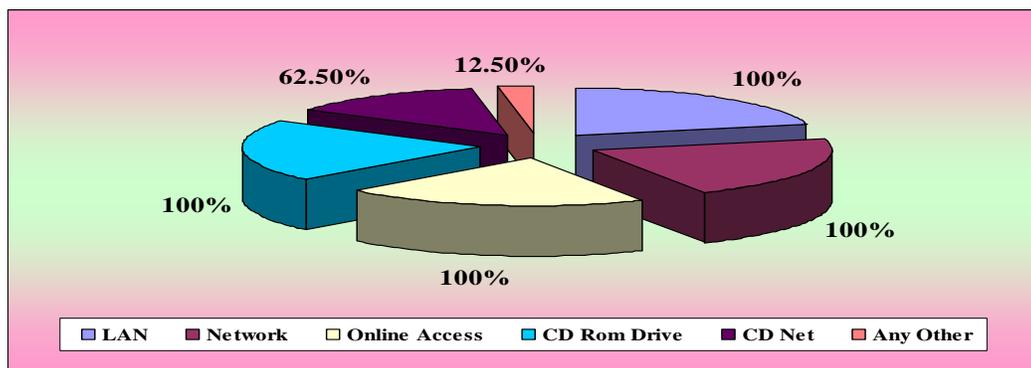


Figure 4. Facilities Available in the Libraries

Sl. No	University Library	Software			
		Operating System	Software Packages	Communication Software	LAN Scanner
1	SHML	MS-DOS; LINUX; CD-Rom Drives	SOUL	NM	NM
2	GUL	MS-DOS CD-Rom Drives	SOUL	NM	NM
3	BLSPU	Windows CD-Rom Drives	SOUL	NM	NM
4	VNSGUL	LINUX, CD-Rom Drives, Windows 2008	SOUL, RFID	NM	Netware
5	SUL	CD-ROM Drives	SOUL	NM	Nil
6	HNGUL	MS-DOS; LINUX; CD-ROM Drives	e-Granthalaya, SOUL	NM	Netware
7	GVL	Windows, CD-Rom Drives	SOUL	NM	NM
8	BUL	MS-DOS, CD-Rom Drives	SOUL	NM	NM

Table 8. Software Used for Database Creation and Library Services in the University Libraries

Sl. No.	University Library	Network Type	
		National	International
1	SHML	INFLIBNET	Internet
2	GUL	INFLIBNET	Internet
3	BLSPU	INFLIBNET & DELNET	Internet
4	VNSGUL	INFLIBNET	Internet
5	SUL	INFLIBNET	Internet
6	HNGUL	INFLIBNET	Internet
7	GVL	INFLIBNET	Internet
8	BUL	INFLIBNET	Internet

Table 9. Network Access in the University Libraries

with two. All libraries have acquired SOUL. However, the VNSGUL has equipped itself with both SOUL and RFID packages. The latter and the HNGUL also have Netware facility.

10.4 Type of Network Access

All the university libraries of the State have acquired network access at the National level through INFLIBNET.

The BLSPU has created the provision of network access through DELNET over and above INFLIBNET. As far as international network access, the internet is used by all the university libraries of the State, which has been depicted in the table 8.

10.5 Modernization of Library and Information Services

Knowledge scenario in the contemporary world and its dissemination has virtually posed enormous challenges for the library professionals. The present circumstances have in fact, introduced modifications in the definition of librarianship as well as their roles. It has become immensely pertinent for today's library professionals, not only to acquire modern knowledge of handling the new gadgets and tools but also to sufficiently and efficiently equip their libraries to accommodate and apply them. Unless urgent and sincere efforts are made in this direction, librarianship as a profession might have to face the question of its relevance in the contemporary society. The society today expects the librarians to provide a much wider range of data in forms different from the traditional ones and at a speed that is almost closer to the speed of light. Under the circumstances, it is pertinent to make major modifications in the modus operandi of the libraries by way of modernising the library services at the earliest. In order to understand the status of modernization in the university libraries of Gujarat, the survey tried to explore the areas of their library services, where mechanization and computerisation have been introduced. The findings of the study are presented in the following sections.

10.6 Library Services

Generally all libraries provide reference, CAS/SDI, reprographic, press clipping, consultancy, orientation of users, photocopying, microfilm reader, audio-video, lending, multimedia, online search, CD-ROM search services. In today's era of mechanization and computerisation, a few new services have been introduced to the libraries that are immensely helpful in enhancing the level of modernisation of the libraries.

In order to assess the level of modernisation of the university libraries, information on library services operated manually, mechanically and through computers were collected from the libraries under study. Scores of 1, 2 and 3 were assigned to each library service operated manually, mechanically and through computers respectively and Composite Modernisation Score (CMS) was computed by adding the scores and presented in table 9. The basic assumption was, higher the CMS better is the level of modernisation. The study revealed that highest level of modernisation has been achieved by the SHML with a CMS of 27. While the HNGUL, the GUL, the GVL and the SUL are placed not much far behind the SHML, the BLSPU and the VNSGUL lag much behind with meager scores of 16 and 13 respectively. The BUL however, remains at the bottom in terms of levels of modernization of library services among all the university libraries with a miserably low CMS of only 5.

10.7 INFLIBNET Services

INFLIBNET is providing various types of information services to the academic community of India, which can be accessed from the <http://www.inflibnet.ac.in>. The services offered by the INFLIBNET are Bibliographic Databases Services, CD-ROM Databases Access Services, On-Line Databases Services, COPSAT Services, OCLC's First Services and the most popular Document Delivery Services (DDS). These services are also being utilized by university libraries through the Internet or other means.

Survey results show that the INFLIBNET services are accessed by all the libraries. It is also indicated that out of eight university libraries under study, the SHML uses all the services available through the INFLIBNET whereas, the GUL, the VNSGU, the BLSPUL and the GVL are using Bibliographic Services with CD-ROM databases, the SUL and the BUL are using OCLC's First Services, the HNGUL is using both Bibliographic Services with CD-ROM databases and OCLC's First Services.

Sl. No	University Library	Library Services			
		Manual (Score = 01 for each)	Mechanised (Score = 02 for each)	Computerised (Score = 03 for each)	CMS*
1	SHML	Reference, CAS/SD, Reprographic, Press Clipping, Consultancy, Orientation of Users = 06	Photocopying, Microfilm Reader, Audio-Video. = 06	Lending, CAS/SDI, Multimedia, Online Search, CD-ROM Search.= 15	27
2	GUL	Reference, Lending, CAS/SD, Bibliographic, ILL, Reprographic, Press Clipping, Orientation of Users = 08	Photocopying, Audio-Video = 04	Lending, CAS/SDI, Online Search, CD-ROM Search. = 12	24
3	BLSPU	Reference, Lending, ILL, Reprographic, Consultancy, Orientation of Users =06	Photocopying, Audio-Video = 04	Lending, Online Search, = 06	16
4	VNSGUL	Reprographic, Orientation of Users = 02	Photocopying. = 02	Email, Multimedia, Online Search.= 09	13
5	SUL	Reference, ILL, Reprographic, Press Clipping, Orientation of Users, Consultancy; Orientation. = 07	Photocopying, Microfilm Reader, Audio-Video. = 06	CAS/SDI, Online Search, CD-ROM Search. = 09	22
6	HNGUL	Reference, Indexing, Abstracting, Translation = 03	Photocopying, Microfilming, Microfilming Reader, Audio-Video. = 08	Email, Multimedia, Hyper Text/Hypermedia, Online Search, CD-ROM Search = 15	26
7	GVL	Reference, Lending, CAS/SD, Bibliographic, ILL, Reprographic, Press Clipping, Orientation of Users. = 08	Photocopying, Audio-Video = 04	Lending, CAS/SDI, Online Search, CD-ROM Search. = 12	24
8	BUL	Reference = 01	Photocopying = 01	Lending, E-mail , AS/SDI = 03	05

* CMS = Composite Modernization Score.

Table 10. Level of Modernization of Library Services in the University Libraries

The INFLIBNET has been playing a vital role since its inception for initiating the automation and networking activities of library and information centres in universities, colleges, R&D laboratories, and various institutions of higher learning. The present study covers the status and implementation of automation and networking activities in the university libraries of Gujarat, which are being funded under the INFLIBNET Program. The study intends to investigate the extent of library automation and the status of computerization of library activities and services in university libraries under study. What types of computer-based services, use of e-mail/internet, on-line databases, multimedia CD-ROM databases are made available to the users have also been investigated.

11. Suggestions

Based on the findings and conclusions of the study, a few suggestions may be offered.

1. The university libraries, which have initiated the application of IT, should try to become fully computerized and the libraries in which computerization is yet to start must begin the work at the earliest.
2. University libraries need better funding, if they are to give more productive and effective information resources and services. In order to access electronic resources such as e-journals and databases, a substantial amount of money is

needed. Therefore, sufficient funds should be made available by the authorities for library automation, development of digital resources, and application of IT.

3. It should be noted that a library, which has better resources performs better. Libraries should have state-of-the-art infrastructure including hardware, software and skilled manpower. They should procure sufficient hardware like servers; computer terminals, printers, scanners, barcode scanners, and data capture unit, CD-Tower, CD-writers, DVD drives, VCD players and UPS. All these should also be maintained properly for sustainable application of IT.
4. University Libraries should also install research software packages to operate and execute all the library management activities. The software should be an integrated version with online help and OPAC/WebOPAC facilities.
5. The university librarians should have skills to evaluate software, which will enable them to identify appropriate software for their libraries. LAN should be set up in all libraries.
6. It was observed that the database development activity in some university libraries seems to be very discouraging. Therefore, university libraries need to make rigorous efforts to use INFLIBNET databases for retrospective conversion of the documents as well as other activities related to computerization may be outsourced to complete the computerization of the library.
7. The staff of university libraries may form online Newsgroup, Listserv to have regular interaction with library professionals in order to share ideas, views, experiences, innovations and to keep abreast with the modern technology.

12. Conclusion

Today, university libraries are functioning under constantly changing environment and facing a variety of complex challenges like information explosion, IT revolution, network evolution, shrinking library budgets, escalating prices of documents, high level of user expectations, and availability of information resources in diverse media and so on. Application of IT in libraries has become inevitable in an era of information explosion and the emergence of a wide range of new technologies in order to satisfy the changing complex information needs of users. Libraries have been using IT in general and computer technology in particular, to automate a wide range of administrative and technical processes, build databases, OPACs, networks and provide better services to their users. The movements towards the application of IT and Hi-Tech electronic technologies posing new challenges for better management of information in all types of libraries have grown significantly in recent years. University librarians have started thinking about their responsibility to collect electronic materials and ensuring that important scholarly publications are available to the researchers. IT offers a wide range of opportunities, which could provide solutions to some of these major challenges.

The present study highlights the reasons for application of IT in different areas of library operations and services, and for efficient management of the library. The most significant reason why IT application should be encouraged and adopted is, *'application of IT helps in improving access to the collection, quality of existing services and in reducing routine and time consuming clerical operations'*.

At present there are thirty six universities of different kinds in Gujarat. Growth in higher education system, rapid development of university and university libraries are increasing day by day. The development of these libraries may be satisfactory but it is necessary to find out whether these libraries fulfill the objectives of the universities. One needs to study the development in collection of reading materials, readers, library staff, library services, satisfaction with the application of modern technologies for the modernization of libraries. There is a continuing evolution of the roles and functions of libraries and librarians, which appears to parallel the growth of acceptance and use of the new technologies. The innovative use of new technologies enables library professionals to reach both local and distant users much more easily and effectively than hither to possible.

The university libraries of Gujarat present an optimistic picture of the prospects of the IT application. However, the university libraries of Gujarat have been computerised only recently. The study clearly indicates that the university libraries of Gujarat are not yet fully equipped with trained staff for the application of IT. It was evidenced through investigation that modernisation of the university libraries of the State are yet not complete.

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