Availability of ICT infrastructure in the University Libraries of West Bengal, India

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Abstract

The present study is an attempt to asses the way in which the University libraries in West Bengal have responded to changing information environment and developed their infrastructure toward use of ICT. The findings show that ICT infrastructure in the university libraries of West Bengal is still at different stages of development. Most of the libraries have minimum infrastructure for the implementation of ICT, but they face the problem of manpower.

***Keywords**:* ICT, Value–added information service, Video-conferencing, Intranet, Infrastructure, Human resource.

1. Introduction

Ever dynamic ICT has changed the traditional process of library activities and this situation stresses the necessity for the university libraries to be part of the ICT based information world. ICT offers ample opportunities for libraries to automate the traditional activities, implement efficient and effective library cooperation and resource sharing networks, develop institutional repositories, provide value-added information services and initiate capacity building programmes for library staff and library users.

But implementing ICT in University libraries necessitates a varied set of technological tools. ICT encompasses a wide range of technologies such as telephony, cable, satellite, TV and radio, video-conferencing, digital technologies, computers, Internet, World Wide Web, & intranet and software application.

Indian Statistical Institution (ISI) library for the very first time started computerisation in West Bengal. Later, some special libraries of West Bengal started computerisation. But computerisation began in the State University libraries of West Bengal at the beginning of 90's. Due to lack of proper ICT infrastructure facilities computerisation of the University libraries started late. Now the situation has totally changed. Most of the University libraries in West Bengal have minimum ICT infrastructure and ready for ICT application. The present study is an attempt to asses the way in which the University libraries in West Bengal have responded to changing information environment and developed infrastructure to use ICT.

2. Aims and objectives of the study

The aim of the study is to investigate the availability of information and communication technology infrastructure in the general University libraries in West Bengal.

3. Scope & Limitation of the study

The Universities of West Bengal established after 2000 (2008 onward) are yet to develop proper basic infrastructure. Due to this reason and also considering limited time and money, the state funded general university libraries of West Bengal established before 2000 are included in the study. There are seven such State Funded General Universities in West Bengal as shown in Table 1 (Sl.no.1-7).

4. Review of related Literature

Kannappanavar and Vijayakumar[1] (2001) have made a survey on the use of hardware and software facilities in University of Agricultural science libraries in Karnataka. The results reveal that none of the University libraries at the time of study were having databases and full implementation of IT applications in their libraries. Though the agricultural university libraries are having hardware and software facilities to some extent, the results are not reaching the clientele. It recommends that the librarians should approach the university authorities to train the library personnel on IT application and approach funding agencies like INFLIBNET and ICAR for their library automation and provide IT based information services to their clientele. Suku and Pillai[2] (2005) made a survey to assess the status of automation in the university libraries of Kerala. A structured questionnaire was used to elicit data from the Librarian/Librarian in-charge of the Central libraries of six universities. The survey mainly cover various aspects of library automation such as information technology infrastructure, in-house activities, information services and their usage, manpower development, and budget. The study also deals with the role of INFLIBNET Centre in supporting the automation activities of university libraries. It is seen that library automation has been rather slow in Kerala due to various reasons like absence of University Librarian in most of the libraries and lack of adequate qualified professional staff. 50% of university libraries in Kerala introduced comprehensive automation of housekeeping activities. LAN facility is available in all university libraries. All university libraries in Kerala are using computers for their services. All the libraries, without any exception, are using only personal computers for the entire range of automation activities. The survey also reveals that all university libraries have conducted sufficient number of training programs to its staff members before acquiring the new technology. Walmiki & Ramkrishnegowda[3] (2009) have surveyed on the status of ICT infrastructure in six selected university libraries of Karnataka and revealed that, ICT infrastructure in the university is still at different stages of development. Insufficient computer hardware and software and lack of internet facilities with required bandwidth indicate that university libraries of Karnataka are yet to establish extensive facilities required for efficient information access. Hence, there is an urgent need on the part of the university libraries in Karnataka to plan implement and develop ICT infrastructure to be fit in facing the challenges ahead of them. Dhanavandan, Esmail & Nagarajan[4] (2011) have surveyed on Information

Communication Technology (ICT) Infrastructure Facilities in Self-Financing Engineering College Libraries in Tamil Nadu. From the result of the findings of the study it could be noted that 87.14 % of the libraries have client and work station facility. Among them, the IBM, HP and Intel dominate. Most of the libraries do not have CD ROM servers in their libraries but majority of the libraries have CD Tower facility in their respective environment. 95 per cent of the colleges use the library application software in their libraries. More than half of the libraries use digital library software.

5. Methodology

Survey method has been used to conduct the study. To complete the survey structured questionnaire was prepared and e-mailed to the librarians/in-charges individually in the month of September 2012. In-spite of several telephonic communications little response is received. Later the university libraries were visited physically for data collection.

6. Data analysis method

Collected data has been analysed with the use of simple statistical techniques. Data has been presented in the form of tables and/or charts using MS-Excel 2007 software.

Table 1: State Funded General Universities Affiliated to UGC in W.B.

Serial No.	Name of University	Year of establishment	Location
1	Universiyu of Calcutta(C.U.)	1857	Kolkata
2	Jadavpur University(J.U.)	1955	Kolkata
3	University of Burdwan(B.U.)	1960	Burdwan
4	University of Kalyani(K.U.)	1960	Kalyani
5	Rabindra Bharati University(R.B.U.)	1962	Kolkata
6	Universiyy of North Bengal(N.B.U.)	1962	Siliguri
7	Vidyasagar University(V.U.)	1981	Midnapore
8	University of Gour Banga(G.B.U.)	2008	English Bazar
9	West Bengal State University(W.B.S.U.)	2008	Barasat
10	Aliah University(A.U.)	2008	Kolkata
11	Sidho Kanho Birsha University(S.K.B.U.)	2010	Purulia & Bankura
12	Presidency University(P.U.)	2010	Kolkata

Table 1 shows State Funded General Universities Affiliated to UGC in W.B. It is seen from the table that, there are only 12 state funded general universities having in West Bengal. Out of 12 , the questionnaires were sent to 7 university libraries as the last 5(from serial no. 8-12) universities viz. G.B.U, W.B.S.U., A.U., S.K.B.U. & P.U. are established very recently and are just in the process of developing infrastructural facilities, academic programmes and libraries.

7. Data analysis and interpretation

7.1 Library Budget

Table 2: Library Budget (in Rs. lakhs)

Name of University	Information Technology		
	2009-10	2010-11	2011-12
C.U.	-	-	-
J.U.	-	-	-
B.U.	1.00	1.00	-
K.U.	-	-	-
R.B.U.	-	-	-
N.B.U.	-	-	-
V.U.	20.00	20.00	20.00

Table 2 shows budget provision for the development of ICT infrastructure in three consecutive years. It is seen from the table that out of seven state funded general university only two universities have kept provision to spend amount on the improvement of ICT infrastructure in the library. It is also seen that BU have no budget provision on ICT in 2011-12

7.2 Availability of Computers

Table 3: Availability of Computers in the Library

Name of universities	Type of computer		Total
	Server machines	Client computers	
C.U.	12	4000	4012
J.U.	07	150	157
B.U.	03	37	40
K.U.	01	21	22
R.B.U.	03	35	38
N.B.U.	04	95	99
V.U.	12	56	68
Total	42	4394	4436
Percentage	0.95%	99.05%	100%

Table 3 depicts availability of computer facility in the state funded general university libraries of West Bengal. Out of seven university libraries C.U. & V.U. have same no. of 12 server machine followed by J.U. with 7 server machine N.B.U. with 4 server machine. On the other hand C.U. has largest no. of 4000 client computers followed by J.U. having 150 & N.B.U. having 95 client computers. Out of total no of 4436 computers there

are only 42 (0.95%) server machines and remaining 4394 (99.05%) client computers. At a glance the result shows that C.U., J.U., N.B.U. & V.U. are in a very good position in the sense of availability of computers.

7.3 Hardware Facilities

Table 4: Accessory Hardware Facilities in the Libraries

Name of University	Digital camera	Printer	Fax	Scanner	Barcode reader	RFID technology	Projector		UPS	T.V.
							Overhead	LCD		
C.U.	Y	Y	N	Y	Y	N	Y	Y	Y	Y
J.U.	Y	Y	N	Y	N	Y	Y	Y	Y	N
B.U.	N	Y	Y	Y	Y	N	N	Y	Y	Y
K.U.	N	Y	Y	Y	Y	N	N	N	Y	N
R.B.U.	N	Y	N	Y	N	N	Y	N	Y	Y
N.B.U.	Y	Y	Y	Y	Y	N	N	Y	Y	N
V.U.	N	Y	N	Y	Y	N	N	N	Y	N
Total	3	7	3	7	5	1	3	4	7	3
Percentage	43%	100%	43%	100%	71%	14%	43%	57%	100%	43%

Y=Yes; N=No;

The data gathered from questionnaire responses regarding the Infrastructural Facilities available in the university libraries under study is presented in Table 4. It is seen from the Table that all the 7(100%) libraries have Printer, Scanner, UPS, Xerox (Photocopier). 5 (71%) Libraries have Barcode reader & CD/DVD player, 4 (57%) libraries have LCD Projector. 3(43%) libraries have Digital camera, Fax, Overhead Projector & T.V. Only J.U. library has RFID Technology.

In addition to the items mentioned in the table, J.U. library has separate Preservation unit, V.U. has unified storage CCTV system & K.U. has Barcode printer as well as Lamination Machine. Since most of the libraries have the basic Infrastructural Facilities, they would facilitate the introduction & use of IT in the libraries.

7.4 Software used

Table 5: Software used by the library

Name Of University	Operating System	Library Management	Digital Library	DBMS	Antivirus

	DOS	WINDOWS	LINUX	CDS/ISIS	SOUL	LIBSYS	GSDL	DSPACE	FEDORA	CUSTOMISED	MSSQL	POSTGRESQL	NORTON	KASPERSKY	QUICKHEAL	EKILL	TRENDMICRO
C.U.	N	Y	Y	N	Y	N	N	N	N	Y	Y	N	Y	N	N	N	N
J.U.	Y	Y	Y	N	N	Y	N	Y	N	N	Y	N	N	N	N	Y	N
B.U.	N	Y	Y	N	Y	N	Y	Y	N	N	Y	N	N	Y	N	N	N
K.U.	N	Y	N	N	Y	N	N	Y	N	N	Y	N	N	Y	N	N	N
R.B.U.	Y	Y	Y	Y	Y	N	N	N	N	N	Y	N	N	N	Y	N	N
N.B.U.	Y	Y	Y	N	Y	N	N	Y	Y	N	Y	N	Y	N	N	N	N
V.U.	N	Y	Y	N	Y	N	N	Y	N	N	N	Y	N	N	N	N	Y
Total	3	7	6	1	6	1	1	5	1	1	6	1	2	2	1	1	1
Percentage	43	100	86	14	86	14	14	72	14	14	86	14	29	29	14	14	14

Y=Yes; N=No;

Kinds of software used by the libraries are depicted in Table 5. Regarding Operating system, as seen from the table that all the 7 (100%) university libraries used Windows followed by Linux with 6(86%) libraries and Dos with 3(43%) libraries. About 6 (86%) libraries used Soul as library management software. CDS/ISIS & Libsys are used by only 1(14%) library as library management software. On the other hand 5 (72%) libraries used open source software Despace as digital library management software. C.U. used customised software as it despatch the digitisation work to a private agency. 6(86%) libraries used MS-SQL as a backend DBMS. Only one library used POSTGRESQL as DBMS. There is a variation in using antivirus software. Out of 7 university Libraries, antivirus software NORTON & KASPERSKY are used by 2(29%) libraries. Other libraries used single different kinds of software such as RBU used QUICKHEAL; J.U. used EKILL & V.U. used TRENDMICRO.

7.5 Campus Wide Data Communication Network

Table 6: Availability of Campus Wide Data Communication Network

Name of Universities	WIFI	LAN	WAN	INTERNET	Link with regional/national/international network		
					INFLIBNET	DELNET	ERNET
C.U.	Y	Y	Y	Y	Y	N	N
J.U.	Y	Y	Y	Y	Y	Y	N
B.U.	N	Y	Y	Y	Y	N	N
K.U.	N	N	Y	Y	Y	N	Y

R.B.U.	Y	Y	Y	Y	Y	N	N
N.B.U.	N	Y	Y	Y	Y	Y	N
V.U.	Y	Y	Y	Y	Y	N	N
Total	4	6	7	7	7	2	1
Percentage	57	86	100	100	100	29	14

It is seen from Table 6 that, all the libraries have WAN & Internet facility. Six (86%) libraries have LAN & 4(57%) libraries have WIFI connection. In addition all the libraries are linked to either one or two National as well as International library network. Statistics also shows that all the libraries (100%) are linked with UGC's INFLIBNET. J.U. & N.B.U. are linked with both INFLIBNET as well as DELNET. K.U. is the only University which is linked with ERNET & INFLIBNET.

7.6 Terminals Provided To Users

Table 7: Number of Terminals Provided to the Users from the Library

Name of Universities	Number of terminals	Percentage
C.U.	150	35
J.U.	100	23
B.U.	34	8
K.U.	02	0.5
R.B.U.	28	6
N.B.U.	95	22
V.U.	24	5.5
Total	433	100

Table 7 demonstrate the number of Terminals provided to the user from the library. It is seen from the table that there are 433 terminals available for use by the users of 7 state funded general university libraries of west Bengal. Out of 7 responded libraries C.U. has the largest number of 150(35%) terminals followed by J.U. with 100(23%) terminals and N.B.U. with 95(22%) terminals. K.U. has a very small no. of 2(0.5%) terminals available for their users.

7.7 Internet Connectivity

Table 8: Internet Connectivity through ISP & its Bandwidth

Name of University	ERNET			NICNET			RELIANCE			TATA COMMUNICATION		
	*L.L.	VSAT	BANDWIDTH	*L.L.	VSAT	BANDWIDTH	*L.L.	VSAT	BAND WIDT	*L.L.	VSAT	BAND WIDTH

									H			
C.U.	Y	N	1 Mbps	N	N	-	N	N	-	Y	N	1 Gbps
J.U.	N	N	-	N	N	-	N	N	-	Y	Y	70 Mbps
B.U.	Y	Y	4 Mbps	N	N	-	N	N	-	Y	N	1 Gbps
K.U.	N	N	-	N	N	-	N	N	-	Y	N	1 Gbps
R.B.U.	Y	N	2 Mbps	Y	N	1 Gbps	N	N	-	N	N	-
N.B.U.	N	N	-	N	N	-	Y	N	16 Mbps	Y	N	1 Gbps
V.U.	N	N	-	N	N	-	N	N	-	Y	N	1 Gbps

- L.L.=LEASED LINE

The table 8 shows the details of internet connection regarding the type of connection, service provider & bandwidth. It is seen from the table that most of the libraries have leased line connection from different internet service provider (ISP). B.U. & J.U. Libraries have VSAT connection. Except K.U., all other universities have connected through the ISP Tata communications (previously VSNL). Out of 7 universities 4 universities have been connected through more than one Internet Service Provider. Like C.U. & B.U. have connected with ERNET & Tata Communication, R.B.U. with ERNET & NICNET and N.B.U. with Reliance & Tata communication. The Table also shows that except J.U. all other universities are having 1 Gbps bandwidth facilities.

8. Findings:

1. Only NBU provides open access library facility to its users. All the other libraries provide either closed / mixed access facility to its users.
2. Most of the University libraries under study have given less importance on implementation of ICT.
3. C.U., J.U., N.B.U. & V.U. are in a very good position in the sense of availability of computers.
4. Since most of the libraries have the basic Infrastructural Facilities, they would facilitate the introduction & use of IT in the libraries.
5. All the libraries have WAN & Internet facility. Six (86%) libraries have LAN and 4 (57%) libraries have WIFI connection. In addition all the libraries are linked to either one or two National as well as International library network.

9. Conclusion

ICT infrastructure in the university libraries of West Bengal is still at different stages of development. Most of the libraries have minimum infrastructure for the implementation of ICT, but they face the problem of manpower. Another problem that has come out from the interrogations with the library staff members is that existing manpower are not competent enough with ICT. Hence there is an urgent need to plan properly about the required manpower for providing ICT based library service.

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