ICT INFRASTRUCTURE IN COLLEGE LIBRARIES OF DARJEELING DISTRICT OF WEST BENGAL, INDIA: A SURVEY

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Abstract

Information and Communication Technology (ICT) plays an important role in library automation or computerization which facilitates speedy operation, services and access to and delivery of information. Attempt had been made to assess the use of information communication technology (ICT) in 20 college libraries in Darjeeling District, India by investigating the ICT infrastructure, current status of library automation, barriers to implementation of library automation. A survey method based on structured questionnaires was used for the study. The findings revealed that the status of the ICT infrastructures and services of the degree colleges of Darjeeling district were at different stages of development. Most of the libraries lacked sufficient hardware and software facilities and did not have sufficient internet nodes and

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bandwidth. In conclusion, the provision of hardware, standardized library software, adequate financial resources, and proper training facilities for librarians and library staffs will help to strengthen the ICT application in college libraries of Darjeeling district of West Bengal, India.

1. Introduction

Information communication technology (ICT) has emerged as an outcome of the digital convergence of computer technologies, telecommunication technologies and other media communication technologies (Ramakrishagowda and Walmiki, 2009). There has been enormous impact of ICT in all walks of our life including banking, postal services, biotechnology, bioinformatics, health care sector, teaching and learning, library and information services, etc. The innovations in ICT have influenced libraries to serve better and adapt the changes. With the use of ICT, there have been remarkable changes in the libraries in terms of their daily operations and services. It has also helped to identify a new and active role for the librarians. The important application of ICT in libraries is the library automation or computerization which facilitates speedy operation, services and access to and delivery of information (Mairaj and El-Hadi, 2012). ICT facilitates the libraries to provide value-added information services and access to a wide variety of digital-based information sources to their users. ICT is being used in the libraries to automate their core functions, implement efficient and effective library cooperation and resource sharing through networks. Moreover, ICT is used in the libraries to implement the management information systems (MIS), develop institutional repositories (IR) of digital local content, and digital libraries (Tiwari & Sahoo, 2013). However, in most libraries in India, use of ICT is largely restricted to the automation of traditional library, i.e. replacing manual operation by computerized methods (Rana, 2008). In the present study, the general degree colleges of Darjeeling district of West Bengal have been surveyed to assess the status of the ICT infrastructures and services in these colleges.

2. Statement of Problem

The present study is an attempt to assess the way in which the general degree college libraries in Darjeeling District of West Bengal have responded to changing information environment and developed infrastructure to use ICT.

3. Objectives of the present study

The present study was conducted in 20 general degree college libraries of Darjeeling district of West Bengal, India with the following main objectives:

1.   To determine the level of growth and development in the field of ICT infrastructure in the degree College libraries of Darjeeling District of West Bengal.

2.   To ascertain the level of automation of the college Libraries of the region under study.

3.   To find out the details of bandwidth and internet speed used by the degree College libraries.

4.   To analyze the networking components and its use in ICT environment of College libraries and their membership with important library networks and Consortium of India.

5.   To understand the financial support for the development of ICT infrastructure in the college libraries.

6.   To evaluate the possible causes hindering the ICT infrastructure development.

4. Scope and Limitations of the Study

The study is restricted to twenty general degree colleges of Darjeeling district to find out the status of ICT infrastructure and facilities. The Colleges other than the general degree colleges have not been included in the present study.

5. Review of related Literature

Numerous studies have documented the status of ICT infrastructure and facilities in college libraries. It is observed that the number of studies conducted for the assessment/ evaluation of ICT infrastructure and facilities in general degree colleges is less as compared to the number of such studies conducted in engineering colleges, agricultural colleges, technical colleges, etc.

Walmiki and Ramakrishnegowda (2009) studied ICT infrastructures in university libraries of Karnataka and found that most of the libraries lacks sufficient hardware, software facilities and do not have adequate internet nodes and bandwidth". The campus LANs were not fully extended to exploit the benefits of digital information environment. (Sivakumaren et al. 2011). conducted a survey to study the ICT infrastructure facilities, ICT based software implemented and the various types of electronic resources available in the university libraries. They recommended that the University libraries must increase the numbers of computer available to enable the users to maximize the usage of ICT-based resources and services. The libraries should implement digital library software and to digitize rare collections such as older and out of print editions (Sivakumaren et al. 2011). Paulson (2015) conducted the study to find out the ICT facility and services in arts and science college libraries of Kanyakumari district. Based on the findings of the study, author suggested thatthe modernization of information system with ICT facility be given importance by the management, adequate allocation of fund for the development of automation and ICT facilities in the library, expansion of space, infrastructural facilities and recruitment of trained staff for providing better ICT based services and demand of providing ICT based services in the private and self-financed colleges be demanded by the Government and higher educational authorities (Paulson, 2015). Tiwari and Sahoo carried out the survey in all University libraries of Rajasthan to assess ICT infrastructure, its use in library operations and services and problems associated with the development and use of ICT. The findings revealed that ICT activities were under developing stage in the university libraries of Rajasthan. They identified the lack of basic management and proper planning and frequent changes in ICT as the basic problems faced by the libraries for successful implementation and development of ICT (Tiwari & Sahoo, 2013). Choudhary and Sarmah conducted a survey in the selected college libraries of Cachar district of Assam to find out the availability of ICT infrastructure facilities and application of modern technologies. Their study revealed that with respect to the

implementation of ICT, most college libraries were in the developing stage. They found that the financial constraints and lack of ICT skilled staffs were the main constraints in the proper implementation of ICT in those college libraries (Choudhary &Sarmah, 2017). Biswas and Akhter analysed the content of 22 College libraries affiliated under Kalyani University, Nadia, West Bengal with the objectives of finding out status of automation and the application of ICT with reference to the problem and prospects of college libraries. The findings of their study showed that most of the college libraries lacked the reference collections but filled with textbook collections. Similarly, libraries also lacked the periodicals and mostly competitive magazines were available. The collection of non-book materials viz. CD/Cassettes were very few. Libraries were not having adequate ICT infrastructure. The policy of Library automation was not defined. There was a lack of skilled manpower for automation and lack of policy for purchasing of books and periodicals (Biswas & Akhter, 2017).

6. Research Method

Twenty general degree colleges of Darjeeling district of West Bengal were included in the present study. These are presented in Table 1 in accordance to their year of establishment. A survey method based on structured questionnaires was used for the study. As the questionnaire method has some limitation in data collection, thus the investigator adopted interview and observation methods to collect required information to supplement to the questionnaire method and to bring more clarity to the data obtained. The respondents included the twenty college librarians who were given the questionnaire by physically visiting each of the colleges and data were extracted through proper interaction with the librarian and observation.

Table 1: General Degree colleges of Darjeeling District included for the analysis

Serial No.	Name of college	Year of establishment	Location
1	St. Joseph's College (SJC)	1927	North Point Darjeeling
2	Salesian college (SSC)	1934	Gorabari, Sonada, Darjeeling
3	Darjeeling Government College (DGC)	1948	Lebong Card Road,Darjeeling

4	Siliguri College (SC)	1950	Siliguri, Darjeeling
5	Southfield College (SFC)	1962	Southfield, Darjeeling
6	KalimpongCollege(KPC)	1962	Ringkingpong Road, Kalimpong
7	Siliguri College of Commerce (SCC)	1962	Siliguri, Darjeeling
8	Kurseong College (KC)	1967	Dow Hill Road, Kurseong
9	Siliguri MahilaMahavidhalaya (SMM)	1981	Siliguri, Darjeeling
10	Sonada Degree College (SDC)	1985	Sonada, Darjeeling
11	Kalipada Ghosh TaraiMahavidhalaya (KGTM)	1988	Bagdogra, Darjeeling
12	Bijanbari Degree College (BDC)	1995	Bijanbari, Darjeeling
13	Cluny Women's College (CWC)	1998	7th Mile, Kalimpong
14	Mirik College (MC)	2000	Mirik, Darjeeling
15	GhoomJorbunglow College (GJBC)	2004	Sinchel Road Darjeeling
16	Gyan Jyoti College (GJC)	2005	Dagapur, Siliguri
17	Naxalbari College (NC)	2008	Naxalbari, Darjeeling
18	Munshi PremchandMahavidhalaya (MPM)	2008	Sevoke Road, Siliguri,
19	APC Roy College (APCRC)	2010	Matigara, Darjeeling
20	Pedong Degree College (PDC)	2015	Pedong, Kalimpong

7. Data Analysis and Interpretation

Data collected have been tabulated and presented in the tabular forms wherever applicable under different sub-heads as follows:

7.1 Basic ICT Infrastructure (Hardware)

7.1.1 Availability of Computers in the Library

Table 2: Availability of Computers in the Library

College	Number of Computers in the Library		Total
	Number of Computer for administrative use	Number of Computers for users	
SJC	3	11	14
SSC	2	12	14
DGC	3	0	3
SC	2	0	2
SFC	2	4	6
KPC	2	1	3
SCC	1	0	1
KC	3	5	8
SMM	0	0	0
SDC	2	0	0
KGTM	3	0	3
BDC	0	0	0
CWC	1	3	4
MC	1	0	1
GJBC	0	0	0
GJC	1	3	4
NC	1	0	1
MPM	0	0	0
APCRC	1	0	0
PDC	0	0	0
Total	28	39	67
Percentage	41.79%	58.21%	100%

The number of computers available in the college libraries are presented in Table 2. It is found that 5 out of 20 colleges have no computer in their libraries either for administrative use or for users. While 8 college libraries are having the computers for administrative use only but no

computer for the users. Remaining 7 college libraries are found to have the computers for both administrative purpose and the users.

7.1.2 Availability of Accessory Hardware Facilities in the Libraries

Table 3: Availability of Accessory Hardware Facilities in the Libraries

College	Printer	Xerox machine	Scanner	Barcode reader	CCTV	Power backup UPS/Generator/ Inverter
SJC	Y	Y	Y	N	Y	Y
SSC	Y	Y	Y	Y	Y	Y
DGC	Y	N	N	N	N	N
SC	Y	Y	Y	N	N	Y
SFC	Y	Y	Y	N	Y	Y
KPC	Y	Y	Y	N	Y	Y
SCC	N	N	N	N	N	N
KC	Y	Y	Y	N	N	Y
SMM	N	N	N	N	N	N
SDC	N	Y	N	N	N	N
KGTM	Y	Y	Y	N	N	Y
BDC	N	N	N	N	N	N
CWC	Y	Y	Y	N	N	Y
MC	N	N	N	N	N	N
GJBC	N	N	N	N	N	N
GJC	Y	Y	Y	N	N	Y
NC	N	N	N	N	N	N
MPM	N	N	N	N	N	N
APCRC	Y	Y	Y	Y	N	Y
PDC	N	N	N	N	N	N
Total	11	11	10	2	4	10
Percentage	55%	55%	50%	10%	20%	50%

Y=Yes; N=No

The availability of accessory hardware facilities viz. printer, xerox, scanner, barcode reader, etc. in the college libraries is shown in Table 3. It is observed that out of 20 college libraries, 11

libraries (55%) are having printer and xerox machine, 10 libraries (50%) have the scanner and power back-up (UPS/Generator/Inverter), 4 libraries (20%) have CCTV and only 2 libraries (10%) are having the barcode reader in their libraries.

7.2 Software used

Table 4: Operating Systems and Software used in the libraries with area of automation

College	Operating System	Software for Library	Software functioning area	Satisfaction level of Librarian
SJC	Windows 2003, 07, Vista	SOUL 2.0	Catalouging	Good
SSC	Windows 2003, 07.	EBLIS (Salesian Chennai)	Catalouging/Circulation	Very Good
DGC	Windows 2007	Koha	Ongoing	X
SC	Windows 2007	SOUL 2.0	Ongoing	X
SFC	Windows 2007	SOUL(Limited version)	Ongoing	X
KPC	Windows 2007	SOUL(Limited version)	Ongoing	X
SCC	Windows 2010	X	X	X
KC	Windows 2007,08, 10	Koha	Ongoing	X
SMM	X	X	X	X
SDC	Windows 2007	X	X	X
KGTM	Windows 2007,10	SOUL(Limited version)	Ongoing	X
BDC	X	X	X	X
CWC	Windows 2003, 2007	Local software	X	X
MC	Windows 2007	X	X	X
GJBC	X	X	X	X
GJC	Windows 2007	SOUL(Limited version)	Ongoing	X
NC	Windows 2007	Local software	Ongoing	X
MPM	X	X	X	X

APCRC	Windows 2007	ATHENOS (Local)	Catalouging / Circulation	Very Good
PDC	X	X	X	X
Total	15	12	3	3
Percentage	75%	60%	15%	15%

Table 4 depicts the operating systems, Library software, area for which software is being used and the satisfaction level of the librarian of the college libraries. It is found that 75% of colleges having the computers in their libraries are using the operating systems. The Windows is the most popular operating system used by almost all the college libraries. As far as the use of library software is concerned, 60% of college libraries are using various library software. Among the various software, SOUL is used by 6 college libraries, Koha is used by 2 college libraries and locally developed library software are being used by 4 college libraries. Remaining 8 college libraries have no library software. Out of 12 college libraries which are having the library software, only 3 libraries are using the software for cataloguing and/or circulation purpose. Other 8 college libraries are under process to initiate the use of software in their libraries. As far as the satisfaction level of the librarians for the software is concerned, only 3 college librarians have responded that the software used by them to be good/ very good.

7.3 Campus-Wide Data Communication Network

Table 5: Availability of Campus-Wide Data Communication Network

Colleges	WIFI	LAN	WAN	Internet
SJC	Y	Y	N	Y
SSC	N	Y	N	Y
DGC	Y	N	N	Y
SC	Y	N	N	Y
SFC	N	Y	N	Y
KPC	N	N	N	Y
SCC	N	N	N	Y
KC	Y	Y	N	Y

SMM	N	N	N	N
SDC	N	N	N	N
KGTM	N	N	N	Y
BDC	N	N	N	N
CWC	Y	N	N	Y
MC	N	N	N	N
GJBC	N	N	N	N
GJC	Y	N	N	Y
NC	Y	N	N	Y
MPM	N	N	N	N
APCRC	Y	N	N	Y
PDC	N	N	N	N
Total	8	4	0	13
Percentage	40%	20%	0%	65%

Y=Yes; N=No;

The availability of campus-wide data communication network in the colleges under study is also assessed. The availability of communication network such as Wi fi, LAN, WAN and Internet in the college libraries is presented in Table 5. It is observed that 65% of college libraries have the internet connectivity while 40% of libraries have Wi fi and 20% of libraries have LAN connectivity. WAN is found in none of these college libraries.

7.4 Association of College Libraries with National Library Networks

Table 6: Associated Library Networks of the College Libraries

Colleges	INFLIBNET	DELNET	CALIBNET	Any other
SJC	Y	N	N	N
SSC	Y	N	N	N
DGC	N	N	N	N
SC	Y	N	N	N
SFC	Y	N	N	N

KPC	Y	N	N	N
SCC	N	N	N	N
KC	Y	Y	N	N
SMM	N	N	N	N
SDC	N	N	N	N
KGTM	N	N	N	N
BDC	N	N	N	N
CWC	Y	N	N	N
MC	N	N	N	N
GJBC	N	N	N	N
GJC	Y	N	N	N
NC	N	N	N	N
MPM	N	N	N	N
APCRC	N	N	N	N
PDC	N	N	N	N
Total	8	1	**0**	**0**
Percentage	40%	5%	**0%**	**0%**

Y=Yes; N=No;

Table 6 presents the data pertaining to the association of college libraries with National Library Networks. It was found that 8 out of 20 (40%) college libraries were associated with INFLIBNET and only 1 college library (5%) was found to have DELNET.

7.5 Consortium membership of College Libraries.

Table 7: Consortia Membership of the College libraries

Name of college	UGC Infonet	INDEST	N- LIST	Any other
SJC	N	N	Y	N
SSC	N	N	Y	N
DGC	N	N	N	N

SC	N	N	N	N
SFC	N	N	Y	N
KPC	N	N	Y	N
SCC	N	N	N	N
KC	N	N	Y	N
SMM	N	N	N	N
SDC	N	N	N	N
KGTM	N	N	N	N
BDC	N	N	N	N
CWC	N	Y	Y	N
MC	N	N	N	N
GJBC	N	N	N	N
GJC	N	N	Y	N
NC	N	N	N	N
MPM	N	N	N	N
APCRC	N	N	Y	N
PDC	N	N	N	N
Total	0	01	8	0
Percentage	0%	5%	40%	0%

Y=Yes; N=No;

The membership of the college libraries to various consortia is also analyzed in the study. The membership of the college libraries to such consortia is highlighted in Table 7. It is found that out of 20 college libraries, 8 libraries (40%) have the membership of NLIST and only 1 library (5%) is found to have the membership of INDEST. None of these college libraries have the membership of UGC Infonet

7.6 Financial assistance for ICT equipment and automation:

The questionnaire given to the respondents had also included the question pertaining to the receipt of separate annual grant or financial assistance grant separately for ICT infrastructure development and library automation, if any. However, it is found that not a single library has received a separate annual budget for the development of ICT infrastructure for library.

7.7 Library website:

Questions on the availability of library website, link on institution home page, and services offered were also included in the questionnaire. Data obtained reveals that none of these college libraries has the library website However, it is indicated that the website is under preparation in some of these college libraries.

7.8 Problems in ICT applications:

Attempt has also been made to analyse the problems associated with the development of ICT infrastructure and library automation. It is found that the lack of cooperation from higher authorities, insufficient budget and lack of trained staff are the most significant problems associated with the development of ICT infrastructure and services as indicated by the respondents.

8. Conclusion

ICT infrastructure in the degree colleges of Darjeeling district is still at different stages of development. It may be concluded that the provision of hardware, standardized library software, adequate financial resources, and proper training facilities for librarians and library staff, will help to strengthen ICT application in college libraries of Darjeeling district of West Bengal, India. For the adequate development of ICT infrastructure and library automation in the colleges of this region, cooperation from higher authorities, allocation of separate budget and the availability of the trained library staff are to be given utmost priority.

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