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Usage of Information and Communication Technology in the Degree College Libraries of Assam: A Study

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Abstract

The aim of the study was to know the usage of Information and Communication Technology (ICT) in the degree college libraries of Assam. For solving the research objectives, questionnaire, interview and observation method have been used to collect the primary data from the respondents. The findings of the study have shown that among the 126 college libraries surveyed, 55 libraries are fully automated and 67 are partially automated while 51 libraries have developed institutional repositories. The study also tried to identify the problems associated with the implementation of ICT. Lack of IT skilled manpower to perform ICT related activities in the libraries were among the primary problem faced by the college libraries. The study recommended that the college libraries of Assam should develop ICT infrastructure extensively to make optimal use of the library resources, both conventional and digital.

Keywords: ICT Infrastructure, ICT Based Library Services, Library Automation, Institutional repositories, College Libraries, Assam

1. Introduction

United Nations Development Program (UNDP)¹ comprehensively defines “ICT are basically information handling tools that are basically a varied set of goods, applications, and services that are used to produce, store, process, distribute and exchange information. They include the ‘old’ ICT of television, radio and telephone and ‘new’ ICT of computers, mobile phones, satellite, and wireless technologies and the internet. These different tools are now able to work together and combine to form ‘networked world’- a massive infrastructure of interconnected telephone services, standardized computer hardware, the internet, and radio and television, which reaches into every corner of the globe”. The older and more familiar technologies are referred to collective headings of analogue media while the newer computer and internet based technologies are called the digital media¹.

Application of ICT in libraries has tremendously influenced on housekeeping operations such as acquisition, cataloguing, circulation, serial control and OPAC. ICT has also influenced the management of information resources and services. It also used to develop new information services and improving the productivity and efficiency of library services. The ICT based resources help to reduce library space by using the electronic storage media, digital library, and virtual learning activities. The use of ICT in libraries enhanced the satisfaction level of users. ICT based library services provides a variety of benefits to library users such as speedy and easy access to information, remote access to users, round the access to users, access to unlimited information for different sources, information flexibility to be used by any individuals according to his/her requirements, increased flexibility, facilitates the reformatting and combining of data from different sources. The libraries are also providing various ICT based services to the user community along with the provision of web access to OPACs, electronic document delivery, networked information resources, delivery of information to the users, on-line guidance, online reader advisory services, etc.²

The study “Usage of ICT in the Degree College libraries of Assam” is a new aspect of research on the latest ICT environment. Based on Shodhganga, Google search and other searching techniques, no systematic study has found. The study has planned to know the status of the college libraries in Assam. It will identify the ICT infrastructure and extent of use in the college libraries, library services that are performed through ICT, barriers associated with the implementing of ICTs, ICT based services extended to the users and impact of ICT on the users in the college libraries of Assam.

2. Review of Literature

The review of related literature is very important for planning and carrying out the research work in the right direction. There are lot of work done in the field of ICT application. So few related studies on the usage of ICT in the libraries have been consulted before conducting the research.

Chavan and Naik³ have revealed that the maximum students are using ICT for accessing e-journals, e-book, email and internet services. Kumar and Lokesha⁴ revealed that maximum college libraries are not having good technical infrastructure facility to perform library automation activities. The majority of the college libraries are not providing internet services to the users. It also expressed that lack of funds and non-availability of ICT equipments in their libraries are the main problems for the implementation of ICT in the libraries. Paulson⁵ found that 54.55% of libraries have completed automation, 50% of the library have internet facility and 18.18% library have institutional repository. The study suggested that the management should give importance to modernize the information service system with ICT facilities. Reddy and Reddy⁶ revealed that the majority of the colleges are found automated. It is also revealed that maximum libraries are providing internet services. It expressed that lack of commitment by institutional management is the main barriers to ICT usage. Chhatwal and Mahajan⁷ expressed that lack of computer hardware, antivirus software, digital library software, research data analysis software, extended campus LAN and internet facilities with necessary bandwidth are the problems faced by the libraries. Murugu⁸ revealed that the level of ICT application in academic libraries is found low. It also expressed that partial automation, lack of hardware, insufficient fund, lack of co-operation from higher authorities, lack of website and training opportunities are the major drawbacks faced by the librarians. Patil⁹, et al. found that 02 university libraries have achieved 100 percent library automation, 04 university libraries achieved 75 percent automation and remaining 02 university libraries have achieved 50 percent library automation. All the universities have expressed lack of ICT facilities to meet the demands of the users. It is also found that 88 percent libraries have initiated to create or develop digital library with the funds provided by ICAR. Tiwary and Sahoo¹⁰ revealed that use of ICT in university libraries of Rajasthan is in developing stage. Kumar and Biradar¹¹ revealed that lack of budget, lack of manpower, lack of skilled staff and lack of training are the main constraints for not automating the library activities. Haridasan and Khan¹² found that a majority of the respondents were happy with the use of e-resource available in the NASSDOC library.

3. Statement of the Problem

The use of ICT in college libraries has offered to automate the housekeeping operation, develop institutional repositories or digital libraries, resource sharing among libraries, provide value-added information services and initiate capacity building programs. The traditional libraries are gradually shifting towards hybrid library or digital or virtual libraries due to the adoption of latest ICT based technologies. Better and effective library services can be ensured by the application of information and communication technology with skilled and qualified library manpower. The ICT infrastructure and services in the libraries are gradually improving due to the initiatives of different agencies in India such as RUSA, UGC, INFLIBNET, the concern state government and the local enterprises. Thus, the application of ICT in the college libraries of Assam has also improved day by day due to the financial assistance of the different agencies. Therefore, a study on usages of Information and Communication Technology in the degree college libraries of Assam was planned, to know the development status of ICT application in the college libraries. Based on Shodhganga, Google search, and other searching techniques, no systematic studies have been found on the usage of Information and Communication Technology in the degree college libraries of Assam.

4. Objectives of the Study

The following objectives are adopted by the investigator to fulfil the aims of the research study:

- To identify the ICT infrastructure and extent of use in the college libraries of Assam;
- To identify the library services that are performed through ICT in the college libraries of Assam;
- To identify the barriers associated with the implementation of ICTs in the college libraries of Assam;
- To find out the ICT based services extended to the users in the college libraries of Assam; and
- To find out the impact of ICT on the users in the college libraries of Assam.

5. Scope and Limitation of the Study

There are 295¹³ provincialised and 03 government degree colleges imparting general education in Assam, out of which 189¹⁴ colleges have provincialised before 2012. The government and the provincialised degree colleges of Assam which have provincialised before 2012 are included in the current study. The total number of colleges covered under the study is 192. User study is based on the status of ICT application in the college libraries of Assam. The user study has been conducted in the colleges which responded the questionnaire-1. The selection of the colleges for user study has been based on the availability of facilities such as internet service, colleges who have achieved level of cataloguing above 75% and colleges who have undertaken the initiative of developing institutional repository.

The colleges which are imparting technical, medical, management, law and special subject or other colleges related to professional are excluded from the current study.

6. Research Methodology

The study will adopt a combined methodology of theories and the field work to identify ICT infrastructure facilities, library automation, institutional repository, library services, barriers associated with the implementation of ICT, ICT based service extended to users and impact of ICT on the users. The available literature on the above areas has been studied and reviewed to examine the usage of ICTs in different educational institution. For solving the research objectives, questionnaire, interview and observation method have used to collect the primary data from the respondents. Two sets of structured questionnaires have prepared; questionnaire-1 for the librarians and questionnaire-2 for the library users. The questionnaires were distributed to the respondents by personally or by e-mail to college librarians and the same were received personally or through E-mail. Certain primary data were collected through telephonic interview. In the same way, certain data have been collected by personal observation during the visit to the libraries.

The data obtained from the filled up questionnaires is classified, analyzed, tabulated and logically interpreted. Well known statistical package SPSS has been used to find out the frequency, mean and standard deviation of the research objectives. The questionnaires were distributed to 192 colleges out of which 126 colleges have responded. The percentage of response rate is 65.6%. The user questionnaire has also distributed to 983 users of different colleges, out of which total 677 questionnaires have received. The percentage of the response rate of the users is 68.9%.

7. Result and Discussions

7.1 ICT Infrastructure Facilities:

a) **Hardware Facilities:** Table 1 shows that the highest 99.2% of the libraries has CCTV facilities followed by 96.0% of the libraries have photocopy machine. Subsequently, data in gradation are 93.7% college libraries possessed server machine; 92.9% libraries have desktop facility; 84.9% libraries have scanner for general purposes; 75.4% libraries have barcode scanner; 74.6% libraries have barcode printer; 62.7% libraries have backup device; 44.4% libraries have scanner for digitization; 29.4% libraries have projector; 20.6% libraries have identity card printer and the least 19.8% libraries have laptop facility.

S.No	Description	Yes	%	No	%	Mean	Rank	Std. Dv
1	Server	118	93.7	8	6.3	.9365	3	.24482
2	Desktop	117	92.9	9	7.1	.9286	4	.25857
3	Laptop	25	19.8	101	80.2	.1984	13	.40040
4	Printer	118	93.7	8	6.3	.9365	3	.24482
5	Scanner for general purposes	107	84.9	19	15.1	.8492	5	.35928
6	Scanner for digitization	56	44.4	70	55.6	.4444	10	.49889
7	Barcode Scanner	95	75.4	31	24.6	.7540	6	.43242
8	Barcode Printer	94	74.6	32	25.4	.7460	7	.43702
9	Backup Devices	79	62.7	47	37.3	.6270	9	.48554
10	Projector	37	29.4	89	70.6	.2937	11	.45725
11	Identity Card Printer	26	20.6	100	79.4	.2063	12	.40630
12	CCTV	125	99.2	1	.8	.9921	1	.08909
13	Photocopy Machine	121	96.0	5	4.0	.9603	2	.19599
14	Telephone	83	65.9	43	34.1	.6587	8	.47603

b) **Software Facilities:** Table 2 shows that the highest 96.8% of the colleges has availed library management software in their libraries, 88.1% libraries have availed anti-virus software and 51.6% college libraries have availed digital library software.

S.No	Description	Yes	%	No	%	Mean	Rank	Std. Dv
1	Library Management Software	122	96.8	4	3.2	.9683	1	.17602
2	Institutional Repository software	65	51.6	61	48.4	.5159	3	.50174
3	Anti-virus	111	88.1	15	11.9	.8810	2	.32514

c) **ICT-based Technologies:** Table 3 shows that the highest 95.2% of the college libraries has internet technology in their college libraries while 73.0% of the college libraries have adopted barcode technology. Very few 8.7% of the libraries have the video conference technology and the least, 3.2% college libraries have RFID technology.

S.No	Description	Yes	%	No	%	Mean	Rank	Std. Dv
1	Barcode	92	73.0	34	27.0	.7302	2	.44565
2	RFID	04	3.2	122	96.8	.0317	4	.17602
3	Video Conference	11	8.7	115	91.3	.0873	3	.28340
4	Internet	120	95.2	6	4.8	.9524	1	.21381

d) Internet Connectivity: Table 4 shows that 95.2% of the college libraries have internet connectivity in functional status while 4.8% of the libraries do not have functional internet connectivity.

Description	Yes	%	No	%	Total (%)
Internet connectivity in the library	120	95.2	6	4.8	126(100.0)

Internet Connection: Table 5 shows that the maximum 62.7% of the college libraries have been using DSL connection while 26.2% of the libraries using the wireless connection. Very few 3.2% of each college libraries have been using cellular and other connection.

S.No	Description	Yes	%	No	%	Rank	Mean
1	DSL	79	62.7	47	37.3	1	.6270
2	Wireless	33	26.2	93	73.8	2	.2619
3	Cellular	4	3.2	122	96.8	3	.0317
4	Other	4	3.2	122	96.8	3	.0317

Internet Service Provider: Table 6 shows that the highest 77.8% of the college libraries have subscribed internet services from BSNL service provider. The 12.7% of the libraries have subscribed from Reliance Jio and each 2.4% of libraries have subscribed internet from Airtel and other internet service provider.

S.No	Description	Yes	%	No	%	Rank	Mean
1	BSNL	98	77.8	28	22.2	1	.7778
2	Airtel	3	2.4	123	97.6	3	.0238
3	Reliance Jio	16	12.7	110	87.3	2	.1270
4	Other	3	2.4	123	97.6	3	.0238

7.2 Extent of Use of ICT in the College libraries:

a) Status of Automation: Table 7 shows that the highest 53.2% of the college libraries are partially automated while 43.7% of the libraries are fully automated. The least 3.1% of the libraries are found not automated.

S.No	Views	Responses (N=126)	Percentage
1	Fully automated	55	43.7
2	Partially automated	67	53.2
3	Not automated	4	3.1
Total		126	100.0

b) Status of Institutional Repositories: Table 8 shows that the 40.5% of the college libraries have developed institutional repositories while 20.6% of the libraries are still in process and 38.9% of the libraries do not have institutional repository.

S.No	Institutional repositories	Responses (N=126)	Percentage
1	Available	51	40.5
2	Still in process	26	20.6
3	Not available	49	38.9
Total		126	100.0

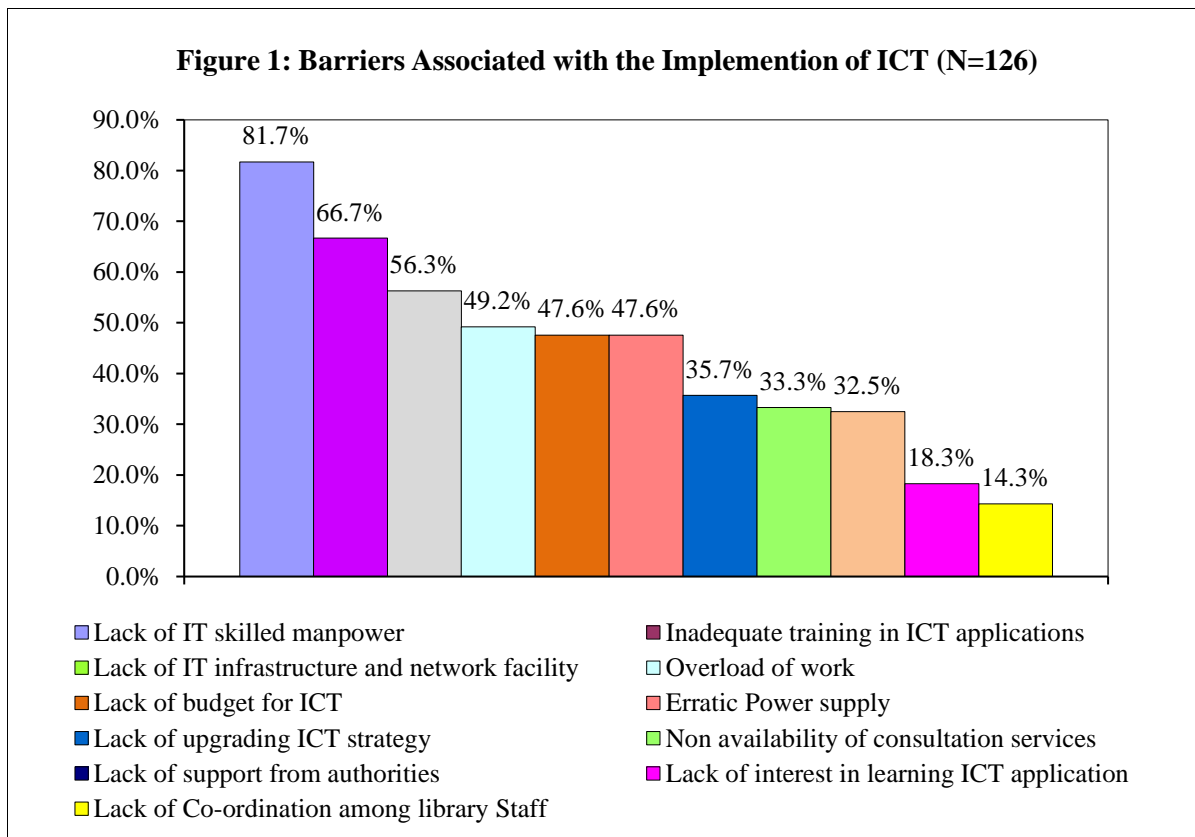
7.3 Library Services that are Performed through ICT:

Table 9 shows that the highest 96.0% libraries have been providing internet services followed by 92.9% libraries provide photocopy service, 87.3% libraries provide desktop facility whereas 84.9% libraries provide OPAC services; 81.7% libraries provide printing facility; 72.2% libraries provide scanning facility; 71.4% libraries provide lending services; 70.6% libraries provide CD-ROM facility; 63.5% libraries provide electronic database services; 58.7% libraries provide online database services; 41.3% libraries provide institutional repository services and the least 22.2% libraries provide document delivery services.

S.No	Description	Yes	%	No	%	Mean	Rank	Std. Dv
1	Online Database Services	74	58.7	52	41.3	.5873	10	.49428
2	Electronic Database	80	63.5	46	36.5	.6349	9	.48337
3	Institutional Repository	52	41.3	74	58.7	.4127	11	.49428
4	Document Delivery Service	28	22.2	98	77.8	.2222	12	.41740
5	Internet Service	121	96.0	5	4.0	.9603	1	.19599
6	OPAC	107	84.9	19	15.1	.8492	4	.35928
7	Lending Services	90	71.4	36	28.6	.7143	7	.45356
8	CD-ROM	89	70.6	37	29.4	.7063	8	.45725
9	Scanning facility	91	72.2	35	27.8	.7222	6	.44969
10	Printing facility	103	81.7	23	18.3	.8175	5	.38783
11	Photocopy Service	117	92.9	9	7.1	.9286	2	.25857
12	Desktop facility	110	87.3	16	12.7	.8730	3	.33428

7.4 Barriers Associated with the Implementation of ICT in the College Libraries:

Fig.1 shows that the highest 81.7% of the college libraries have faced problem due to lack of IT skilled manpower and subsequently, 66.7% of the libraries faced problem caused by inadequate training in ICT applications whereas 56.3% libraries, lack of IT infrastructure and network facility; 49.2% libraries, work overload; 47.6% of each libraries, lack of budget for ICT and erratic power supply; 35.7% libraries, lack of upgrading ICT strategy; 33.3% libraries, non availability of consultation services; 32.5% libraries, lack of support from authorities; 18.3% libraries, lack of interest in learning ICT application and 14.3% libraries, lack of co-ordination among library staff.



7.5 ICT-based Services Extended to Users:

Table 10 shows that the highest 80.5% of the user has expressed the availability of internet services in the college libraries followed by 80.1% of users availed the desktop facility while 78.4% users availed photocopy service; 55.2% users availed printing facility; 52.7% users availed OPAC service; 49.9% users availed lending service; 48.4% users availed institutional repository services; 43.3% users availed online database services; 40.0% users availed CD-ROM facility; 36.6% users availed scanning facility; 30.1% users availed electronic database services and 4.7% users availed document delivery service.

S.No	Description	Yes	%	No	%	Rank	Mean	Std.Dv
1	Online Database Services	293	43.3	384	56.7	8	.4328	.49583
2	Electronic Database	204	30.1	473	69.9	11	.3013	.45917
3	Institutional repository services	328	48.4	349	51.6	7	.4845	.50013
4	Document Delivery service	32	4.7	645	95.3	12	.0473	.21237
5	Internet Service	545	80.5	132	19.5	1	.8050	.39648
6	OPAC	357	52.7	320	47.3	5	.5273	.49962
7	Lending Service	338	49.9	339	50.1	6	.4993	.50037
8	CD-ROM	271	40.0	406	60.0	9	.4003	.49032
9	Scanning facility	248	36.6	429	63.4	10	.3663	.48216
10	Printing facility	374	55.2	303	44.8	4	.5524	.49761
11	Photocopy service	531	78.4	146	21.6	3	.7843	.41158
12	Desktop facility	542	80.1	135	19.9	2	.8006	.39985

7.6 Impact of ICT on the Users:

Table 11 shows that the highest 89.2% of users agreed that they have positive impact on ICT in the form of ‘It helps to access up-to-date information’ followed by 88.5% users agreed that ICT ‘Provided quickly access the required information’. Subsequently, 78.0% of users agreed that ICT ‘it saves spaces and reduces paper’; each of 76.2% users agreed that ICT ‘Enhanced the quality of library services’ and ‘Access to new range of electronic services not possible before’; 75.6% users agreed that ICT ‘saves the time and effort’; 74.4% users agreed that ICT ‘It helps to create positive attitude’; 69.4% users agreed that ICT ‘provided flexible and comprehensive retrieval of information’ and 65.9% users agreed that ‘utility of ICT in my institute is good’.

S.No	Description	Agree	%	Disagree	%	Rank	Mean	Std.Dv
1	Provided quickly access the required information	599	88.5	78	11.5	2	.8848	.31952
2	Enhanced the quality of library services	516	76.2	161	23.8	4	.7622	.42606
3	It helps to create positive attitude	504	74.4	173	25.6	6	.7445	.43649
4	It helps to access up-to-date information	604	89.2	73	10.8	1	.8922	.31039
5	It saves time and effort	512	75.6	165	24.4	5	.7563	.42964
6	Provided flexible and comprehensive retrieval of information	470	69.4	207	30.6	7	.6942	.46107
7	It saves space and reduces paper	528	78.0	149	22.0	3	.7799	.41461
8	Access to new range of electronic services not possible before	516	76.2	161	23.8	4	.7622	.42606
9	The utility of ICT in my institute is good	446	65.9	231	34.1	8	.6588	.47447

8. Suggestions and Recommendations:

The suggestions and recommendations based on the findings of the present study are stated below:

- The Library automation and Digital library or institutional repository should be set up with branded IT equipment. The respondents replied that 40.5% libraries have institutional repositories and 20.6% libraries are still in the process while 38.9% libraries do not have institutional repository. Hence, the authority should take necessary steps to facilitate institutional repository section in their libraries.
- The hardware and software facility in the library should be regularly upgraded to improve the additional features while delivering library services.
- The library should be equipped to have high speed internet with Wi-Fi facility so that the users can access maximum online resources.
- Very few 3.2% libraries have RFID based technology in the college libraries. The authority should take the necessary step to implement RFID for efficient management of library resources.
- 8.7% of the libraries have video conference facility in the college libraries. The library should provide video conference facilities to enable users to maximize the usage of ICT based library activities and services.
- Lack of IT skilled manpower is found main constraints in the libraries. The librarians and the library staff should participate in the training program on ICT based activities especially library management software, digital library software and management of e-resources organized by different agencies to cope up the latest technologies.

9. Conclusion:

The study has investigated the usage of ICT in the college libraries of Assam. It is found that the majority of the libraries have been providing internet services. Almost all the college libraries have internet technology and all of them have internet connectivity in functional status. More than half of the libraries are partially automated where less than half of the libraries are fully automated. It was also found that 51 out of 126 college libraries have developed institutional repositories. The majority of the have faced problem due to lack of IT skilled manpower while more than half of the libraries have faced problem caused by inadequate training in ICT applications and lack of IT infrastructure and network facility.

From the analysis of the user study, it is found that maximum respondents have visited the library sometimes. Half of the respondents responded that they have availed the facility to use institutional repositories in their colleges and maximum respondents used digitized magazine. The maximum respondents have revealed that they have used internet services as ICT based services. The highest numbers of respondents have mentioned that they have positive impact on ICT in the form of 'it helps to access up-to-date information'.

Application of ICT has become inevitable in the present era of information explosion. Effective application of ICT in libraries helps in performing their operations and services effectively. The college libraries of Assam should prepare themselves to meet the challenges of the present digital revolution. College Librarians should acquire adequate knowledge, skill and expertise in ICT applications in the libraries. The library staff should also be trained properly to become familiar with the ICT applications. The study concludes that the college libraries of Assam should develop ICT infrastructure extensively to make optimal use of the library resources, both conventional and digital resources.

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