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ICT Infrastructure and Services in the College Libraries of Assam: A Study

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ABSTRACT

College education plays an important role in developing the knowledge power of any individual in a society. The libraries of academic institutions are not confined only to printed information sources; in fact, they have started acquisition and management of digital or electronic or virtual information resources. Thus the College libraries are able to fulfil the needs of the students, teachers and researchers by providing different kind of printed or digital resources. Better and effective library services can be ensured by the application of information and communication technology (ICT) with skilled and qualified library manpower. The technological aspect of ICT has created few challenges in the college libraries especially in Assam. The study covers the degree colleges which have been imparting general education in Assam. At present, there are 295 provincialised and 3 government degree colleges imparting general education in Assam. In total 189 colleges were provincialised before 2012. The study covers the 3 government and 189 provincialised degree colleges in Assam. The total number of colleges covered under the study is 192. The study investigated the ICT Infrastructure and Services in the College Libraries of Assam. This will identify the availability of ICT infrastructure facilities, ICT based library services performed by the college libraries and the barriers associated with the implementation of ICTs in the college libraries of Assam.

Keywords: Information and Communication Technology, ICT, ICT Infrastructure, ICT Based Library Services, Library Services, College libraries, Assam

1. INTRODUCTION:

A library is the heart of an institution which collects, stores and transmits updated information to the teachers, students, scientists and those who are engaged in research activities. The quality of an academic institution depends upon the quality of services provided by the academic library. An academic library is known as the heart of any academic institutions. The college libraries have a tremendous role for enhancing the knowledge and skills of the academic students in both rural and urban communities.

Information and communication technology (ICT) are any combination of tools and procedures that facilitate the acquisition, storage, searching, retrieval and transmission of information. It fundamentally changes the access, storage and dissemination of information and facilitates global interconnectivity and accelerated information exchange.

ICTs offers sufficient opportunities for libraries to automate the traditional activities, implement effective library co-operation and resource sharing networks, develop institutional repositories or digital libraries, provide value-added information services and initiate capacity building programs for the library staff and the users. The ICTs are used in libraries to provide better security services and fulfill the needs of the user as per their requirement. It is also used in libraries for development of new information services and improving the productivity and efficiency of library services. The ICT based resources help to save the library space by using the electronic storage media and virtual learning activities.

College education is an important part of higher education which is usually identified with the education in colleges, universities, technologies and which deals mostly with adults and is a higher level of knowledge in terms of its complexity and understanding. After independence, Government of India has given importance to education sector for achieving the development goals. Various committees and commissions were set up by the Government of India to look into the problems of educational reforms. These reforms have great impact in the development of higher education in Assam in the post independence period. Before independence, in 1892 Murarichand College was established in Sylhet of Assam affiliated to University of Calcutta which is now in Sylhet district of Bangladesh. Cotton College was established in the year 1901 by Sir Henry Stedman Cotton at Guwahati, Assam. In 1930, Jagannath Baruah College was established in Jorhat district of Assam. Madhab Choudhury College, Barpeta is the fourth oldest College in undivided Assam which was established in the year 1939. After that several new colleges have come up and imparting the higher

education to the entire Assam. At present, there are 298 general degree colleges affiliated to different universities in Assam. This paper identifies the availability of ICT infrastructure facility, ICT based library services performed by the college libraries and the barriers associated with the implementation of ICTs in the college libraries of Assam.

2. LITERATURE REVIEW:

There have been a lot of works done in the field of ICT infrastructure in libraries. So these related studies on ICT infrastructure and Services have been consulted before conducting the research study. Some of those related studies are briefed below:

Atonring (2015)¹ has conducted a study on ICT in the university libraries of Tamil Nadu which mainly focuses on how far the university libraries have adopted the modern techniques for library management and availability of ICT infrastructure among Arts and Science university libraries in Tamil Nadu. Egoeze *et al.*, (2014)² have conducted a descriptive survey on ICT Infrastructure and application in Nigeria Universities. The study has found that ICT infrastructure is lacking in Nigeria universities and the utilization is found low. The main ICT infrastructure and services utilized in Nigeria universities were identified to include the computer, internet, E-mail services, World Wide Web, website, and telephone. Mondal and Bandyopadhyay (2014)³ have conducted a study on availability of ICT infrastructure in the university libraries of West Bengal. It has found that ICT infrastructure in the university libraries of West Bengal is still at different stages of development. Most of the university libraries of West Bengal have minimum infrastructure for the implementation of ICT. Mahanta (2014)⁴ has studied on Information and Communication Technology infrastructure in the college libraries of Barpeta district in Assam. The study was conducted among the 14 college libraries in the Barpeta district to identify the hardware and software infrastructure facility with the automation status in the college libraries, library services provided by the college libraries and the constraint to use ICT in the college libraries. The study has found that the uses of ICT in the college libraries of Barpeta district are in the developing stage. Half of the college libraries have been partially automated. It is also observed that the maximum libraries have faced problem due to insufficient fund to implement ICT in their college libraries. Patil, Lihitkar and Lihitkar (2014)⁵ have studied on ICT applications on Agriculture University Libraries of western India with the objectives to find the automation status, ICT infrastructure, library services through ICT, training need by library staff with problem faced in adopting ICT etc. The study has covered eight agriculture universities in western India. It has found that two university libraries have achieved 100

percent library automation, four university libraries achieved 75 percent automation and remaining two university libraries have achieved 50 percent library automation. Regarding the availability of ICT infrastructure, the SDAU library having the maximum to the some extend and the BSKKV library have the minimum infrastructure. All the universities feel lack of ICT facilities to meet the demands of the users. It has found that eighty eight percent libraries have initiated to create or development digital library with the funds from ICAR. Walmiki and Ramakrishnegowda (2009)⁶ have studied on ICT infrastructure in university libraries of Karnataka to identify the status of hardware, software and other ICT infrastructure available in university libraries of Karnataka. ICT infrastructure in the university libraries of Karnataka has found in the stage of development. Insufficient computer hardware, suitable software and lack of internet facilities with required bandwidth in the university libraries of Karnataka are yet to establish.

3. OBJECTIVES:

The key objectives of the present study are:

- To identify the hardware infrastructure facilities in the college libraries of Assam;
- To identify the software infrastructure facilities in the college libraries of Assam;
- To identify the availability of ICT based technology in the college libraries of Assam;
- To identify the availability of internet facilities in the college libraries of Assam;
- To identify the ICT based library services performed by the college libraries; and
- To identify the barriers associated with the implementation of ICTs in the college libraries of Assam.

4. SCOPE AND LIMITATION OF THE STUDY:

The study covers the degree colleges which have been imparting general education in Assam. There are 298 provincialised and 3 government degree colleges imparting general education in Assam⁷, out of which 189 colleges have been provincialised before 2012⁸. The study have covers the 189 provincialised and 3 government degree colleges. The total number of colleges covered under the study is 192. The colleges which are imparting Technical, Medical, Management, Law and special subject or other colleges related to professional courses are excluded in the present study.

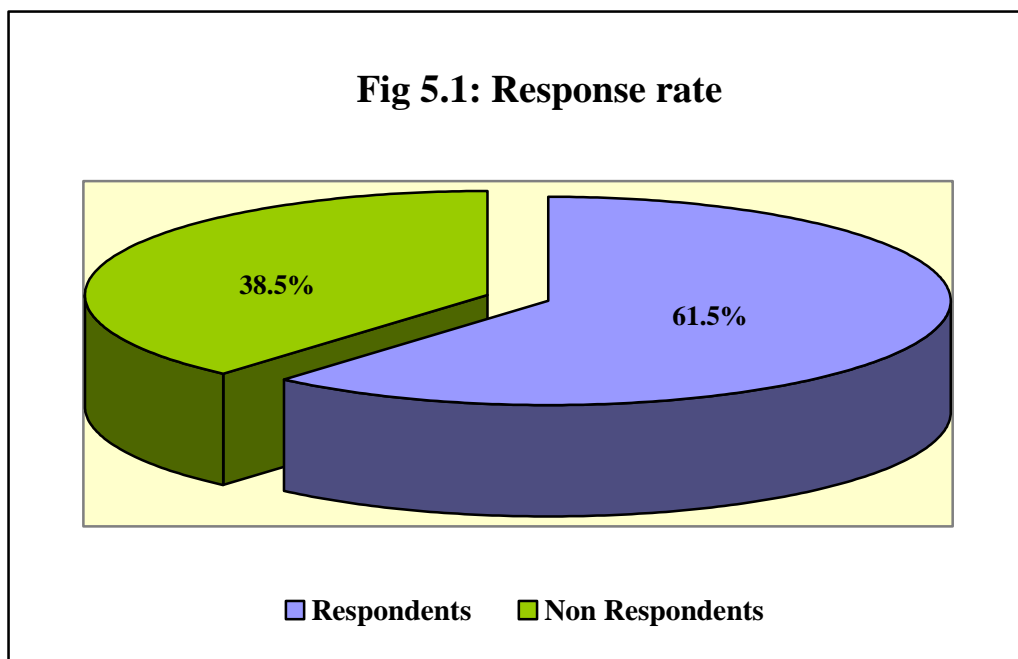
5. RESEARCH METHODOLOGY:

Research methodology of the study includes the use of questionnaire, interview and observation method for collection of primary data from the respondents. The purpose of the questionnaire is to get data regarding the ICT infrastructure, ICT based services performed through ICT and the constraints associated with the implementing of ICT in the college libraries of Assam. Random sampling method has been used to select the colleges and collect the data from the librarians. The questionnaires were distributed personally or by e-mail to the 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 problems.

6. RESULT AND DISCUSSION:

6.1 Response rate:

The questionnaires were distributed to 192 colleges out of which 118 colleges have responded and filled up the questionnaire. The percentage of response rate is 61.5% which is graphically represented in the Fig 5.1.



6.2 Hardware Infrastructure facilities:

The strength of the hardware infrastructure facility in the college libraries are measured by taking different parameters that have been shown in the Table 5.1.

Table 5.1: Hardware facility in the library(N=118)								
S.No	Description	Yes	%	No	%	Mean	Rank	Std. Dv
1	Server	111	94.1	7	5.9	.94	3	.237
2	Desktop	117	99.2	1	.8	.99	1	.092
3	Laptop	23	19.5	95	80.5	.19	11	.398
4	Printer	111	94.1	7	5.9	.94	3	.237
5	Scanner for general purposes	101	85.6	17	14.4	.86	4	.353
6	Scanner for digitization	53	44.9	65	55.1	.45	8	.500
7	Barcode scanner	92	78.0	26	22.0	.78	5	.416
8	Barcode Printer	91	77.1	27	22.9	.77	6	.422
9	Backup devices	74	62.7	44	37.3	.63	7	.486
10	Projector	35	29.7	83	70.3	.30	9	.459
11	Identity card printer	26	22.0	92	78.0	.22	10	.416
12	CCTV	111	94.1	7	5.9	.94	3	.237
13	Photocopy machine	114	96.6	4	3.4	.97	2	.182

Table 5.1 shows that the highest 99.2% college libraries have the desktop computer facility followed by 96.6% of the colleges that have photocopy machine. Subsequent data in the gradation are 94.1% of each college libraries possessed server, printer and CCTV; 85.6% libraries have scanner for general purposes; 78.0% libraries have barcode scanner; 77.1% libraries have barcode printer; 62.7% libraries have backup devices; 44.9% libraries have scanner for digitization; 29.7% libraries have projector and 22.0% libraries have identity card printer. The least 19.5% of the colleges have laptop facility.

6.3 Software infrastructure facilities:

To know the software infrastructure facility in the college libraries of Assam, the investigator has attempted to collect data relating to software for management of libraries. The data collected from the respondents have been summarized in the Table 5.2

Table 5.2: Software infrastructure facility(N=118)								
S.No	Description	Yes	%	No	%	Mean	Rank	Std. Dv
1	Library Management Software	114	96.6	4	3.4	.97	1	.181
2	Digital Library software or Institutional repository software	61	51.7	57	48.3	.52	3	.502
3	Anti-virus	105	89.0	13	11.0	.89	2	.314

Table 5.2 shows that the highest 96.6% of the college libraries have library management software package followed by 89.0% of the libraries that have antivirus software while 51.7% of the college libraries have digital library software or institutional repository software.

6.4 Availability of ICT based Technologies:

Table 5.3: Availability of ICT based Technologies(N=118)								
S.No	Description	Yes	%	No	%	Mean	Rank	Std. Dv
1	Barcode	89	75.4	29	24.6	.75	2	.432
2	RFID	2	1.7	116	98.3	.02	4	.130
3	Video Conference	8	6.8	110	93.2	.07	3	.252
4	Internet	113	95.8	5	4.2	.96	1	.202

The data collected from the respondents relating to ICT based technologies used by the college libraries have been summarized in the Table 5.3. It shows that at the highest 95.8% of the colleges have internet technology in their libraries and it is followed by 75.4% of the college libraries that have adopted barcode technology. The least 1.7% of the college libraries has RFID Technology.

6.5 Availability of Internet facilities in the library:

6.5.1 Internet Connectivity:

Table 5.4: Internet connectivity(N=118)					
Description	Yes	%	No	%	Total (%)
Internet connectivity in the library	112	94.9	6	5.1	118(100.0)

Table 5.4 shows that 94.9% of the college libraries have internet connectivity in functional status while 5.1% of the libraries do not have functional internet connectivity.

6.5.2 Type of internet connection:

Table 5.5:Type of internet connection used(N=118)							
S.No	Description	Yes	%	No	%	Mean	Rank
1	DSL	73	61.9	45	38.1	.62	1
2	Wireless	32	27.1	86	72.9	.27	2
3	Cellular	3	2.5	115	97.5	.03	4
4	Other	4	3.4	114	96.6	.03	3

Table 5.5 shows that 61.9 % of the libraries have been using DSL connection followed by 27.1% of the libraries using wireless connection. The 3.4% of the college libraries have been using other connection. The least 2.5% of the libraries have been using cellular connection.

6.5.3 Type of internet service provider:

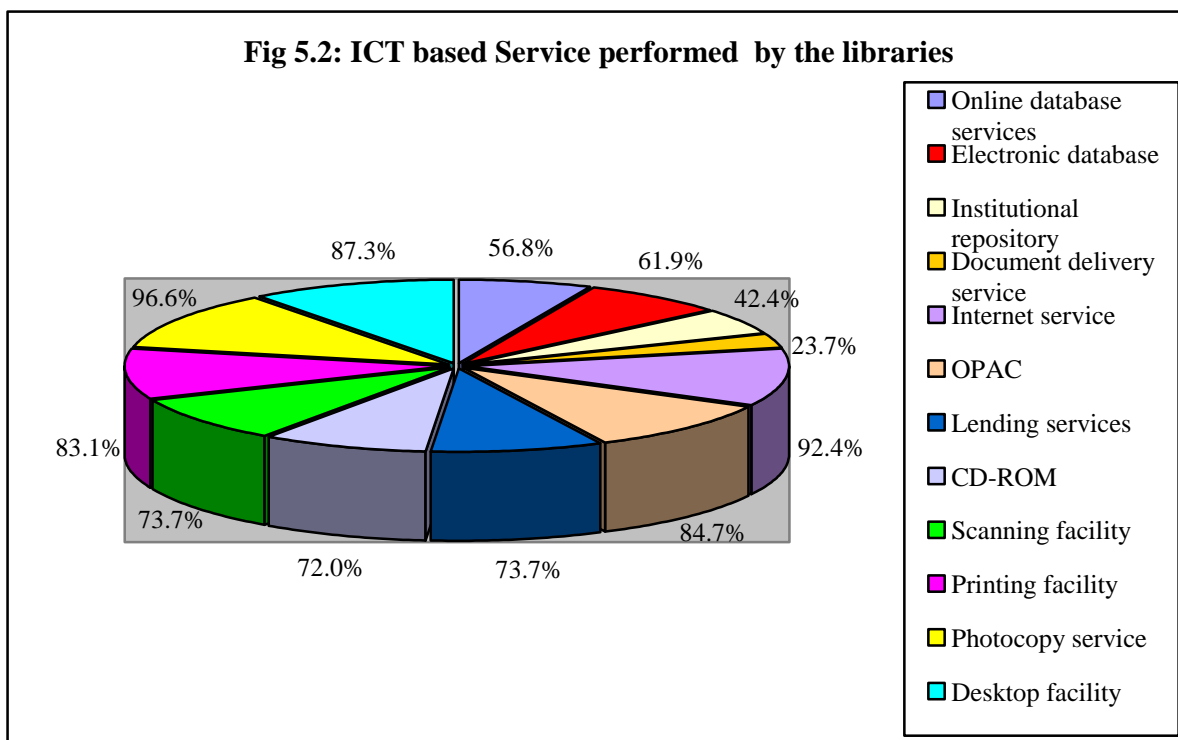
Table 5.6:Type of internet service provider(N=118)							
S.No	Description	Yes	%	No	%	Mean	Rank
1	BSNL	91	77.1	27	22.9	.77	1
2	Airtel	3	2.5	115	97.5	.03	3
3	Reliance Jio	15	12.7	103	87.3	.13	2
4	Other	3	2.5	115	97.5	.03	3

With respect to the service provider of internet connection in the college libraries, 77.1% libraries have subscribed internet service from BSNL service provider while 12.7% of the libraries have subscribed Reliance Jio and 2.5% of each library have subscribed from Airtel and other service provider.

6.6 ICT based Services performed by the Libraries:

Table 5.7: ICT based Service performed by the libraries(N=118)								
S.No	Description	Yes	%	No	%	Mean	Rank	Std. Dv
1	Online Database Services	67	56.8	51	43.2	.57	9	.497
2	Electronic Database	73	61.9	45	38.1	.62	8	.488
3	Institutional repository	50	42.4	68	57.6	.42	10	.496
4	Document Delivery service	28	23.7	90	76.3	.24	11	.427
5	Internet Service	109	92.4	9	7.6	.92	2	.267
6	OPAC	100	84.7	18	15.3	.85	4	.361
7	Lending Services	87	73.7	31	26.3	.74	6	.442
8	CD-ROM	85	72.0	33	28.0	.72	7	.451
9	Scanning facility	87	73.7	31	26.3	.74	6	.442
10	Printing facility	98	83.1	20	16.9	.83	5	.377
11	Photocopy service	114	96.6	4	3.4	.97	1	.182
12	Desktop facility	103	87.3	15	12.7	.87	3	.335

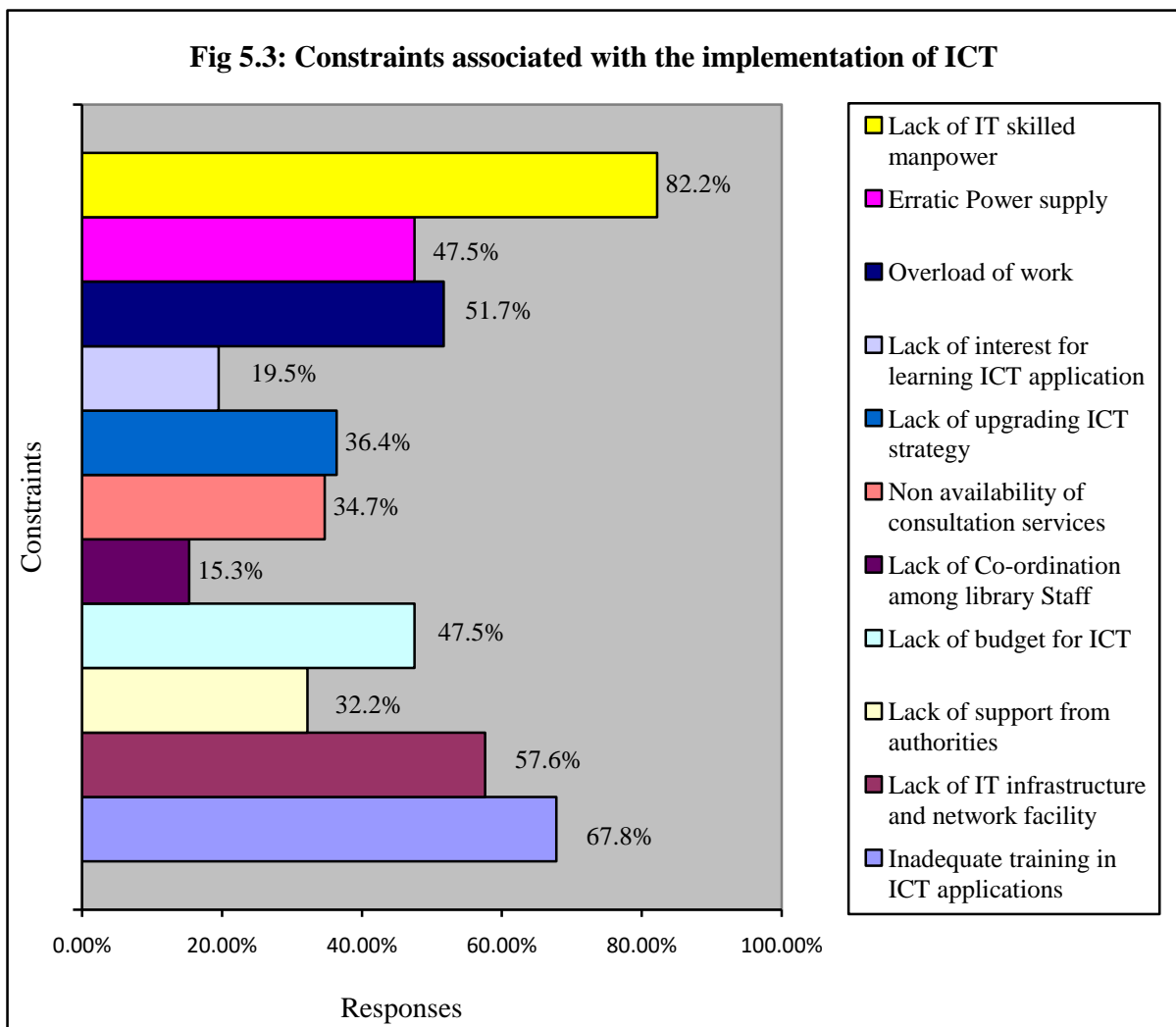
Table 5.7 depicts that the highest 96.6% libraries provide photocopy services followed by 92.4% libraries facilitates internet service while 87.3% libraries provide desktop facility, 84.7% libraries provide OPAC services; 83.1% libraries provide printing facility; 73.7% of each libraries provide lending service and scanning facility; 72.0% libraries provide CD-ROM facility; 61.9% libraries provide electronic database services; 56.8% libraries provide online database services; 42.4% libraries provide institutional repository services and the least 23.7% libraries provide document delivery services. The ICT based Services performed by the college libraries in Assam have been graphically presented in the Fig 5.2.



6.7 Barriers associated with the implementation of ICT:

Table 5.8: Barriers associated with the implementation of ICT(N=118)								
S.No	Description	Yes	%	No	%	Rank	Mean	Std. Dv
1	Inadequate training in ICT applications	80	67.8	38	32.2	2	.68	.469
2	Lack of IT infrastructure and network facility	68	57.6	50	42.4	3	.57	.496
3	Lack of support from authorities	38	32.2	80	67.8	8	.32	.469
4	Lack of budget for ICT	56	47.5	62	52.5	5	.47	.501
5	Lack of Co-ordination among library Staff	18	15.3	100	84.7	10	.15	.361
6	Non availability of consultation services	41	34.7	77	65.3	7	.35	.478
7	Lack of upgrading ICT strategy	43	36.4	75	63.6	6	.36	.483
8	Lack of interest for learning ICT application	23	19.5	95	80.5	9	.19	.398
9	Overload of work	61	51.7	57	48.3	4	.52	.502
10	Erratic Power supply	56	47.5	62	52.5	5	.47	.501
11	Lack of IT skilled manpower	97	82.2	21	17.8	1	.82	.384

Table 5.8 shows that the highest 82.2% of the college libraries are facing problem due to lack of IT skilled manpower followed by 67.8% of the libraries for inadequate training in ICT applications while 57.6% of the libraries are faced problem caused by the lack of IT infrastructure and network facility; 51.7% of the libraries for overload of work; 47.5% of each libraries for lack of budget for ICT and erratic power supply; 36.4% of the libraries for lack of upgrading ICT strategy; 34.7% of the libraries for non availability of consultation services; 32.2% of the libraries for lack of support from authorities; 19.5% of the libraries for lack of interest for learning ICT application and least 15.3% of the libraries for lack of co-ordination among library staff. The barriers associated with the implementation of ICT in the college of Assam have been graphically presented in the Fig 5.3.



7. CONCLUSIONS:

From the interpretation and analysis of the study, it has been noticed that the availability of the hardware and software infrastructure facility in the college libraries of Assam has reached a good condition. Almost all the college libraries have internet connectivity in functional status and most of these libraries have been subscribing internet service from BSNL service provider. Majority of the college libraries in Assam have barcode and internet technology. Almost all the college libraries in Assam have been providing photocopy and internet services. The college libraries in Assam have faced many problems in the implementation of ICT. The main problems are caused by the lack of IT skilled manpower and inadequate training in ICT applications. The Rashtriya Uchchar Shiksha Abhiyan (RUSA), UGC, INFLIBNET, the concerned state government and the local enterprises in India have been taking great initiatives to modernize the academic institutes. Assam is not an exception in this regard; the colleges have been taking the opportunities for development and modernization of every educational institution. The college authorities should allocate maximum funds to overcome the difficulties faced by the libraries. The authority should take initiative to recruit qualified library staff with IT skills as per the UGC norms. The librarians as well as library staff should join ICT based training programs organized by different agencies to cope up with the latest technologies.

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