Issues and Challenges of ICT Infrastructure in the Neighboring Districts to Bangladesh: a Study of Colleges Libraries of Assam

Mr. Shyam Thakuria,

Librarian, Ramkrishna Nagar College, Karimganj.
Email: shyan.thakuria@gmail.com

Mr. Rofique U. Laskar,

Librarian, A.L.C College, Algapur and PhD Scholar, Assam University
Email: rofique.aus@gmail.om

Abstract

The state of Assam shared its International Border to Bangladesh, the districts which are neighbor of Bangladesh are comparatively located in the remote area of Assam. Therefore this districts facing issues in the development in every aspect including the development of College education system. The libraries of the colleges in these areas are comparatively lacking of proper development according to the need of 21st centaury demand. The present study is to find out the development of ICT infrastructure in these four districts of Assam, neighboring to the Bangladesh. This is descriptive study based on the primary data collected through Structured Questionnaire using Goggle Form. There are total numbers of 30 Colleges only 25 College has responded in the present survey. Inadequate manpower and lack of interest of the library staff are the major issues to develop a complete ICT based infrastructure in the colleges under this study.

Keywords: ICT Infrastructure, College Library, Border districts of Assam, Indo-Bangla Border, Issues and Challenges of ICT.

1. Introduction

ICT became the basic infrastructure in 21st Century, especially during Covid-19 pandemic we realized the need of ICT infrastructure to continue our services including library services. Present libraries are depended on ICT services such as automated lending services, document delivery services, library record maintenance, digital library services etc. The present ICT services are most advanced services due to the advancement of Artificial Intelligence and Machine Learning to provide machine directed dissemination of information and so on. in this context the college libraries of Assam are far beyond the modern technology but the basic ICT infrastructure are being developed slowly with help of Directorate of Higher Education such as Library Automation, Digital Library or Digital Classroom etc. The present study is find out the status of the development of ICT infrastructure and the challenges to implement such basic infrastructure in the degree colleges of neighboring districts of Bangladesh.

2. Background of the Study

Information Communication Technology is the need of the hour especially sudden outbreak taught us to have basic ICT infrastructure to continue day to day library services on such situation. But the colleges of bordering districts facing discrimination

due to backward place in the state of Assam and lacking of communication etc. studies were conducted on ICT infrastructure, library automation and digital library etc in the different parts of the state but the libraries situated in the Indo-Bangla border were less focused. The present study is understand the cause and to highlight the ground reality for the improvement of the colleges under this study.

3. Scope and Limitation

Due the technological advancement it is possible to access information on demand from the doorstep itself. The development of ICT infrastructure is the basic need to implement ICT based services like automation, digitization, MOOCs, e-resources services and Web based services etc. But the colleges under this study are growing slowly compared to the libraries of other parts of the state due to lack of concentration of the authority. This study will bring real picture of the ICT V and ICT base services of the colleges under this survey.

There total numbers of 30 colleges in the Indo- Bangla bordering districts of Assam, this study is covering the whole population of the colleges located in the four districts – Dhubri, Mancachar, Karimganj and Cachar districts of Assam, India.

4. Literature Review

A literature survey has been made to find out different studies related to ICT in the college libraries, library automation, and studies on college libraries of Assam are listed below:

Laskar, R. U. and Dey, N. C. (2019) have conducted a Study on ICT infrastructure and library automation in the colleges affiliated to Assam University, Silchar. They found that the development of library infrastructure based of ICT is still under developing phase.

Laskar, R. U. and Mozumder, S. K.(2020) on their study 'Issues and challenges of ICT application and library automation in the newly provincialised degree colleges of Barak valley, Assam: a survey' have highlighted the lack of good will of the college authority to implement ICT infrastructure.

Choudhury, S. and Sarmah (2017) The study discussed the availability of ICT infrastructure and issues related to the implementation ICT in the colleges in their study ICT infrastructure and application in the degree colleges of Cachar Districts

Dasgupta, Choudhury and Sarmah (2014) have highlighted about the impotance of information literacy skills among the PG students and Scholars of Assam University, Silchar. They also suggested to improve the ICT skills of the student and scholars of the University.

Konwar and Sinha (2014) have discussed the status of ICT infrastructure and development of library network among the major colleges of Barak Valley, Assam. The study focused that most of the college libraries are not well of in context to ICT infrastructure.

Kumar, Manjunath and Vijayraj (2012) discussed the role of library in present day context and implement the ICT in the libraries. They are opined that college library should take initiatives to increase socio economic status of the libraries to create an atmosphere to adapt the new and latest technological achievement.

Thakuria, Barua and Sharma (2021) highlighted that most of the colleges have best practices adopted in the areas of automation, collection development and administration. Lack of fund, lack of ICT infrastructure, lack of sufficient staff and lack of initiative from the college authority

are found responsible for non implementation of best practices.

5. Objectives of the Study

i) To find out the status of ICT infrastructure of the colleges situated in the neighboring districts to Bangladesh.
ii) To understand the ICT based library services provided in the college libraries of neighboring districts of Bangladesh.
iii) To observe the different software used in the college libraries of bordering districts of Assam.
iv) To find out the issues and challenges for the development of ICT infrastructure in the college libraries of bordering districts of Assam.

6. Research Methodology

This is a descriptive study based on the primary data collected through Structured Questionnaire using Goggle Form. There are total numbers of 30 Colleges only 25 College has respond in the present survey.

The present study covers the whole population of the colleges located in the bordering districts of Assam to Bangladesh. The survey collected primary data though Google Form provided by the college librarian were tabulated and analyzed to find out the interpretations according to the study objective to reach study conclusion and generalization.

7. Data Analysis and Interpretation:

The present study covers total numbers of 30 degree colleges where 25 college libraries responded in the survey. The study population is the College libraries of four Neighboring Districts of Assam-Bangla Boarder namely Dhubri, Cachar, Karimganj and South Salmara, Mankachar which are affiliated to Gauhati University and Assam University, Silchar. These four districts are situated in the neighboring districts of Bangladesh. Dhubri district is bounded by International borders of Bangladesh. South Salmara Mankachar District shares its borders with Bangladesh in the West and Karimganj and Cachar District is also situated in Barak Valley, Assam , North Eastern corner of India. These four districts are situated along with the International Boundary with Bangladesh. District wise length of the international boundary is Dhubri-Bangla-90KM, Karimganj-Bangla-3KM, Cachar-Bangla – 32 KM and South Salmara Mankachar-Bangla-63milometers respectively.

Table No.1: General Information of the Colleges under study

SL No	Name of the College	Year of Establishment	Name of the Library	College Website
DHUBRI DISTRICT- LOWER ASSAM				
1.	Bhola Nath College	1946	Shew Narain Tantia Library	www.bncollege.co.in
2.	Sapatgram College	1972	Central Library	
3.	Pramathesh Barua College	1964	Alakesh Chandra Baruah Central Library	www.pbcollege.in.net
4.	Chilarai College	1973	BCP Library	www.chilaraicollege.co.in
5.	Bilashipara College	1960	Banikanta Kakati Library	www.bilasiparacollege.org
6.	Ratna Pith College	1978	Apurba Singha Library	www.ratnapithcollege.ac.in

CACHAR DISTRICT- BARAK VALLEY				
7.	Guru Charan College	1935	B.C. Gupta Memorial Library	www.gurucharancollege.ac.in
8.	Radha Madhab College	1971	B.C. Memorial Library	www.rmcollege.org
9.	Women's College	1963	Central library	www.wcsilchar.ac.in
10.	M.C. D. College	1972	Central library	www.mcdcollege.org
11.	Cachar College	1960	Central library	www.cacharcollege.ac.in
12.	Janata College	1964	Central library	www.janatacollege.in
13	Nehru College	1965	Central library	www.nehrucollege.org
14	Satya Ranjan College	1992	Central library	http://www.srcollege.c.in
15	West Silchar College	1985	Central library	www.westsilcharcollege.ac.in
16	J. N. Singh College	1998	Central library	www.jagannathsinghcollege.ac.in
17	Silchar College, Silchar	1994	Central library	www.silcharcollege.ac.in
KARIMGANJ DISTRICT-BARAK VALLEY				
18.	Nabin Chandra College	1960	Central Library	www.nccollege.ac.in
19.	Karimganj College	1946	Central Library	www.karimganjcollege.ac.in
20..	Rabindra Sadan Girls College	1962	R.S.Girl's College Library	www.rabindrasadangirlscollege.in
21.	Ramkrishna Nagar College	1964	Shishir Granthagar	www.rknagarcollege.org
22.	Nilam Bazar College	1994	Central Library	http://nilambazarcollege.ac.in
23.	Patharkandi College	1990	Central Library	http://www.pkdc.ac.in
24.	Swami Vivekananda College	1987	Central Library	http://svcollegecdk.in
SOUTH SALMARA MANKACHAR DISTRICT- LOWER ASSAM				
25.	Mankachar College	1971	Central Library	www.mankacharcollege.in

In the following graph it can be seen that 83.33% college libraries have participates and responded in the study which is a very good response.

Responses Recieved

5 (16.66%)

25 (83.33%)

Total = 30
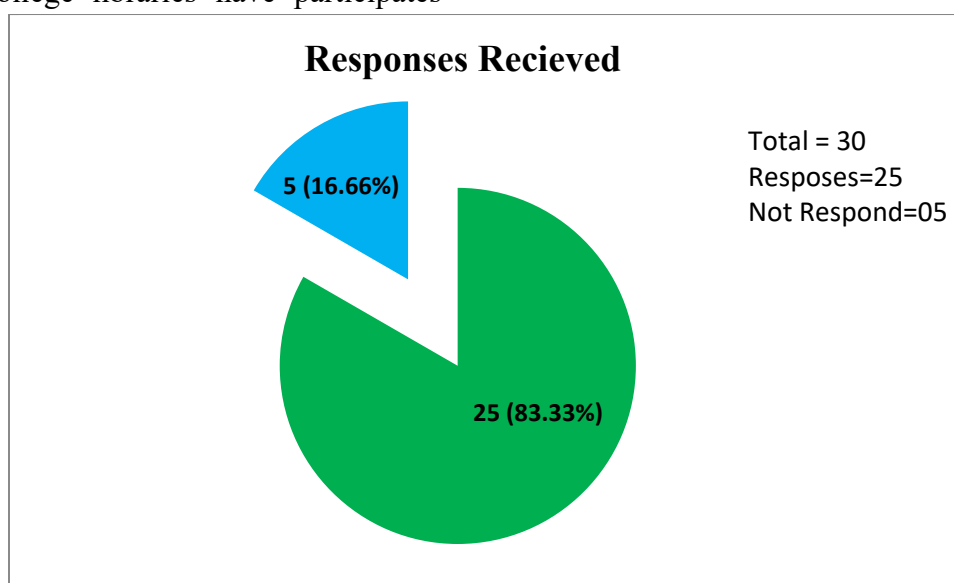Resposes=25
Not Respond=05

Figure: 1 Response Received

7.1 ICT Infrastructure available in the College Libraries

The basic infrastructure of modern libraries are ICT based infrastructure and its services. To enable a library 24/7 available at door step ICT devices are of basic need. This study is going to reveal the practical scenario of the college libraries of Indo-Bangla border. 60% college libraries having a server but not 100% college having a desktop even. Only 56% college having CCTV surveillance system. 56% libraries having barcode reader where 44% colleges having Barcode Printer.

Table No. 2: ICT Infrastructure available in the College Libraries

IT Infrastructure	No. of Colleges available (N-25)	Percentage
Server	15	60%
Desktop	24	96%
Printer	24	96%
Document Scanner	15	60%
Barcode-Scanner	14	56%
Barcode printer	11	44%
Back-up Device	13	52%
UPS	24	96%
CCTV	14	56%
LCD Projector	5	20%
Electronic Notice Board	4	16%
Photocopying Machine	18	72%

7.2 Software used in the Library

Library management software package play a key role for the success of library automation in a college. Responses indicate that the colleges surveyed use a wealth of different software packages depending upon particular application.· The analysis shows that college libraries in this three districts are more interested in SOUL software package developed by INFLIBNET. Fifteen libraries are using the library management software. College Libraries are also using different software like digital library software, DTP software, Antivirus software, etc. The analysis shows that 11 libraries are using digital library software and among these, 5 libraries are using Greenstone Digital Library Software and one library is using ACADO software. As far as the DTPs software are concerned, Most of the libraries are using MS Office software, Two libraries are using PC Software and one library is using AVG software. It is also found that Central Government autonomous institutions are comparatively good. As per digital library software these software, 11 of 25 are using Greenstone, and 8 are using MS Office and Norton Antivirus.

Table No. 3: Software used in the Library

Software Used	No. of College (N-24)	Percentage
Library Management Software	15	60%
Digital Library Software	11	44%
Antivirus Software	15	60%
Others (Local made S/W)	3	12%

The following graphical representation show that 60% colleges having library Management Software and 44% libraries are enable with digital library software but the digitization still in the initial phase.
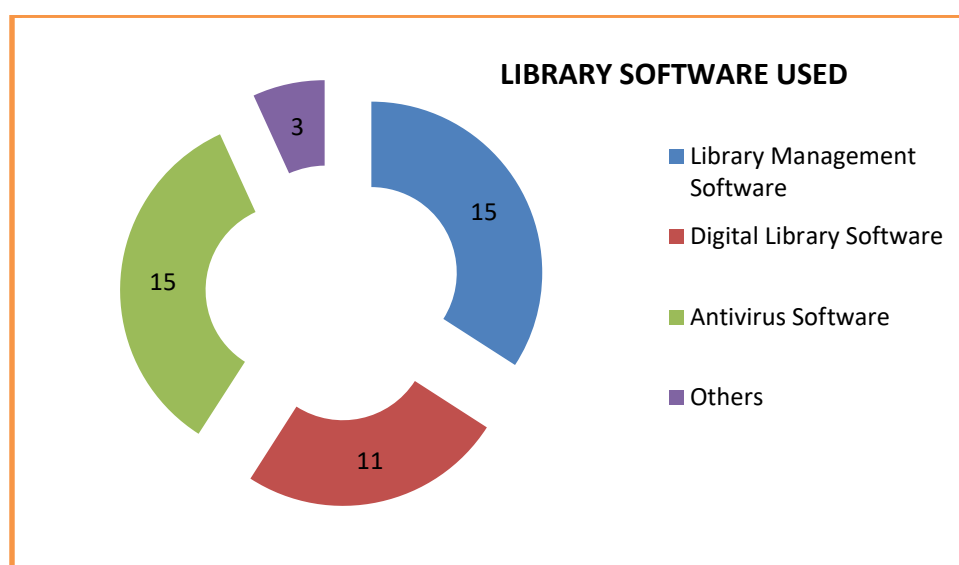

Figure: 2 Library Software Used

7.3 Internet Connectivity in the Library
Internet is the most essential communication media in the present generation and it the best source of information. Therefore every library need to be connected with internet to access huge amount of e-resources and knowledge through out the World. In this study it has been seen that 92% libraries having Internet Connection and 76% libraries are providing Free Wi-Fi facilities.

Table No. 4: Internet Connectivity in the Library

Description	No. of College (N-25)	Percentage
Internet Connectivity	23	92%
Free Wi-Fi	19	76%
LAN	15	60%

7.3.1 Types of Internet Connectivity

Internet connection options vary by Internet Service Provider and by region. The following factors are considered before selecting an Internet package: speed or bandwidth, cost, availability, reliability and convenience. Different types of Internet connections are available in the market today. The type of internet connection used in the college libraries is shown in table 5. Out of 15 college libraries having the Lease line internet connection, 76% are having Wi-Fi connection, 15 (60%) have leased line connection to internet, 21 (84%) college libraries have broad band connection. It is seen that majority of colleges are having free Wi-Fi internet connectivity.

Table No. 5: Types of Internet Connectivity in the Libraries

Type of Internet Connection	No. of College (N-25)	Percentage
Leased Line	15	60%
VSAT	0	0
Cable-Modem	21	84%
Wireless	19	76%
Others	11	44%

7.4 Internet Service Provider in the Colleges

The type of internet service used in college libraries of this three district affiliated to Gauhati University and Assam University, Silchar is presented in table no.6. An Internet service provider (ISP) is an organization that provides services for accessing, using, or participating in the Internet. Internet service providers can be organized in various forms, such as commercial, community-owned, non-profit, or otherwise privately owned etc. The BSNL internet service is used in 16 (64%) libraries, 7 (28%) libraries are using Airtel Network, and 2 (08%) libraries are using Other Network in their libraries. The government owned internet service BSNL is used in majority of college libraries i.e. is 16(64%) than the private internet service.

Table No. 6. Type of Internet Service Provider in the Colleges

Type of ISP	No. of College (N-25)	Percentage
BSNL	16	64%
Reliance JIO	0	0
Airtel	7	28%
Others	2	08%
Total	25	100%

7.5 Internet Browsers available in the College Libraries
In the following Table it can be seen that most of college libraries are using Google Chrome and Internet Explorer for browsing internet resources. Those who have Linux platform they are using Firefox Internet Browser.

Table No.7 Internet Browsers available in the College Libraries

Description	No. of College (N-25)	Percentage
Chrome	19	76%
Internet Explorer/Microsoft Edge	24	96%
Fire Fox	15	60%
Opera	0	0
Others	0	0

7.6 Library Website available in College Libraries
One of the important aspects of college library is its Website to deliver its information and day to day activity to its end users. It is found that only 20% College library has separate website but most of them are not dynamic and 60% libraries having a library page in their college website. 20% college libraries yet to have a Website or webpage. This is to suggest the libraries should have dynamic Website for better sharing of communication to its users.

Table No.8 Library Website available in College Libraries.

Sl. No	Description	No. of College (N-25)	Percentage
1.	Library Website	5	20%
2.	Library Webpage	15	60%
3	Planning to add		

The following graphical representation shows that 15 out of 25 College having separate library Webpage for their library but it has been observe that only a few library is updating daily activities on their website.
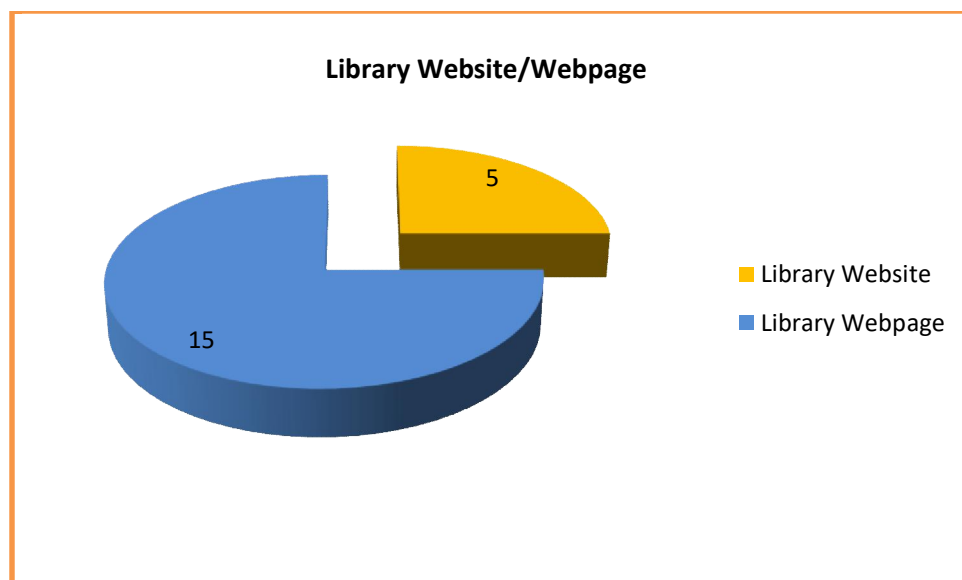
Figure: 3 Status of Library Website/Webpage

7.7 ICT based services performed by the College Libraries

In the present study it has been found that the ICT based services provided by the college libraries under this study is not up to the mark. 52% college libraries are providing Online Database services and only 16% libraries are availing Institutional Repository. 64% libraries are delivering ICT based Lending Service through library automation software.

Table No. 9 ICT based services performed by the College Libraries

ICT Base Service	No. of College (N-25)	Percentage
Online Database Service	13	52%
Institutional Repository	4	16%
Document Delivery Service	12	48%
Internet Service	22	88%
Wi-Fi	19	76%
OPAC	16	64%
Lending	16	64%
Scanning	7	28%
Printing	15	60%
Photocopy	18	72%
Desktop Facility	24	96%

The following graph reveals the fact that only 16 college library having online public access catalogue (OPAC) at present and providing Lending services through library Automation software.
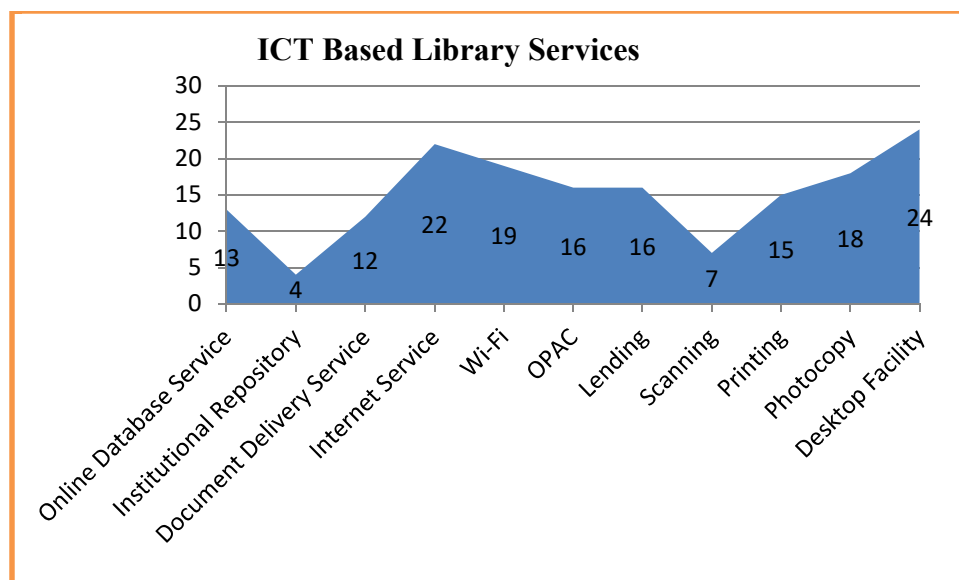
ICT Based Library Services

Figure: 4 ICT Based Library Services

7.8 Barriers associated with implementation of ICT in College Libraries

Form the entire study it has been observed that the libraries covers in this study are not satisfactory as per ICT based infrastructure and serves are concerned due good will of the college authority and lack of concentration. Multiple reasons have been mentioned by the respondent during the survey. 84% mentioned lack of professional manpower, 72% considered due to lack of fund and 44% responded as lack of interest of the staff due to proper training etc

Table No.10 Barriers associated with implementation of ICT in College Libraries

Barriers	No. of College (N-25)	Percentage
Lack of Fund	18	72%
Inadequate Manpower	21	84%
Poor Power Supply	17	68%
Inhospitable Terrain	5	20%
Lack of Maintenance	13	52%
Lack of Interest of Library Staff	11	44%
Poor Network Connectivity	12	48%

The following graphical presentation reveals that lack of fund, inadequate manpower and lack of interest of the library staff are the major issues to developed a complete ICT based infrastructure in the colleges under this study.
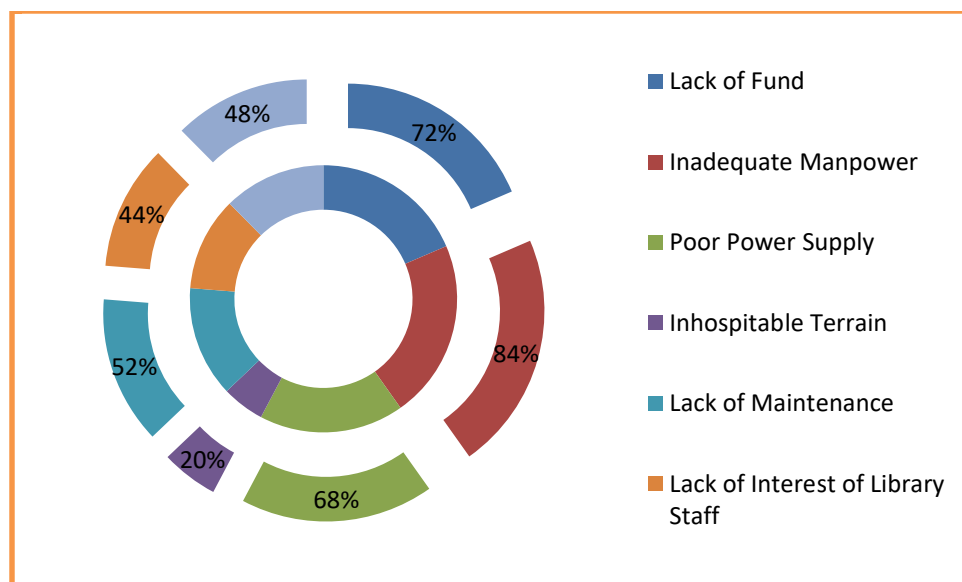
Figure: 5 Issues and Challenges of ICT infrastructure

8. Major findings:
i) 96% libraries having at least a Desktop and Printer where as 60% have installed Server machine.
ii) 60% libraries are using library management software and 44% libraries are enabled with digital library software.
iii) 92% college libraries a having Internet facilities where 60% are providing Free Wi-Fi facilities. 60% libraries are connected with Leased line connection 84% having Cable Modem for Internet connection.
iv) Only 20% colleges having separate Website for its library while 60% have library web page in the college Website.
v) 64% libraries are providing OPAC and Lending services through library Automation Software, 52% providing online Database services and only 16% started to develop Institutional Repository to provide digital resources.
vi) Most of the college libraries responded inadequate manpower and lack of interest of the library staff are the major issues to develop a complete ICT based infrastructure in the colleges under this study.

9. Conclusion.
The college libraries are facing some issues to have complete ICT based infrastructure especially the lack of cooperation and good will of the college authority. Quite a good number of libraries are serving without a permanent librarian and library staffs. Due to the recent outbreak the libraries are now focusing to develop ICT based library services to provide remote access of resources at door step. The libraries accredited by NAAC are found satisfactory and reaming libraries are preparing for NAAC therefore a change can be expected near future. The study can be concluded saying that we should prepare our libraries for handling Covid like situation by accessing e-resources and implementing digital platform to avail the library 24/7 without any interruption in any situation occurs.

References.

1. Choudhury, S. and Sarmah (2017). An evaluation of ICT Infrastructure and Application in Selected College Libraries of Cachar Districts, Assam. In: International Journal of Digital Library Services. 2017, ISSN: 2250-1142.IJODLS (retrieved from: http://www.ijodls.in/uploads/3/4/0/3/3603729/6ijdosl174.pdf)

2. Dasgupta, P. Choudhary,S., & Sarmah, M . (2014). Assessing ICT literacy skills of students and research scholars of Assam University. In K.P.Singh, A.K.Rathore& Avila,D.M.(Eds.) Proceedings of the international conference Tecnia SRFLIS Summit 2014 Content to connectivity : Paradigm shifts in knowledge innovation, information representation, information management systems and librarianship (pp.399-416).New Delhi: Tecnia Institute of Advanced Studies & Satija Research Foundation for LIS.

3. Dev, Sharma (2016). "*A Study on Best Practices with Special Emphasis on Modernization in the Libraries of Degree Colleges Affiliated to Dibrugarh University, Assam"*. Doctoral Thesis Submitted to Department of Library and Information Science, Assam University, Silchar, 788011. (Retrieved from http://shodganga.inflibnet.ac.in)

4. Dey, N. C. , Singh, S. K. and Deka, P. K. (2017). "Emerging Functions and Activities of Library Consortia with reference to Best Practices in LICs of Higher Education in Assam", CALIBER-2017

5. Konwar,U.K. & Sinha,M.K.(2014). Status of ICT infrastructure and development of college library network among the major colleges of Barak Valley, Southern Assam: A case study. In Jagdish Arora (Ed.),Capacity building in library and information services. 9thConventional PLANNER-2014, Dibrugarh University (pp.156-164).Ahmedabad : INFLIBNET Centre.

6. Laskar, R. U. and Dey, N. C. (2019) " A study ICT infrastructure and library automation in the colleges affiliated to Assam University, Silchar."

7. Laskar, R. U. and Mozumder, S. K.(2020) "Issues and challenges of ICT application and library automation in the newly provincialised degree colleges of Barak valley, Assam: a survey"

8. NAAC. (2006). *Best Practices in Library and Information Services.*[online] Available from: http://www.naac.gov.in/best_practices (Accessed on dt.04/08/2018)

9. Sharmah, R. M. (2016). *A study on best practices with special emphasis on modernization in the libraries if degree colleges affiliated to Dibrugarh*

10. Sinha, M.K.(2013).Status of collection development of printed and electronic resources in the college libraries of Assam with special reference to Barak Valley, Assam. In D. Das, B. Choudhury & P. Boruah (Eds.), *Collection development in IT environment in the college libraries of Assam.* (pp.136-158).Guwahati: Assam College Librarians' Association.

11. Vyas, S. D. (2009). Best Practices in Academic Libraries in India: A Study. In: *proceeding of International Conference on Academic Library.* 2009, 5th-8th Oct. India, New Delhi. Delhi University Library System, University.

12. Thakuria,S,Barua, Niraj and Sharma, Tilak (2021).Best practices in the libraries of provincialised degree colleges of karimganj district, Assam: a study. *Library Philosophy and Practice.* https://digitalcommons.unl.edu/libphilprac/5457?utm_source=digitalcommons.unl.edu%2Flibphilprac%2F5457&utm_medium=PDF&utm_campaign=PDFCoverPages

12. www.dheassam.gov.in