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Development of ICT Application in the University Libraries of Assam: A study

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Abstract

The 21st century can be taken as the revolutionary age where ICT have been playing a major role in every sector. The library & information centre are not exception in such case. At this ICT age the Library and information centres are playing a major role in teaching and learning activities where students, researchers and teachers can explore the vast resources of information. The broad objective of the study is to investigate how university libraries in the state of Assam is negotiating the challenged brought forward by the contemporary information environment more particularly in the light of the opportunities in this era of Information Communication Technology (ICT). The increased attention towards the application of ICT in the libraries has change the scenario of the modern library and information services to the user community. This research paper is more specific, in that it focuses on ICT application and the developments in the university libraries of Assam. The researcher also tries to attempt to explore the trend of ICT application and implementation in the university libraries of Assam. It also discusses the trend in various categories along with the issues faced by the library professionals in their implementation.

Keywords: *ICT, Library automation, Library digitization, Library Problems, Library software,*

1. Introduction

The Libraries and Information centres has undergone a radical transformation in the last few decades. Information Communication Technology (ICT) and its allied tools have further enhanced the spread towards attaining the desired height. As a result the Library and Information centre also cannot find any area untouched from management to processing. The university libraries of Assam are not exception to this case. In the state Assam, the university libraries also incorporated various technologies to satisfy the demand of the end users with various services. The university libraries of Assam also availing various ICT systems virtually for their basic operations such as acquisitions, cataloguing, circulation, serials control etc. The improvement in the IT environment has forced to review the library services and structures to attract the end numbers of users. The costs are reduced and time of library

staff in handling and shelving resources is minimized. The outcome seems satisfactory in terms of the developments in application and implementation of information technology.

2. Statement of the problem

The university libraries of Assam have been trying to inculcate various tools and technologies to cope up with the ICT environment. As the scenario of libraries have been changed in ICT environment , so, it is pertinent to adopt certain tools and techniques in the library system as a whole to negotiate these challenges so that the library can grow as per the changing environment where Information Communication Technology (ICT) act as the driving force. The origin of its problematic areas attempted to be identified, ascertained, verified and causally validated as proposed in the study.

3. Objectives of the study

The following objectives have been lined up for the study:

- 3.1 To see the status and developments of library automation in the university libraries of Assam.
- 3.2 To see the status of various software used in the university libraries.
- 3.3 To find out the areas where ICT has been implemented.
- 3.4 To observed the ICT facilities provided by the universities.
- 3.5 To find out the issues related application of ICT in the university libraries of Assam.

4. Scope & limitations of the study

- 4.1. The study concentrated on seven universities of Assam (Table 1) which were established before the year 2005.

Table 1: University Libraries of Assam under study

University	Year	Name of the Library	Location
Gauhati University	1948	Krishna Kanta Handiqui Library (GU-KKHL)	Guwahati
Dibrugarh University	1965	Lakshminath Bezbaroa Library(DU-LNBL)	Dibrugarh
Assam Agricultural University	1969	Rev. B. M. Pugh Central Library(AAU-BMPL)	Jorhat
Assam University	1994	Rabindra Library(AU-RL)	Silchar
Indian Institute of Technology	1994	Lakshminath Bezbaroa Central Library (IIT-LNBCL)	Guwahati
Tezpur University	1994	Central Library(TU-CL)	Tezpur
National Institute of Technology	2002	Central Library(NIT- CL)	Silchar

4.2 In order to gather data exhaustively in relevant parameters as stated in the objectives, two years with the duration of ten years window is chosen *i.e.* 2005-06 and the year 2014-2015

4.3 The other thirteen universities are excluded from the study. The reason for exclusion is either the universities are private or open universities or the universities were established after the year 2005.

5. Methodology

In order to carry out this study, survey (questionnaire, interview and observation) method is adopted for collection of primary data. A structured questionnaire was designed and distributed among the university libraries under the study. Also the researcher has visited the universities personally to know the status.

6. ICT development trend of university libraries of Assam

6.1 Library automation

Library automation is the process of application of computers and related data processing equipment to libraries. It is also the use of automatic and semi automatic library activities as acquisition, cataloguing and circulation and other housekeeping operations.

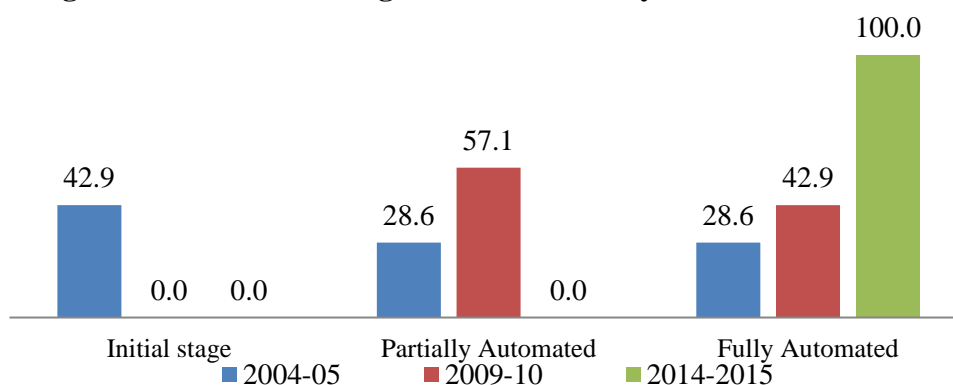
6.1 (a): Stages and developments of library automation

Table 2: Status of library automation (in %)

Year	Initial stage	Partially Automated	Fully Automated
2005-06	42.9	28.6	28.6
2009-10	0.0	57.1	42.9
2014-15	0.0	0.0	100.0

The process of Automation was implemented during 2005-06 in all the University libraries of Assam which have been upgraded and updated and during the year 2014-15 the university libraries of Assam reached the status of fully automated library.

Figure 1: Automation stages in the University libraries of Assam



6.1 (b): Status of Library Software used in the university libraries

The Library Management Software (LMS) is used for database development and management of library housekeeping operations. From the table 3, it is found that three major categories of LMS packages (i.e SOUL, Koha and LibSys) with different versions has been used by the university libraries of Assam.

Table 3: LMS packages used by the university libraries

Universities	LMS package 2004-05	LMS package 2014-15
GU-KKHL	SOUL 1.0	SOUL 2.0
DU-LNBL	SOUL 1.0	SOUL 2.0
AAU-BMPL	SOUL 1.0	SOUL 2.0
AU-RL	SOUL 1.0	Koha
IITG-LNBCL	LibSys4	LibSys7
TU-CL	LibSys4	LibSys4
NIT-CL	LibSys	LibSys4

From the **Table 3** it is highlighted that 57.14% of the university libraries of Assam initially started using earlier version of SOUL software developed by INFLIBNET and 42.85% university libraries used LibSys for data creation. Later on these softwares have been updated and AU-RL changed their software from earlier version of SOUL to Open source software Koha.

6.1(c): Developmental changes of library housekeeping activities

From the table 4 it is seen that the university libraries of Assam have started their automation process and some of them successfully automated all the core areas of library housekeeping operations during the last year of the study period.

Table 4: Automated Housekeeping operations in university libraries of Assam

University	Acquisition		Catalogue		Circulation		Serial Control		OPAC	
	2005-06	2014-15	2005-06	2014-15	2005-06	2014-15	2005-06	2014-15	2005-06	2014-15
GU-KKHL	N	N	I	F	I	F	N	F	N	F
DU-LNBL	N	N	I	F	I	F	N	F	N	F
AAU-BMPL	N	P	I	F	I	F	N	F	N	F
AU-RL	N	F	I	F	I	F	N	F	N	F
IIT-LNBCL	N	F	F	F	F	F	N	F	F	F
TU-CL	N	F	F	F	F	F	N	F	N	F
NIT-CL	N	N	I	F	I	F	N	F	N	F

Note: N=Not done, P=Partially, F=Fully, I=Initially started

It is found that AU-RL, IIT-LNBL and TU-CL have done all the core areas of library automation up to the year 2014-15. It is found that GU-KKHL, DU-LNBL and NIT-CL have

not yet started the automated acquisition whereas AU-RL, IIT-LNBCL and TU-CL have started the automated acquisition fully and AAU-BMPL followed the module partially.

6.2 Trend of using Barcode and RFID technology

Barcode and RFID technologies are generally used to accelerate the automated circulation, inventory work like stock verification and also theft detection. Self Check is also one among the major achievement done by using the RFID technology.

Table 5: Barcode and RFID technology in university libraries

University	Barcode used		RFID used		Planning to implement RFID
	2005-06	2014-15	2005-06	2014-15	2014-15
GU-KKHL	N	Y	N	N	Y
DU-LNBL	N	Y	N	N	Y
AAU-BMPL	N	Y	N	N	Y
AU-RL	N	Y	N	N	N
IIT-LNBCL	Y	NA	N	Y	AI
TU-CL	Y	Y	N	N	N
NIT-CL	N	NA	N	Y	AI

Note: Y=Yes, N=No, NA= Not Applicable, AI=Already implemented

From the study (**Table 5**) it is found that 100% of the university libraries used Barcode technology during 2014-15 which was only 28.57% during 2005-06. It is also a positive sign for the university libraries of Assam that 28.57% university libraries made use of RFID technology which was not at all implemented during 2005-06.

6.3 ICT Measures for protection in the university Libraries

All the surveyed university libraries follow open access system for which measures of protections became a major need for the libraries. Initially, these libraries were depended on vigilant or security staff at their entrance along with the protected doors and windows. But the scenario has been changed with the using of different ICT measures for protection in the libraries.

Table 6: Measures of protection in the University libraries of Assam

University	Mode of access	No of entrance	Protected doors/windows	Availability of vigilant at entrance	CCTV cameras		RFID used	
					2005-06	2014-15	2005-06	2014-15
GU-KKHL	Open access	1	Y	Y	N	Y	N	N
DU-LNBL	Open access	1	Y	Y	N	Y	N	N
AAU-BMPL	Open access	1	Y	Y	N	Y	N	N
AU-RL	Open access	1	Y	Y	N	Y	N	N
IIT-LNBCL	Open access	1	Y	Y	N	Y	N	Y
TU-CL	Open access	1	Y	Y	N	Y	N	N
NIT-CL	Open access	1	Y	Y	N	Y	N	Y

The **Table 6** highlights that CCTV cameras were not implemented during the 2005-06 in any library. However, the university libraries made use of this facility during the last years of the study period. Besides, it is needed to mention that during the year 2014-15, 28.57% of the university libraries have implemented RFID technology for security purpose while 71.42% university libraries have planning for implementing this technology in the libraries..

6.4 ICT Connectivity in the university libraries of Assam

Table 7 : Connectivity of internet facility in the universities

University	Internet connectivity		LAN connectivity with the teaching depts.		Wi-Fi connectivity	
	2005-06	2014-15	2005-06	2014-15	2005-06	2014-15
GU-KKHL	Y	Y	N	Y	N	N
DU-LNBL	Y	Y	N	Y	N	N
AAU-BMPL	Y	Y	N	Y	N	N
AU-RL	Y	Y	N	Y	N	N
IIT-LNBCL	Y	Y	Y	Y	N	Y
TU-CL	Y	Y	Y	Y	N	Y
NIT- CL	Y	Y	N	Y	N	Y

It is observed from the **Table 7** that 28.57% universities had LAN connectivity with the teaching departments in the year 2005-06 which increased to 100% during the year 2014-15. Moreover 42.85% universities have Wi-Fi connectivity during the year 2014-15 which was 0% in 2005-06.

6.5 Library consortium of the

The library consortia are to made best use of availability and accessibility of resources and services to a wider category of users in a comparatively less budget.

Table 8: Consortium of the university libraries

Name of the University	Consortium joined		Name of Consortium 2014-15
	2005-06	2014-15	
GU-KKHL	Y	Y	E-Shodhsindhu
DU-LNBL	N	Y	E-Shodhsindhu, CEC
AAU-BMPL	Y	Y	CeRA,
AU-RL	Y	Y	E-Shodhsindhu
IIT-LNBCL	Y	Y	E-Shodhsindhu , DELNET
TU-CL	Y	Y	E-Shodhsindhu, DELNET
NIT- CL	N	Y	E-Shodhsindhu , DELNET

From the Table 8 it is reveals that 71.14% University libraries joined consortium in 2005-06 and in the year 2014-15 the rate increased to 100%.

6.6 Library digitization in the University libraries of Assam

There have been always an increasing demand for accessing various electronic resources by the users and once users become accustomed to accessing information electronically over internet, their demands for those resources found increase and they donot want them to be removed or diminished. The solution lies on library digitization.

Table 9: Library digitization & institutional repositories

University	Library Digitized		Software used
	2005-06	2014-15	2014-15
GU-KKHL	N	Y	DSpace
DU-LNBL	N	Y	DSpace
AAU-BMPL	N	Y	DSpace
AU-RL	N	Y	DSpace
IIT-LNBCL	N	Y	DSpace
TU-CL	N	Y	DSpace
NIT- CL	N	Y	TechFocuz

Though the library digitization process was not started during 2005-06, but after the year 2009-10, all the university libraries planned for library digitization and in 2014-15 all the university libraries of Assam started digitization work with the softwares like DSpace and TechFocuz. From the study it is found that GU-KKHL, DU-LNBL, AAU-BMPL, AU-RL, IIT-LNBCL, TU-CL started digitization work with DSpace and NIT- CL used the software TechFocuz. Among these University Libraries only AU-RL has given DSpace service online. Therefore digital preservation has become a major solution to the exponential growth of information in the state like Assam too.

7. Challenges in ICT implementation in university libraries

Though we are living in an IT environment, but for implementing the ICT, the university libraries of Assam have been facing various issues which need more attention. **Table 10** indicates the problems faced by the university libraries in ICT application.

Table 10: Issues in ICT application in the University Libraries

Problem faced by Libraries	KKHL	LNBL	BMPL	CLTU	RLAU	LNBL	CLNIT	Total (Yes)
Lack of fund	Y	Y	Y	N	Y	Y	Y	6
Lack of infrastructure to support storage & access	Y	N	Y	N	Y	N	Y	4
Lack of trained manpower	Y	Y	Y	N	N	N	N	3
Lack of expertise for management	N	N	N	N	N	N	N	0
Lack of autonomy	N	N	N	N	N	N	N	0
Software limitation	N	N	Y	N	N	N	N	1
Slow internet service	Y	Y	Y	Y	Y	N	N	5

Others (Please specify)	N	N	N	N	N	N	N	0
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Note: Y= Yes N=No

From the study the major issue found in the Lack of fund in six university libraries; one library faced the problem of indifferent attitude of the authority. Lack of infrastructure to support storage and access is a problem of four libraries; three libraries faced the lack of trained manpower. Software limitation is a problem of one University library; five libraries faced the problem of slow internet service for collection development.

8. Outcome of the study

The study has provided a useful summary with fruitful outcome indicating the developments in ICT application in the university libraries of Assam.

- 8.1 All the university libraries of Assam are fully automated library during the year 2014-15 which have been upgraded and updated time to time (Table 2).
- 8.2 It is found that 57.14% of the university libraries of Assam initially started automation using earlier version of SOUL and 42.85% university Libraries used LibSys. Later on these softwares have been updated and AU-RL changed their software from earlier version of SOUL to Open source software Koha. (Table 3 , Figure 2)
- 8.3 It is found that 42.87% university libraries have done all the core areas of library automation up to the year 2014-15. It is also observed that 42.87% university libraries have not yet started the automated acquisition whereas 57.14% university libraries have started the automated acquisition fully and 14.28% university libraries have followed the module partially (Table 4).
- 8.4 It is found that 100% of the university libraries of Assam used Barcode technology during 2014-15 which was only 28.57% during 2005-06. It is also found that 28.57% university libraries made use of RFID technology which was not implemented during 2005-06. (Table 5).
- 8.5 The university libraries made use of CCTV cameras during the last years of the study period. Besides, 28.57% of the university Libraries have implemented RFID technology for security purpose while 71.42% the year 2014-15 (Table 6).
- 8.6 It is also observed that 28.57% universities had LAN connectivity with the teaching departments in the year 2005-06 which increased to 100% during the year 2014-15. Moreover 42.85% universities had Wi-Fi connectivity during the year 2014-15 which was 0% in 2005-06 (Table 7).

8.7 It is found that 71.14% university libraries joined consortium in 2005-06 and in the year 2014-15 the rate increased to 100% (Table 8).

8.8 The library digitization process was not started in the university libraries during 2005-06, but after the year 2009-10, all the university libraries planned for library digitization and in 2014-15 all the university libraries of Assam implemented digitization work with the softwares like DSpace (85.72%) and Tech Focuz (14.28%) (Table 9).

8.1 The Lack of fund is a major problem of 85.71% university libraries; 14.28% library faced the problem of indifferent attitude of the authority. Lack of infrastructure to support storage and access is a problem of four libraries; three libraries faced the lack of trained manpower. Software limitation is a problem of one University library; five libraries faced the problem of slow internet service for collection development (Table 10).

9. Suggestions

A few suggestions and recommendations are proposed on the basis of the study.

9.1 In-service training programmes, technical training programmes etc. are the core needs in terms of the development of the university libraries to go with the ICT trend.

9.2 The development of digital preservation is possible only with adequate finance, trained personnel and government patronage. Therefore the authority must give attention in these aspects.

9.3 The Library and Information Science schools should update the syllabus frequently so that the professionals as well as the students may progress with adequate skills.

10. Conclusion

At this time, it is now a common phenomenon that libraries are not confined with the four walls of a library building rather the resources are going beyond it. The users' expectations are also increasing day by day. Therefore to fulfill the demands of the users, the library professionals have been adopting ICT and implemented in their libraries. From the study, it is also seen that effective use of ICT in the university libraries of Assam helped in performing their operations and services most efficiently which is positive sign towards the development of university libraries of Assam. Though up to the starting few years of the study period, the developments of the libraries had not been noticed and during the end years of the study period the scenario changed with the implementation of various ICT tools in the university libraries of Assam. The study concludes that a failure on this front may threaten the survival

of the library profession in the long run unless libraries actively keep pace with the ICT revolutions.

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