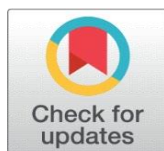


EMERGING TRENDS AND TECHNOLOGIES IN SELECTED UNIVERSITY LIBRARIES OF WEST BENAGL:A STUDY

Subrata Ghosh¹, Dr. Roshan Khayal²

¹Research Scholar, Dept. of Library & Information Science, Mangalayatan University, Aligarh-202146 , Uttar Pradesh, India.²Research Supervisor & Assistant Professor, Dept. of Library & Information Science, Mangalayatan University, Aligarh-202146 , Uttar Pradesh, India



Corresponding Author

Subrata Ghosh,

ghoshsxx@gmail.com

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1. INTRODUCTION

ICT is very essential to accomplish all kinds of house keeping operations. Important library works are acquisition, circulation, cataloguing , retrieval,. Library technology helps to retrieve data quickly. The six universities were selected for this study. The study has tried to reveal the ICT infrastructure that is library technologies and service to its reader.

2. STATEMENT OF PROBLEM

With the assistance of the most recent technological advancement libraries presently are moving towards electronic/ online administration dependent on Information and communication Technology(ICT). The investigation will emphasize on the utilization of different sorts of Information and Communication Technology (ICT) resources and give ICT based administration by various state university libraries in West Bengal.

ABSTRACT

This paper highlights the emerging technologies of some selected University libraries of West Bengal. Today Library technologies play an important role to organize and deliver its services through the application of different library technologies. It is true that without the use of Information and communication technology no better library services could be provided. This paper discusses the different library technologies such as library automation ,use of library management software (LMS), use of open source digital library software ,Reference/ citation management software , Plagiarism checker software, use of discovery tools, e-document delivery system, assistive technology used for visually impaired students , providing digital library service beyond campus through remote access online library software , own library website and services ,E-learning resources , other emerging technologies such as : podcasting, vodcasting, Block chain technology ,Drone technology, Artificial Intelligence (AI),Internet of Things(IOT) , Robotics, ,Blogs, wikis, RSS/HTML Feeds , social media, CCTV, RFID etc. used by the university libraries located in the State of West Bengal.

Keywords: Library Technology, Library Automation, LMS, Plagiarism Checker Software, Discovery Tools, Artificial Intelligence , Internet Of Things , Robotics , RSS/HTML Feeds.

3. OBJECTIVE OF THE STUDY

1. To find out the ICT based library services provided by the state University libraries.
2. To find out different library technologies used in the state university libraries.

4. SCOPE AND COVERAGE OF THE STUDY

Six state University libraries which are situated in the state of West Bengal have been chosen for the study. These are: 1. University of Burdwan (BU)

2. University of Calcutta (CU)
3. Jadavpur University (JU)
4. University of North Bengal (NBU)
5. Rabindra Bharati University (RBU)
6. University of Gour Banga (UGB)

5. METHODOLOGY AND METHODS USED FOR COLLECTION OF DATA

The descriptive survey method has been taken into consideration to conduct the study. It comprises of questionnaires, interviews, observation methods. Firstly questionnaire formulated, defined and developed then the questionnaire was circulated to the concerned university libraries along with an introductory letter for the respondent to understand the reason for the survey. After data are received through questionnaire, the data are analysed statistically and presented in the form of tables to highlight various problems relating to the study.

6. DATA ANALYSIS AND FINDINGS

TABLE 1 : Automation Status in the state Aided University libraries in West Bengal

House keeping operations	BU	CU	JU	NBU	RBU	UGB
Acquisition	Fully automated	Fully automated	Fully automated	Fully automated	Fully automated	Not automated
Cataloguing	Fully automated	Fully automated	Fully automated	Fully automated	Fully automated	Fully automated
Circulation	Fully automated	Fully automated	Fully automated	Fully automated	Fully automated	Fully automated
Serials control	Fully automated	Fully automated	Fully automated	Fully automated	Fully automated	Not automated
OPAC	Fully automated	Fully automated	Fully automated	Fully automated	Fully automated	Fully automated

Table 1 shows that House keeping operations such as acquisition, cataloguing, circulation, serials control and OPAC are fully automated in BU, CU, JU, NBU and RBU but in case of UGB the house keeping operations such as cataloguing, circulation and OPAC are fully automated but acquisition and serials control are not automated.

TABLE 2 : Software used for automation in university libraries.

Name of Universities	SOUL	LIBSYS	KOHA	CDS/ISIS	ALICE	Others (if any)
BU	--	--	✓	--	--	--
CU	✓	--	--	--	--	--
JU	--	--	✓	--	--	--
NBU	✓	--	--	--	--	--

RBU	--	--	✓	--	--	--
UGB	--	--	✓	--	--	--

Table 2 shows that four university libraries viz BU, JU, RBU and UGB using Koha library management software for library automation whereas CU and NBU using Soul library management software for library automation.

TABLE 3 : Open source digital library software used for Institutional Repository in the University libraries.

Name of Universities	D-Space	E-Prints	Greenstone	Others
BU	✓	--	--	--
CU	✓	--	--	--
JU	✓	--	--	--
NBU	✓	--	--	--
RBU	--	--	--	--
UGB	--	--	--	--

Table 3 indicates that four university libraries that is BU, CU, JU and NBU are using D-space software for their digital library and Institutional Repository but two other university libraries that is RBU and UGB are not using any Institutional repository or digital library software.

TABLE 4 : Reference / Citation management Software used by the university libraries.

Reference/Citation Management Software	BU	CU	JU	NBU	RBU	UGB
Mendeley	--	--	✓	--	--	--
Refworks	--	--	--	--	--	--
Endnote	--	--	✓	--	--	--
Citeu like	--	--	--	--	--	--
Zotero	--	--	✓	--	--	--
Others (if any)	--	--	--	--	--	--

Table 4 shows that JU (Jadavpur University) has three types of Reference/citation management tools others have no Reference/ citation management tools.

TABLE 5 : Use of Plagiarism checker software used in the university libraries:

Name of plagiarism checker software	BU	CU	JU	NBU	RBU	UGB
Turnitin	--	--	--	--	--	--
DrillBit	--	--	✓	✓	--	--
Urkund	✓	--	--	--	--	--
Quillbot	--	--	--	--	--	--

Table 5 reveals that University of Burdwan (BU) library using “ URKUND ” plagiarism checker software. Jadavpur University (JU) library and University of North Bengal (NBU) library both are using “Drill Bit” plagiarism checker software but others university libraries have not mentioned the use of plagiarism checker software.

TABLE 6 : Use of discovery tools in the university libraries.

Name of Discovery tools	BU	CU	JU	NBU	RBU	UGB
Black light	--	--	--	--	--	--
Vufund	✓				--	--
Extensible catalog	--	--	--	--	--	--
World cat	--	--	--	--	--	--
Ex Libris	--	--	--	--	--	--
Biblio Commons	--	--	--	--	--	--
Pro Quest Aqua Browser	--	--	--	--	--	--
Encore	--	--	--	--	--	--
EBSCO	--	--	✓	--	--	--

Table 6 reveals that BU (University of Burdwan) and JU (Jadavpur University) are using Discover tools in university libraries but other University libraries are not using discovery tools.

TABLE 7 : E-document delivery system in the university libraries:

E-document delivery system	BU	CU	JU	NBU	RBU	UGB
E-Mail	✓	--	--	--	--	--
Whatsapp	--	--	--	--	--	--
Document Delivery software like ARIEL	--	--	--	--	--	--
Through J-Gate@e-shodhsindhu	--	✓	✓	--	--	--

Table 7 shows that university of Burdwan (BU) providing e-document delivery through e-mail. University of Calcutta (CU) and Jadavpur University both are providing e-document delivery through J-Gate@e-shodhsindhu. Other University libraries like NBU, RBU and UGB are not providing e-document delivery through any system.

TABLE 8 : Assistive Technology for visually impaired students in the University libraries.

Assistive Technology for visually impaired students	BU	CU	JU	NBU	RBU	UGB
NVDA audio software to access e-resources	--	--	✓	--	--	--

AMIS (Adaptive Multimedia Information System)	--	✓	--	--	--	--
JAWS (Job Access with speech)	--	✓	✓	--	✓	--
OCR systems	--	--	--	--	--	--

Table 8 shows that Jadavpur University (JU) library has NVDA audio software to access e-resources for visually impaired students and JAWS system for visually impaired students. The university of Calcutta (CU) library has AMIS system and JAWS system for visually impaired students. RBU library has JAWS system for visually impaired students. Rest of the university libraries like BU, NBU and UGB have no any technology for visually impaired students.

TABLE 9 : Providing digital library service beyond campus through remote access online library software.

Providing Digital Library service beyond campus through remote access online software	BU	CU	JU	NBU	RBU	UGB
Remote XS	--	--	✓	--	--	--
Knimbus	✓	--	--	--	--	--
My Loft	--	--	--	--	--	--
EZ Proxy	--	--	--	--	--	--
Refread and INFED	--	--	--	--	--	--

Table 9 shows that two university libraries that Jadavpur University (JU) and University of Burdwan (BU) are providing digital library service beyond campus through “Remote XS” and through “Knimbus” respectively. The rest of the university libraries such as- CU, NBU, RBU and UGB are not providing such kind of service.

TABLE 10 : Availability of library website and web based services provided by the University Libraries.

Name of University Library	BU	CU	JU	NBU	RBU	UGB
Library Website	--	✓	✓	✓	--	--
Institutional/ University website	✓	✓	✓	✓	✓	✓

Table 10 shows that University libraries of CU (University of Calcutta), JU (Jadavpur University) and NBU (University of North Bengal) have their own library website and provide web based library services, on the other hand, University libraries of BU (University of Burdwan), RBU (Rabindra Bharati University) and UGB (University of Gour Banga) have no their own library website and their web based activities fully dependent on Institutional/ university website.

TABLE 11 : Accessibility of E-Learning resources in University Libraries.

Name of E-learning Resources	BU	CU	JU	NBU	RBU	UGB
E-books	✓	✓	✓	✓	✓	✓
E-Journals	✓	✓	✓	✓	✓	✓
E-databases	✓	✓	✓	✓	✓	✓
E- Thesis	✓	✓	✓	✓	✓	✓

Table 11 shows that all university libraries have e-learning resources.

TABLE 12 : Other Emerging technologies in the University libraries.

Other Emerging Technologies	BU	CU	JU	NBU	RBU	UGB
Podcasting/Vodcasting	--	--	--	--	--	--
Block Chain Technology	--	--	--	--	--	--
Drone Technology	--	--	--	--	--	--
Artificial Intelligence(AI)	--	--	--	--	--	--
Internet of Things(IOT)	--	--	--	--	--	--
Robotics	--	--	--	--	--	--
Blogs	✓	✓	✓	✓	✓	✓
Wikis	✓	✓	✓	✓	✓	✓
RSS/HTML Feeds	--	--	--	--	--	--
Social Media	✓	✓	✓	✓	✓	✓
CCTV	✓	✓	✓	✓	✓	✓
RFID	--	✓	--	✓	--	--

Table 12 shows that all university libraries have blogs, wikis and social media. Apart from that all university libraries have CCTV arrangement for monitoring and security, on other hand, only two university libraries viz CU (University of Calcutta) and NBU (University of North Bengal) have RFID technology. There is no other emerging technologies found in the university libraries for example—podcasting/ vodcasting, Block chain technology, Drone technology, Artificial Intelligence (AI), Internet of Things (IOT) and Robotics.

7. MAJOR FINDINGS

- Almost all the libraries have computerized issue and return system. They all provide OPAC facility to search the documents through computer.
- Most of the university libraries using KOHA as library automation software, only two university libraries using SOUL that is University of Calcutta and University of North Bengal.
- Four University libraries using D-space as digital library software , two University libraries that is RBU and UGB using no digital library software .
- Only Jadavpur University library using reference/citation management tools.
- Plagiarism checker software used by three university libraries that is 50 percent of the university libraries of under study.
- The discovery tools using only two university libraries that University of Burdwan (BU) and Jadavpur University(JU).
- E-document delivery service provided by three university libraries viz University of Burdwan (BU) through E-mail, University of Calcutta (CU) and Jadavpur University through J-Gate @Shodhsindhu.
- University of Calcutta (CU) library providing AMIS and JAWS system for visually impaired students. The Jadavpur University (JU) library NVDA audio software to access e-resources and JAWS system for visually impaired students. The University library of RBU also providing JAWS system for its visually impaired students.
- Two University libraries that is University of Burdwan (BU) and Jadavpur University (JU) providing digital library service beyond campus through remote access online library software.
- Three University libraries have their own library website viz university of Calcutta (CU), Jadavpur University (JU) and University of North Bengal (NBU).
- All University libraries have accessibility of e-learning resources.
- All university libraries have blogs, wikis and social media. Apart from that all university libraries have CCTV arrangements for monitoring and security but only two university libraries that is University of Calcutta (CU) and University of North Bengal (NBU) are using RFID technology .

8. SUGGESTIONS

- The four University libraries viz CU, NBU, RBU and UGB should implement digital library service beyond campus through remote access online library software.
- The university of Burdwan (BU), Jadavpur University (JU), Rabindra Bharati University (RBU) and University of Gour Banga (UGB) should implement RFID system for their university libraries.
- University libraries of BU, RBU and UGB should have their own library websites to provide web based library services independently.
- The university libraries of BU, NBU and UGB should also adopt assistive technology for visually impaired students.
- The university libraries of NBU, RBU and UGB should provide e-document delivery service to its reader.
- Use of discovery tools should implement by the University libraries of CU, NBU, RBU and UGB.
- University libraries those having no plagiarism checker software and reference/citation management software should arrange these for university libraries.
- University libraries those having no RFID technology should implement RFID technology.

9. CONCLUSION

This study highlights on the emerging technologies adopted in selected university libraries of West Bengal. All University libraries enabled with e-resources / e-learning resources such as e-books, e-journals, e- databases and e- thesis and provide digital services. All the University libraries are more and less automated with koha. Most of the university libraries adopted D-space software for its digital libraries/ institutional repositories. About 50% university libraries under study have adopted assistive technology for visually impaired students. Some of the university libraries under study adopted e-document delivery system and digital library services beyond campus through online remote access software. The university libraries having RFID technology that combine security with more efficient tracking of materials throughout the library including easier and faster charging and discharging, inventorying and materials handling . Therefore, all the university libraries under study are adopting more or less emerging library technologies for their development..

CONFLICT OF INTERESTS

There is no any kind of conflict of interest.

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