

Availability, Use and Barriers to ICT in the R&D Institutions: A Case Study of the Libraries and Information Centres in Noida

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ABSTRACT

NOIDA is emerging as an international hub of R&D institutions in all sectors. In past no such research study has been conducted on the use and applications of information communication technologies (ICT) in library and information centres (LICs) in the NOIDA city. Hence, the need was felt to undertake an in-depth study on the various aspects of the ICT use and applications. The study provides a current state-of-the-art report on use and applications of ICT in LICs. The study also identifies the causes and problems that hindered ICT applications in the LICs and their possible solutions. The study is an outcome of a research project jointly undertaken by the authors, explores and evaluates the use and availability of ICTs in the LICs of NOIDA. The study is based on 25 LICs from the different sectors such as public, government, corporate, public enterprises, and private. The data was collected through a structured questionnaire and distributed personally as well through mail/e-mail among the librarians of selected institutions. The study finds that majority of the LICs of NOIDA have the basic hardware facilities such as servers, computers, printers, photocopier, Internet connectivity, etc., except one library, i.e., Network Programs library. About half of the LICs have better hardware facilities including scanner, barcode printer, barcode scanner, etc., but the hardware facilities in the majority of LICs are not being properly utilized because majority of the library professionals are not properly aware of the use and operations of the hardware.

Keywords: Information and communication technology, ICT applications, ICT use, Noida libraries

1. INTRODUCTION

The present century is the age of digital nervous system, which aims at leveraging the two-core revolutions-PC and the Internet [1]. The recent advancement in the information processing and dissemination, storage and communication technologies have revolutionized the role of the libraries and information centres all over the world. As a result, LICs are facing new challenges, new competitors, new demands, and variety of information services. To meet the new challenges and multifaceted information needs of the users, LICs are re-consolidating, re-shaping, and re-designing their information services and products by incorporating new tools and technologies, upgrading information resources, and training library and information professionals. Huge amount of information is being generated every moment in various forms such as printed materials (books, periodicals, conference proceedings, technical reports,

standards and patents, etc.), offline (floppies, audio tapes, CD-Rom, DVDs, pen drives, etc.) and online (Web).

Information is a dynamic and unending resource that affects all disciplines and all walks of life hence, the information becomes an essential ingredient of our life and a basic input to education, research, planning, and development activities. LICs have been greatly influenced by the development and applications of ICT and the users have been greatly benefited by such applications. In the recent past, various studies have been conducted on use and applications of ICT in library and information centres. Gulati [2] conducted a research study entitled "Use of Information and Communication Technology in Libraries and Information Centers: An Indian Scenario", and pointed that the status of usage in Indian libraries, with special reference to special libraries, and the efforts made by various institutions to propagate e-information products

and services. This paper highlighted the consortia efforts in India like JCCC Consortium, INDEST Consortium, CSIR E-journal Consortia, and UGC Infonet. It further discussed digitization efforts in India at NISCAIR, New Delhi, IITM, Kerala, C-DAC Pune, and the Digital Library of India. In addition it highlighted details on major information systems in India such as NISSAT and major library networks in India, such as INFLIBNET, DELNET, and CALIBNET etc. The paper also drew attention to challenges for library and information science professionals, and an overview of initiatives taken by Government of India. Singh [3], in an another study on "Library Automation", discussed the various aspects related to library automation such as need and purpose of automation, advantages of automation, criteria for selection of library software, and possible area of automation in LICs. Study also highlights the salient features of important library software packages, i.e., Libsys, SOUL, Alice for Windows, SLIM++, Tech Lib Plus, LIBSUITE, CDS/ISIS, and SUCHIKA.

Singh [4] conducted a study entitled "Application of the Information and Communication Technology in the Libraries and Information Centers of the DRDO and the CSIR located at Delhi". These libraries are: the Defence Science Library of DESIDOC; Laser and Science Technology Centre (LASTEC); Institute of System Studies and Analysis (ISSA); Solid State Physics Laboratory (SSPL); Institute of Nuclear Medicine & Allied Sciences (INMAS); Defense Institute of Physiological and Allied Sciences (DIPAS); Defense Institute of Psychological Research (DIPR); National Science Library of National Institute of Science Communication and Information Resources (NISCAIR); National Institute of Science, Technology and Development Studies (NISTADS); the Central Road Research Institute (CRRRI); and the institute of Genomes and Integrated Biology (IGIB) Library. For the study data was collected through questionnaires and further supplemented with interviews for clarity of the facts. The questionnaire sent to the librarians included various aspects of the libraries with particular reference to ICT applications. Singh presented the data in 10 tables with their interpretation and the findings.

Singh [5] while conducting study on "Communication Technologies in Biomedical Information Centres and Libraries in India: A Study", reports the emergence of information and communications technology (ICT) facilities in biomedical information centres and libraries (ICLs) by comparing the communication technology facilities available at 126 biomedical ICLs during three periods: 1994-1995; 1997-1998, and 2004-2005. The paper reported that communication technologies grew from 55.65 per cent in 1994-1995 to 100 percent in 2004-2005 in these 126 institutions.

Kaul [6] while working on a research study entitled "Resource Sharing and Networking in India" discusses the various facets of resource sharing and library networking such as, library networks, Resource Sharing tools, and resource sharing technology. Further, he describes the manpower needs, user' needs, and the library network problems. The studies conducted by Sloan [7]; Summerhill [8], Kaul [9], also discusses the importance of networking technology in libraries, tools, manpower requirements, and major hurdles in operation of networks and their scientific solutions.

2. OBJECTIVES OF THE STUDY

The main objectives of the study were to explore the use and availability of ICT infrastructure in the LICs of NOIDA. The specific objectives of the study were:

- (i) To know the various areas of application of ICT in LICs.
- (ii) To compare the ICT status among the LICs in NOIDA.
- (iii) To identify and analyse the specific factors that promoted or hindered the application of ICTs in LICs.
- (iv) To assess the current status of state-of-the-art on ICT infrastructure in LICs of NOIDA; and
- (v) To know the opinion of the librarians about the barriers in application of ICT in LICs and their attitudes towards adopting the technology.

3. SCOPE OF THE STUDY

The study covered LICs from public, government and corporate sectors, media houses, public enterprises and from private sector. The following libraries were covered under the study:

- ✘ The Jaipuria Institute of Management.
- ✘ Institute of Bio Technology.
- ✘ The V.V.Giri National Labour Institute.
- ✘ The Jaypee Institute of Information Technology.
- ✘ The NTPC Engineering.
- ✘ The NTPC Power Management Institute.
- ✘ The NOIDA College of Physical Education.
- ✘ The JSS Academy of Technical Education.
- ✘ The Amity Institute of Information Technology.
- ✘ The Amity Business School.
- ✘ The Mahatma Gandhi Mission's College of Engineering & Technology.
- ✘ The Bharat Heavy Electricals.

- ✘ The Global Institute of Management and Technology (GIMT).
- ✘ The Centre for Development of Advanced Computing (C-DAC).
- ✘ The Noida Public Library.
- ✘ The Sahara India.
- ✘ The GAIL Training Institute Library.
- ✘ The Network Programs Library.
- ✘ The Birla Institute of Technology.
- ✘ The Tata Consultancy Service.
- ✘ The Harlal Institute of Management and Technology, Greater Noida.
- ✘ The IEC College of Engineering and Technology, Greater Noida.
- ✘ The Apeejay Institute of Technology, Greater Noida.
- ✘ The Birla Institute of Management and Technology, Greater Noida.
- ✘ The Galgotia's College of Engineering, Greater Noida.
- ✘ The GL Bajaj Institute of Technology and Management, Greater Noida.

4. METHODOLOGY

A structured questionnaire was developed for the purpose of data collection and distributed personally as well through mail/e-mail among the librarians of selected institutions. While designing the questionnaire due care was given to make it comprehensive by including all essential components without sacrificing the objectivity of the study. Some Librarians who were unable to supply the desired data through questionnaire were personally contacted. The collected data was analysed using latest version of MS-Excel for appropriate statistical analysis and description.

5. DISCUSSIONS AND FINDINGS

The outcome of the study has been presented in the following tables and diagrams with their interpretation:

5.1. Libraries' Profile

The first section of the questionnaire was designed to obtain the basic information (such as type of library head of the LICs, membership and budget) about the LICs of Noida (Table 1). Table 1 shows that out of the 26 LICs 17 belongs to private sectors while other belongs to government, public enterprises, and media houses. It was also found that only five LICs were headed by female professionals, which reflect a gender gap especially on the top positions in the LIS profession.

The provisions of budget in the LICs of Noida were not found uniform in terms of budget allocation. This is due to the nature, size, and type of libraries. While Jaypee Institute of Information Technology and IEC College Libraries have the unlimited library budget, TCS Library has the compound budget with the parent organisation for purchasing of books, periodicals and other reading materials. These libraries spent 60 per cent of the allocated budget for subscribing the scientific and technical journals and subject related databases. The table 1 also shows that 50 per cent LICs have more than 1000 users whereas only three LICs namely GIMT, GIT, Network Programs library have less than 200 users.

5.2 Collection Profile

Table 2 indicates that the LICs of Noida have a rich library collection in their respective subjects in printed form. It was further also found that majority of the LICs are subscribing the online journals, audio video databases as well as CD-ROM databases. Most of the institutional libraries have substantial collection of theses/ dissertations and project reports. Table 2 shows that there is a remarkable impact of the ICT on creation, preservation and distribution of the digital contents in few LICs of Noida. These libraries belong to Jaypee Institute of Information Technology, VV Giri National Labour Institute, Amity Business School, GAIL Training Institute, Birla Institute of Management and Technology, Galgotia's College of Engineering, Greater Noida. Majority of the LICs were found subscribing the Indian as well as foreign journals in their disciplines for meeting the information needs of their users.

5.3 Staff Profile

Library staff is the key component for discharging the effective LIS services and managing library resources. Table 3 shows that there is a big variation among staffs in the LICs. This is due to the size, stature and nature of the LICs. The JSS Academy of Technical Education Library has maximum number of LIS professionals followed by the Jaypee Institute of Information Technology Library, JIIT-Learning Resource Centre, and Amity Business School Library. Some of the LICs such as Jaipuria Institute of Management, and NTPC Engineering, NTPC Power Management Institute do not have non-professional staff in the library, therefore, the LIS staff is performing all those activities which are generally performed by the non-library professionals.

5.4 Infrastructure Profile

Since the hardware infrastructure is the basic components of ICT, which enables integration of the software packages in operations of various LIS activities. Table 4 shows that majority of LICs of NOIDA have the basic infrastructure facilities except Network Programs Library. It also shows that GAIL Training Institute Library,

Table 1. Libraries' Profile

S. No.	Name of the institution	Type of library	Name of librarian	Budget for 2007-08	Total membership	Parent organisation
1	Jaipuria Institute of Management	Private	Mr Ram Prakash	15 lakh	400	JIM
2	AMITY Institute of Bio Technology	Private	Mr Bhupender Kumar	10 lakh	4000	Amity Education Society
3	VV Giri National Labour Institute	Govt.	Mr S.K.Verma	70 lakh	1000	VVGNLI
4	Jaypee Institute of Information Technology	Private	Dr Sanjay Kataria	Unlimited	2500	JIIT
5	NTPC Engineering Library	Public	Mr A.K.Sadhu	60 lakh	500	NTPC
6	NTPC Power Management Institute Library	Public	Mr Subhash Chandra	25 lakh	1000	NTPC
7	NOIDA College of Physical Education	Private	Mr Digvijay Singh Rana	2.5 lakh	700	NOIDA CPE
8	JSS Academy of Technical Education	Private	Mr Sudeep Sharma	50 lakh	4000	JSMM
9	Amity Institute of Information Technology	Private	Mr Bibhuti Nath Jha	20 lakh	1800	AES
10	Amity Business School Library	Private	MrSubhash Uniyal	80 lakh	2000	AES
11	Mahatma Gandhi Mission's College of Engin. & Technology	Private	Mr Shailendra Kumar Shukla	13 lakh	250	MGMCM
12	Bharat Heavy Electrical Ltd. (BHEL)	Public	Mr Sandeep Srivastava	15 lakh	1050	BHEL
13	Global Institute of Management & Technology.	Private	Mrs Nina Gupta	5 lakh	100	GIMT
14	Centre for Development of Advanced Computing	Govt.	Mr R.G.Jaiswal	60 lakh	1300	CDAC
15	NOIDA Public Library	Public	Mrs Manju Sanger	10 lakh	400	Public Library
16	Sahara India	Media	Mrs Shalini Bhushan	60 lakh	2000	Sahara India Pariwar
17	GAIL Training Institute	Public	Mr V.K.Nagar	20 lakh	150	GAIL
18	Network Programs Library	Corporate	Mr R.N.Indoria	15 lakh	180	Network Programs
19	Birla Institute of Technology	Private	Miss.Monica Verma	1.5 lakh	900	BIT
20	Tata Consultancy Service	Corporate	Mrs Alpana Srivastava	Compound budget	1500	TCS
21	Harlal Institute of Management and Technology	Private	Mr G. K. Mohanty	1.5 lakh	500	HIMT
22	IEC College of Engineering & Technology Library	Private	Mr Arun Kr. Biswal	Unlimited	2900	IEC College
23	Apeejay Institute of Technology	Private	Mr .B. R. Sachdeva	4.5 lakh	500	AIT
24	Birla Institute of Management & Technology	Private	Mr Rishi Tiwari	15 lakh	700	BIMT

Table 2. Library collection

S. No.	Name of library	Books	Foreign journals	Indian journals	Online journals	Dissertations/ project reports	Audio/ Video	CD-ROM databases
1	JIM Library	5596	11	95	-	250	100	-
2	AMITY- IBT Library	7500	5	71	-	60	-	-
3	NRD Resource Centre	56413	-	238	15	83	491	200
4	JiIT-Learning Resource Centre	24100	400	250	420	510	20	2700
5	NTPC Engineering Library	11000	7	120	-	-	-	-
6	NTPCPM-Learning Resource Centre	13000	-	10	-	198	-	-
7	NCPE Library	12000	20	30	-	98	-	-
8	JSSATE-Library and Information Centre	37000	80	70	600	1000	-	-
9	AIIT Library	20000	8	70	-	-	-	-
10	Amity Business School Library	67000	25	115	150	-	200	500
11	Mahatma Gandhi Mission's CEM-Library	2000	5	27	-	-	-	-
12	BHEL Library	14575	2	76	-	240	-	236
13	GIMT Library	4000	7	8	4	-	-	-
14	CDAC Library	15000	14	15	650	1400	-	-
15	NOIDA Public Library	23000	-	15	-	-	-	-
16	Sahara India Media Library	6000	10	70	-	-	-	-
17	GAIL Library	3304	10	15	4	10	20	172
18	Network Programs Library	6077	5	15	-	-	150	-
19	BIT Library	12000	15	20	20	20	-	100
20	TCS Library	2400	10	18	-	500	100	-
21	HIMT Library	11686	20	27	-	900	-	150
22	IEC Central Library	30000	32	110	-	-	80	890
23	AIT Library	9000	12	70	5	1000	-	1000
24	BIMT Library	18000	25	100	700	500	30	1000
25	GCE Library	35000	12	70	210	1000	50	500
26	GLB-ITM Library	11341	35	59	-	50	-	30

Table 3. Library staff

S. No.	Name of library	Professionals	Others	Total
1	JIM Library	3	0	3
2	AMITY- IBT Library	2	2	4
3	NRD Resource Centre	1	7	8
4	JiIT-Learning Resource Centre	11	2	13
5	NTPC Engineering Library	5	0	5
6	NTPCPM-Learning Resource Centre	2	0	2
7	NCPE Library	2	3	5
8	JSSATE-Library and Information Centre	6	10	16
9	AIIT Library	3	2	5
10	Amity Business School Library	5	6	11
11	Mahatma Gandhi Mission's CEM-Library	2	1	3
12	BHEL Library	2	1	3
13	GIMT Library	2	1	3

14	CDAC Library	3	1	4
15	NOIDA Public Library	3	4	7
16	Sahara India Media Library	4	3	7
17	GAIL Library	1	1	2
18	Network Programs Library	2	1	3
19	BIT Library	3	1	4
20	TCS Library	2	1	3
21	HIMT Library	4	3	7
22	IEC Central Library	7	3	10
23	AIT Library	3	2	5
24	BIMT Library	4	2	6
25	GCE Library	3	5	8
26	GLB-ITM Library	3	1	4

Table 4. Availability of ICT infrastructure

S. No.	Name of library	Servers	Clients	Printers	Barcode printers	Scanners	LCD Projectors
1	JIM Library	1	5	2	-	1	-
2	AMITY- IBT Library	1	3	-	-	-	-
3	NRD Resource Centre	3	6	4	-	2	-
4	JiIT-Learning Resource Centre	1	75	2	2	2	-
5	NTPC Engineering Library	1	3	6	-	1	-
6	NTPCPM-Learning Resource Centre	1	6	1	1	1	-
7	NCPE Library	1	2	3	-	1	-
8	JSSATE-Library and Information Centre	1	24	3	1	4	-
9	AIIT Library	1	2	-	-	-	-
10	Amity Business School Library	1	4	1	-	1	1
11	Mahatma Gandhi Mission's CEM-Library	1	2	-	-	-	-
12	BHEL Library	1	6	1	-	1	-
13	GIMT Library	1	1	1	-	-	2
14	CDAC Library	1	15	1	-	2	-
15	NOIDA Public Library	1	1	2	-	-	-
16	Sahara India Media Library	1	7	1	2	1	-
17	GAIL Library	2	5	2	1	1	1
18	Network Programs Library	-	-	-	-	-	-
19	BIT Library	1	3	1	-	-	-
20	TCS Library	1	2	2	-	1	-
21	HIMT Library	-	3	3	-	-	-
22	IEC Central Library	1	7	1	1	3	-
23	AIT Library	1	-	2	-	-	-
24	BIMT Library	1	-	1	-	1	-
25	GCE Library	1	8	2	1	1	-
26	GLB-ITM Library	1	3	1	-	-	-

JSS Academy Library, Jaypee Institute Library, Galgotia's College Library, and NTPC-PMI LICs have impressive ICT facilities like servers, clients, printers, barcode printers, scanners and LCD projectors.

5.5 Software Profile

Software packages/application programmes are considered as blood of the hardware system, which

brings users and equipment into real use. Table 5 shows about the various kinds of software available in the LICs of Noida. Majority of the LICs are using MS Word for word processing and Windows XP and Windows 2000 as operating system. Table 5 also indicates that for managing the library majority of the LICs were using commercial developed software such as Alice for Windows, Libsuis, Vidya, and Nettlib except C-DAC which is using in-house developed library software. Few LICs namely Jaypee Institute of Information Technology, JSS Academy of Technical Education and Birla Institute of Management and Technology were using the open source digital library software

5.6 Automation Profile

Computerisation of library holdings is the first line use and application of the ICT in the LICs. Table 6 shows the status of the automation activities among the LICs of

Noida. The study shows that majority of the LICs have started their automation activities from 2000 onwards except NRD Resource Centre. Majority of the LICs are also automated except few. Further, it was also noticed that Libsys, commercially developed library software, is being used by majority of the LICs followed by Alice for Windows, CDS/ISIS, Vidya, Nettlib, and in-house developed software.

5.7 Use of ICT in Housekeeping Activities

The housekeeping activities/operations of any LIC are the preliminary computer-based activities on which all the ICT-based LIS services depend. Table 7 shows that the majority of the LICs of Noida except the LICs of AMITY Institute of Bio Technology, Mahatma Gandhi Mission's College of Engineering and Technology, and Noida Public Library and Network Programs were found using ICT in all housekeeping activities, i.e., acquisition, (ordering and

Table 5. Use and availability of software facilities

S. No.	Name of library	Network operating system	Library management software	Digital library software	Database management system	Word processing software
1	JIM Library	Windows 2000	Libsys	-	-	MS Word
2	AMITY- IBT Library	Windows XP	-	-	-	-
3	NRD Resource Centre	Linux	Libsys	-	-	MS-Word
4	JiIT Learning Resource Centre	Windows and Linux	AFW	Dspace	-	MS Office
5	NTPC Engineering Library	Linux	Libsys	-	-	MS Word
6	NTPCPM Learning Resource Centre	Windows XP, 2000	Libsys	-	ABI/INFO	ABID MS Word
7	NCPE Library	Windows XP, 2000	CDS/ISIS	-	-	MS Word
8	JSSATE Library and Information Centre	Windows XP, 2000	Nettlib	GSDL	-	MS Word
9	AIIT Library	Windows 2000	-	-	-	-
10	Amity Business School Library	Windows 2000	AFW	-	-	MS Word
11	Mahatma Gandhi Mission's CEM-Library	-	-	-	-	-
12	BHEL Library	Window NT Server	AFW	-	-	MS Word
13	GIMT Library	-	-	-	-	-
14	CDAC Library	Windows XP, 2000	In-house developed	-	Oracle 8	MS Word
15	NOIDA Public Library	Windows XP	-	-	-	MS Word
16	Sahara India Media Library	-	Libra	-	-	MS Word
17	GAIL Library	Windows XP	Libsys	-	SAP	MS Word
18	Network Programs Library	-	-	-	-	-
19	BIT Library	Windows XP	Libsys	-	-	MS Word
20	TCS Library	Windows XP	Libsys	-	-	MS Word
21	HIMT Library	Windows XP	Libsys	-	SQL	MS Word
22	IEC Central Library	Windows XP	TLSS	-	-	MS Word
23	AIT Library	Windows XP	Libsys	-	-	MS Word
24	BIMT Library	Windows 2000	Vidya	GSDL	-	MS Word
25	GCE Library	Windows 2000	ERP based	-	-	MS Word
26	GLB-ITM Library	Windows 2000	Libsys	-	-	MS Word

Table 6. Status of library automation

S. No	Name of library	Year of automation	Extent of automation	Software
1	JIM Library	2004	Almost automated	Libsys
2	AMITY- IBT Library	-	No automation	-
3	NRD Resource Centre	1995	Fully automated	Libsys
4	JIIT-Learning Resource Centre	2001	Fully automated	AFW
5	NTPC Engineering Library	2002	Almost automated	Libsys
6	NTPCPM Learning Resource Centre	2001	Almost automated	Libsys
7	NCPE Library	2006	Almost automated	CDS/ISIS
8	JSSATE-Library and Information Centre	2002	Almost automated	Nettlib
9	AIIT Library	2004	Almost automated	-
10	Amity Business School Library	1996	Almost automated	AFW
11	Mahatma Gandhi Mission's CEM-Library	-	No automation	-
12	BHEL Library	2004	Almost automated	AFW
13	GIMT Library	2006	Under automation	-
14	CDAC Library	2002	Almost automated	In-house
15	NOIDA Public Library	-	No automation	-
16	Sahara India Media Library	2006	Under automation	Libra
17	GAIL Library	2003	Fully automated	Libsys
18	Network Programs Library	-	No automation	-
19	BIT Library	2001	Almost automated	Libsys
20	TCS Library	2005	Almost automated	Libsuit
21	HIMT Library	2005	Almost automated	Libsys
22	IEC Central Library	2004	Fully automated	TLSS
23	AIT Library	2002	Almost automated	Libsys
24	BIMT Library	2005	Fully automated	Vidya
25	GCE Library	2002	Fully automated	ERP based
26	GLB ITM Library	2006	Almost automated	Libsys

Table 7. Use of ICT in housekeeping activities

S. No.	Name of library	Acquisition	Cataloguing	Circulation	Serial control	Stock verification	Budget control
1	JIM Library	Yes	Yes	Yes	Yes	No	No
2	AMITY- IBT Library	No	No	No	No	No	No
3	NRD Resource Centre	Yes	Yes	Yes	Yes	Yes	Yes
4	JIIT-Learning Resource Centre	Yes	Yes	Yes	Yes	Yes	Yes
5	NTPC Engineering Library	Yes	Yes	Yes	Yes	Yes	Yes
6	NTPCPM-Learning Resource Centre	Yes	Yes	Yes	Yes	No	No
7	NCPE Library	Yes	Yes	Yes	Yes	No	No
8	JSSATE-Library and Information Centre	Yes	Yes	Yes	Yes	No	Yes
9	AIIT Library	Yes	No	Yes	No	No	No
10	Amity Business School Library	Yes	Yes	Yes	Yes	Yes	Yes
11	Mahatma Gandhi Mission's CEM-Library	No	No	No	No	No	No
12	BHEL Library	No	Yes	Yes	Yes	Yes	No
13	GIMT Library	No	Yes	Yes	Yes	No	Yes
14	CDAC Library	Yes	Yes	Yes	No	No	No
15	NOIDA Public Library	No	No	No	No	No	No
16	Sahara India Media Library	Yes	No	Yes	Yes	Yes	No
17	GAIL Library	Yes	Yes	Yes	Yes	Yes	Yes
18	Network Programs Library	No	No	No	No	No	No
19	BIT Library	Yes	Yes	Yes	Yes	No	No

20	TCS Library	Yes	Yes	Yes	Yes	Yes	No
21	HIMT Library	Yes	No	Yes	No	No	No
22	IEC Central Library	Yes	Yes	Yes	Yes	Yes	Yes
23	AIT Library	Yes	Yes	Yes	No	Yes	No
24	BIMT Library	Yes	Yes	Yes	Yes	Yes	Yes
25	GCE Library	Yes	Yes	Yes	Yes	Yes	Yes
26	GLB-ITM Library	Yes	Yes	Yes	Yes	No	No

procurement of documents), cataloguing (technical processing of documents), circulation (charging and discharging of documents), serial controls (periodical management and article indexing), stock verification (computerized checking/inventory of holdings), and budget control.

5.8 Use and Availability of Telecommunication and Networking

The TNT (Telecommunication and Networking Technology) is the core technology of ICT, which shrinks the physical boundaries through dissemination and

Table 8. Use and availability of telecommunication and networking facilities

S. No.	Name of library	Independent library Network	Type of network	ISP	Type	Consortium membership
1	JIM Library	Yes	LAN	CDAC, ISP	Radio Link	No
2	AMITY IBT Library	No	LAN	Reliance	Leased Line	No
3	NRD Resource Centre	Yes	LAN	BSNL	Leased Line	No
4	JiIT-Learning Resource Centre	No	LAN	VSNL, BSNL	Leased Line	INDEST
5	NTPC Engineering Library	Yes	LAN	VSNL	Leased Line	British Council
6	NTPCPM-Learning Resource Centre	No	LAN	ERNET	Leased Line	No
7	NCPE Library	No	Intranet	VSNL	ISDN	No
8	JSSATE-Library and Information Centre	Yes	LAN, WAN	VSNL, Satyam	Leased Line, wifi	INDEST
9	AIIT Library	No	LAN	BSNL	Leased Line	No
10	Amity Business School Library	Yes	LAN	BSNL	Leased Line	No
11	Mahatma Gandhi Mission's CEM-Library	No	LAN	BSNL	Leased Line	No
12	BHEL Library	No	Wireless	MxSet	Leased Line	No
13	GIMT Library	No	LAN	BSNL	Leased Line	No
14	CDAC Library	Yes	LAN, Intranet	CDAC	Leased Line	MCIT Consortium
15	NOIDA Public Library	No	LAN	Airtel	Leased Line	No
16	Sahara India Media Library	Yes	LAN	MTNL	Leased Line	No
17	GAIL Library	Yes	WAN	BSNL	Leased Line	No
18	Network Programs Library	No	Intranet	Others	ISDN	No
19	BIT Library	No	LAN	VSNL	Leased Line	No
20	TCS Library	Yes	Extranet	TCS	Leased Line	No
21	HIMT Library	No	LAN	BSNL	Leased Line	No
22	IEC Central Library	Yes	LAN	Spectra Net	Leased Line	INDEST
23	AIT Library	No	LAN, Intranet	BSNL	Leased Line	No
24	BIMT Library	Yes	LAN, Intranet	Reliance	Leased Line	No
25	GCE Library	Yes	LAN	BSNL	Broadband	INDEST
26	GLB-ITM Library	No	WAN	VSNL	Leased Line	No

distribution of digital information. Table 8 indicates that all the LICs of NOIDA are using own LAN and Internet for accessing, downloading and dissemination of information. It was also found that majority of the LICs are using leased lines to broadband connectivity subscribed by various ISPs such as BSNL, VSNL, Reliance, etc. LICs attached to Jaypee Institute of Information Technology, NTPC Engineering, JSS Academy of Technical Education, C-DAC, IEC College of Engineering and Technology, Galgotia's College of Engineering, Greater Noida are member of INDEST Consortium (Indian National Digital Library for Engineering and Technology) for accessing to e-journals, databases, and e-books for their users.

5.9 LIS Services—Application of ICT

ICT-based LIS services are efficient and effective mechanism of delivering the digital contents pin-pointedly and exhaustively. ICT-based LIS services are the cost effective and user-friendly for meeting the information needs of users. Table 9 shows that majority of the LICs of

NODIA have Internet service, OPAC, CAS, and SDI. It was also found that access to full-text databases, e-journals, and e-books is also being provided by few LICs.

6. BARRIERS TO ICT APPLICATIONS IN LICs

While conducting the study, opinions regarding barriers to application of ICT in the library were sought by the librarians. In response to the questions, viz., 'lack of awareness, interest and initiation of library professionals towards ICT application' it was found that majority of the librarians were agreed with these facts that lack of awareness, interest and initiation of library professionals towards ICT application in the library are the major bottlenecks of ICT application in the LICs.

In response to another questions, viz., 'lack of well-accepted and standard library software package is also a barrier to ICT application in LICs', a sizeable number of the librarians strongly argued that substandard/ incompatibility among library software packages, is also a major barrier to ICT application in LICs. In response to

Table 9. Application of ICT in LIS services

S. No	Name of library	Access to full text database	OPAC	Automated indexing service	CAS	SDI	Scanning of documents	E-journals	E-books	Internet service
1	JIM Library	No	Yes	No	No	Yes	Yes	Yes	No	Yes
2	AMITY- IBT Library	No	No	No	No	No	No	No	No	Yes
3	NRD Resource Centre	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	JIIT-Learning Resource Centre	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	NTPC Engineering Library	No	Yes	No	No	No	No	Yes	No	Yes
6	NTPCPM-Learning Resource Centre	Yes	Yes	No	No	No	Yes	Yes	No	Yes
7	NCPE Library	Yes	Yes	No	No	No	No	No	No	Yes
8	JSSATE-Library and Information Centre	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
9	AIIT Library	No	Yes	No	No	No	No	No	No	Yes
10	Amity Business School Library	No	No	No	No	No	No	Yes	No	Yes
11	Mahatma Gandhi Mission's CEM-Library	No	No	No	No	No	No	No	No	Yes
12	BHEL Library	No	Yes	No	Yes	No	No	No	No	Yes
13	GIMT Library	Yes	No	No	No	No	No	Yes	No	Yes
14	CDAC Library	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes
15	NOIDA Public Library	No	No	No	No	No	No	No	No	Yes
16	Sahara India Media Library	No	Yes	No	No	No	Yes	No	No	Yes
17	GAIL Library	No	Yes	Yes	Yes	No	Yes	Yes	No	Yes
18	Network Programs Library	No	No	No	No	No	No	No	No	Yes
19	BIT Library	No	Yes	No	Yes	No	No	Yes	No	Yes
20	TCS Library	Yes	Yes	No	Yes	Yes	Yes	No	No	Yes
21	HIMT Library	No	Yes	No	Yes	No	No	No	No	Yes
22	IEC Central Library	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
23	AIT Library	No	No	No	Yes	No	Yes	Yes	No	Yes
24	BIMT Library	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes
25	GCE Library	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes
26	GLB-ITM Library	No	Yes	Yes	Yes	No	Yes	No	No	Yes

other questions, viz., 'untrained library professionals, inadequate ICT infrastructure, and insufficient funds', majority of the librarians strongly raised their voices that these barriers are the principal hinderance in effective application/implementation of ICT in LICs.

7. ATTITUDE TOWARDS APPLICATION OF ICT IN LICs

The attitudinal questions were carefully analyzed and interpreted and it was found that in majority, the attitude of the librarians towards ICT application/use in the LICs was very positive. The librarians have overwhelmingly showed their positive attitude towards the applications/ use of ICT in their libraries knowingly that if they use/ implement these technologies in their libraries it would not only improve the status of the library but also improve the quality and efficiency of the library services and resources.

8. CONCLUSION

The effective use and application of ICT in LICs helps in performing their operations and services efficiently and effectively. Application of ICT in the LICs of Noida has become inevitable on account of information explosion and widespread use of digital information. This study provides the current scenario of ICT application in LICs in Noida. The majority of LICs in Noida has good hardware and software facilities to some extent but ICT-based services and products are not reaching the users to the extent expected due to the problems of inadequate finance, infrastructure, and trained library professionals leaving available ICT infrastructure underutilized. Therefore, it is essential that ICT resources should be enhanced; ICT skilled staff should be increased or trained in using and handling ICT. The study pointed out that majority of the staff working in the selected LICs has shown positive inclination toward adoption/application of ICT. The study recommends that LICs of Noida should give the priority to digital library initiatives, consortia-

based subscription, and increase in the funds and recruitment of IT trained staff for better ICT-based services and products to their users.

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