An Evaluation of ICT Infrastructure and Application in Autonomous Engineering College Libraries Affiliated to VTU of the Bangalore Region

Santhosha M.
Research Scholar,
Dept. of Studies in Library and Information Science,
University of Mysore, Mysuru-570006
Email: santhosha.mlisc2012@gmail.com

Adithya Kumari H.
Professor,
Dept. of Studies in Library and Information Science,
University of Mysore,, Mysuru-570006
Email: adithyakumarih@gmail.com

Abstract

The present study examines information on various evaluations of ICT infrastructure and applications in autonomous engineering college libraries affiliated to VTU in the Bangalore region. These questionnaires were distributed to the library professionals of selected 21 autonomous engineering colleges affiliated with VTU in the Bangalore region. Initially, questionnaires and interview methods were used as data collection tools. It has been found that IT-skilled manpower and consultation services are the main barriers to the impending proper implementation of ICT in the engineering college, and interview methods were used as data collection tools under the study.

.Keywords

State Central Library; Connemara Library; Sources of Information; Satisfaction

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1. I INTRODUCTION

Education has been revolutionised by Information and Communication Technology (ICT) in the era of rapid technological advancements. Engineering colleges, renowned for emphasising technical knowledge and research, increasingly use ICT to enhance their operations and services. The library, commonly known as the heart of an academic institution, must support the academic and research needs of students and faculty during this transition. To maintain efficient and modernised systems, ICT must be utilised in library operations for autonomous engineering colleges where academic flexibility and innovation are highly valued. Integrating ICT in engineering college libraries allows various processes, such as cataloguing, circulation, and inventory management, to be automated, enhancing library services' efficiency. Additionally, it makes it possible to create digital repositories, access online resources, and provide virtual library services, which are essential in today's educational environment. This study aims to evaluate the infrastructure and applications of ICT in autonomous engineering college libraries. The goal is to evaluate how well these libraries are incorporating and utilising technology to meet the needs of both students and faculty. The investigation will focus on topics like hardware and software infrastructure, digital resource management, user accessibility, and the efficacy of different ICT tools used in library functions.

2. REVIEW OF LITERATURE

As self-regulated institutions, autonomous engineering colleges often possess more autonomy in adopting and upgrading ICT infrastructure than traditional colleges. This flexibility allows them to invest in advanced systems and digital tools that support academic and research activities. Chavan & Naik (2018) has done a study on impact of ICT innovations by students, on library services in engineering colleges of North Karnataka. The study revealed that 52.87% of the students' agreed on the ICT infrastructure availability in library of engineering colleges of North Karnataka. It was found that 442 (57.85%) students visit the library every day. Most of the students (83.50%) are using library services through internet service. The study revealed that most of the respondents i.e., 656 (85.86%) indicate that email is the

primary intention of using internet. About 656 (85.86%) respondents have access to the Internet for online database search, followed by 626 (81.93%) respondents have access to e-journals and 638 (83.50%) respondents are using reference rquires through the internet. Maan (2012) in his study on "Usage of ICT products and services: a case study of Adesh Institute of Engineering & Technology, Faridkot (Punjab)" found that 85.4% users visit the library daily and most of the users access the e-journals and e-books to update their knowledge and skills. Most users, i.e., 61.4% are using ICT products to access e-journals. The library was my favourite place to access the Internet. 83.2% of users found slow downloading speed as the main problem in accessing online facilities. Kumar (2011) describes the position of libraries in ICT environment in Haryana State. The study was performed through a questionnaire survey of the librarians and users of engineering college libraries on ICT-based resources and services. The investigator received filled-in questionnaires from 20 librarians and 750 users of the libraries of the engineering colleges of Haryana. In almost the engineering colleges, 93% of libraries implemented library automation. Most of them (93%) have their e-mail/website and printing facilities and 86.6% of them have scanners. Usmankoya et al. (2018) examined the ICT infrastructure and electronic resources services in CAPE engineering colleges of Kerala, and the results revealed that CAPE engineering college libraries equipped with basic hardware facilities such as servers, computers, printers, scanners, Wi-Fi facilities, LANs, and high-speed internet facilities.

3. OBJECTIVE OF THE STUDY

The following are the main objectives of the study.

i. To study the existing ICT hardware and software facilities available in autonomous engineering college libraries affiliated to VTU of the Bangalore region.
ii. To know the various applications of ICT in autonomous engineering college libraries.
iii. To find the status of library automation of engineering libraries.
iv. To identify the various barriers confirmed by the professionals in applying ICT in engineering college libraries.

4. METHODOLOGY

The survey method was used to collect primary data on this research investigation. The data is collected through a structured questionnaire that was prepared based on the study's objectives. These questionnaires were distributed to the library professionals only. This study ha selected 21 autonomous engineering colleges affiliated to VTU of Bangalore region. The collected data were tabulated and analysed using simple statistical tools.

5. RESULT AND DISCUSSION

Collected data has been analyzed using simple statistical techniques, Data has been presented in the form of a table using MS Excel software.

Table 1. Year of Establishment of Colleges

Sl. No.	List of Autonomous Engineering Colleges	Est.
1	Atria Institute of Technology	2000
2	B.M.S. College of Engineering	1946
3	Bangalore Institute of Technology, Bangaluru	1979
4	BMS Institute of Technology and Management	2002
5	Cambridge Institute of Technology, Bengaluru	2007
6	Dayananda Sagar Academy of Technology and Management	1979
7	Dayananda Sagar College of Engineering Bangalore	1979
8	Dr. Ambedkar Institute of Technology	1980

9	East Point College of Engineering and Technology	1999
10	East West Institute of Technology	2001
11	Global Academy of Technology	2001
12	M S Ramaiah Institute of Technology	1962
13	MVJ College of Engineering	1982
14	New Horizon College of Engineering	2001
15	Nitte Meenakshi Institute of Technology, Bengaluru	2002
16	R V College of Engineering	1963
17	R. R. Institute of Technology	2008
18	RNS Institute of Technology	2001
19	Rajarajeswari College of Engineering.	2006
20	Nagarjuna College of Engineering & Technology	2001
21	BNM Institute of Technology	2001

It is found from Table 1 that establishments of autonomous engineering colleges affiliated to VTU in the Bangalore region. It is revealed that the highest 12(57.14%) of autonomous engineering colleges were established during the last twenty years there for 2001-2020, followed by the second highest 5(23.80%) of colleges was founded in 1961-1980 and followed by 03 (14.28%) of colleges was founded in 1981-2000. BMS Engineering College was considered the oldest college in the autonomous engineering colleges of the Bangalore region in 1946.

Table 2: Hardware Facilities.

ICT Equipment's	**No of Autonomous Eng Colleges. (N=21)**	
	Freq	**%**
Computers	21	100
Laptops	18	85.71
Printers	21	100
Barcode reader	21	100
Scanners	21	100
CCTV Cameras	14	66.66
LCD Projectors	10	47.61
Servers	21	100

Table 2 shows that all (100%) of autonomous engineering college libraries have Computers, Printer, Barcode reader, Scanners and Server followed by 18 (85.71%) of libraries that have Laptops and 14 (66.66%) of libraries have CCTVs facilities and 10 (47.61%) of libraries that have Projector.

Table 3: Software Facilities

Software Facilities	**No of Autonomous Eng Colleges. (N=21)**	
	Freq.	**%**
Library Automation Software.	21	100.00
Antivirus Software	16	76.19
Reference Management Software	21	100.00
Digital Library Software	16	76.19
Remote Access	11	52.38
Content Management Software	09	42.85
Database Management Software	06	28.57
Learning Management Software	06	19.04

Table 3 shows that all 21 (100%) of autonomous engineering college libraries have library automation software and reference management software followed by 16 (76.19%) of libraries that have antivirus software and digital library software followed by 11 (52.38%) of libraries have remote access software and 9 (42.85%) of libraries have Content Management Software. 6 (19.04%) Each engineering college libraries has data management software and learning management software.

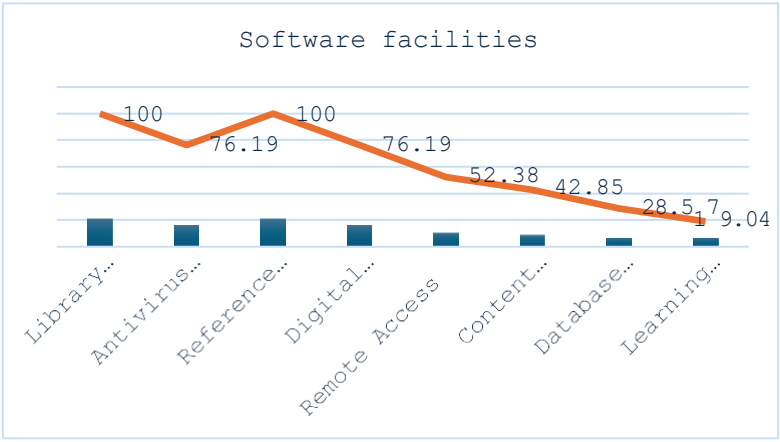


Table 4: Status of the library Automation

Name of Colleges	Status of Automation	Automation Software	Satisfaction Level
AIT	Partially Automated	Koha ILS	Satisfied
BMSCE	Fully Automated	Libsys	Fully Satisfied
BMSITM	Fully Automated	Koha ILS	Satisfied
CIT	Fully Automated	Libsoft	Satisfied
BIT	Fully Automated	Libsoft	Fully Satisfied
DSATM	Fully Automated	Libsys	Fully Satisfied
DSCE	Fully Automated	Libsys	Fully Satisfied
DMIT	Fully Automated	Libsoft	Fully Satisfied
EPCET	Partially Automated	Libsoft	Fully Satisfied
EWIT	Fully Automated	Libsoft	Fully Satisfied
GAT	Fully Automated	Libsoft	Fully Satisfied
MSRIT	Partially Automated	Koha ILS	Satisfied
MVJCE	Fully Automated	Koha ILS	Fully Satisfied
NHCE	Fully Automated	ContineoERP Software	Fully Satisfied
NMIT	Fully Automated	Koha ILS	Fully Satisfied
RVCE	Partially Automated	Libsoft	Fully Satisfied
RRIT	Partially Automated	Koha ILS	Satisfied
RNSIT	Fully Automated	Libsoft	Fully Satisfied
RRCE	Fully Automated	NGL software	Satisfied
SJBIT	Fully Automated	Libsoft	Fully Satisfied
NCET	Fully Automated	Libsoft	Fully Satisfied

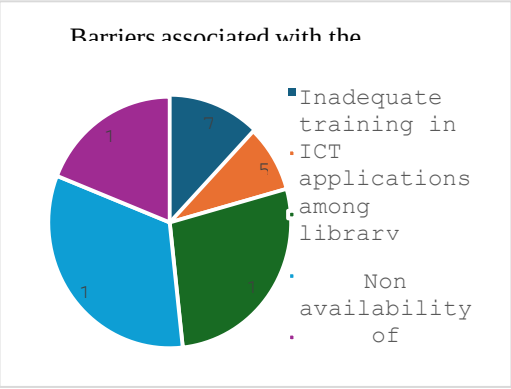
Table 4. The data indicates that the majority of libraries are using Libsoft, with 10 (47.61%) of libraries adopting this software. 6 (28.57%) of libraries are using Koha ILS, making it the second most popular software. A smaller proportion of libraries are using Libsys, with 3 (14.28%) libraries reporting its usage. The least 2 (9.52%) libraries using software are NGL and Contineo ERP, representing the total. Most libraries have expressed satisfaction with their current library automation software in terms

of user satisfaction. Six libraries (28.57%) gave their
software a satisfactory rating, while a larger percentage, 71.42%, said they were fully satisfied with their automation systems. This suggests that the libraries are largely satisfied with the performance and functionality of the software in place.

Table 5: Barriers of implementation of ICT

Barriers	**No of Autonomous Eng Colleges. (N=21)**	
	Freq.	%
Inadequate training in ICT Applications among library staff.	07	33.33
Lack of IT infrastructure and network facility	05	23.80
Lack of IT skilled manpower	12	57.14
Non-availability of consultation services	19	90.47
Financial constraint	11	52.38

An attempt has been made to know the various factors that are impeding the application of ICT in the college libraries and the results are depicted in table 5. It revealed that 19 (90.47%) of respondents were non-availability of consultation services followed by 12(57.14%) Lack of IT skilled manpower and 11(52.38%) of financial constraints, Inadequate training in ICT applications among library staff.7(33.33%), Lack of IT infrastructure and network facility 5(23.80%).



6. FINDINGS

Based on the study's analysis, the researcher observed some interesting facts regarding the availability of ICT infrastructure and its application in autonomous engineering college libraries in the Bangalore region. The study's major findings are highlighted as follows.

- The analysis found that the highest 12 autonomous engineering colleges were established during the last twenty years, from 2001 to 2020. In 1946, Engineering College was regarded as the oldest college in the autonomous engineering colleges of the Bangalore region.
- It has been found that all (100%) autonomous engineering college libraries have computers, printers, barcode readers, scanners, and servers. Moreover, 18 (85.71%) of colleges have laptops.
- The study revealed that all 21 (100%) of autonomous engineering college libraries have library automation software and reference management software, followed by 16 (76.19%) libraries with antivirus and digital library software.
- The study analysis indicates that most libraries use Libsoft, with 10 (47.61%) of libraries adopting this software, and the least 2 (9.52%) libraries using the software are NGL and Contineo ERP, representing the total.
- In terms of user satisfaction, most libraries have expressed satisfaction with their current library automation software. 6 (28.57%) received satisfactory software ratings, while 71.42% said they were completely satisfied with their automation systems.
- The most significant factor impeding the use of ICT in college libraries was the non-availability of consultation services, with 19 (90.47%) citing this as a major barrier. A considerable number of

respondents 12 (57.14%) pointed out the lack of adequately skilled IT personnel as another significant challenge to implementing ICT in libraries.

7. CONCLUSION AND RECOMMENDATION

Evaluating ICT infrastructure and applications in autonomous engineering college libraries affiliated with VTU in the Bangalore region reveals significant strides towards modernising library services through technology. While many libraries have made commendable progress in adopting various ICT tools for efficient resource management, information retrieval, and user engagement, challenges still remain. Issues such as inconsistent internet connectivity, limited access to advanced technologies, and insufficient training for library staff hinder the full potential of these systems. However, the ongoing improvements in digital resources, automated cataloguing, and online access to journals and books indicate a positive trend towards enhancing the academic experience for students and faculty. Future efforts should further strengthen ICT infrastructure, address training gaps, and ensure sustainable funding for continuous technological upgrades.

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