International Journal for Research Trends in Social Science & Humanities
ISSN: 2584-2455
Volume 4, Issue 6
Nov-Dec- 2026, PP 1-22

Changing Scenario of Library Services in the I.C.T. Environment at 59 Government and Grant-in-Aid Teacher Education Colleges in Gujarat State

Patel Navnitbhai Ranchhodbhai[1]
Ph.D. Research Scholar
Department of Library and Information Science, Faculty of Arts
Veer Narmad South Gujarat University, Surat[1]

Dr. Sonal Prananath Bharti[2]
Department of Library and Information Science Veer Narmad South Gujarat University, Surat
R.V. Patel College of Commerce (English Medium), Amroli, Surat, Gujarat – India[2]

Abstract- The 21st century has witnessed a revolutionary transformation in every sphere of life, with Information and Communication Technology (ICT) emerging as a pivotal force in reshaping library and information services globally. The present study investigates the changing landscape of library services in the ICT environment across 59 government and grant-in-aid teacher education colleges in Gujarat State. Teacher education institutions play a crucial role in developing the knowledge economy of any society, and their libraries serve as vital repositories of educational resources for future educators, researchers, and academicians. This research paper explores the availability and utilization of ICT resources, infrastructure, and services in these libraries. The study examines the current status of library automation, availability of e-resources and e-databases, hardware and software infrastructure, internet connectivity, Wi-Fi facilities, digital library initiatives, and the range of ICT-based library services offered. The research also investigates the annual budget allocation for ICT implementation, identifies the challenges and problems faced by these libraries in adopting ICT, and documents future plans for ICT integration. A comprehensive survey methodology was adopted, with structured questionnaires distributed to librarians and library professionals across the selected institutions. The findings reveal that while a significant number of government and grant-in-aid teacher education college

International Journal for Research Trends in Social Science & Humanities
ISSN: 2584-2455
Volume 4, Issue 6
Nov-Dec- 2026, PP 1-22

libraries have made commendable progress in implementing ICT resources and services, there remains considerable scope for improvement. The study underscores the critical need for enhanced financial support, skilled manpower development, and continuous professional training to fully leverage the potential of ICT in transforming library services. The paper concludes with practical recommendations for optimizing ICT adoption in teacher education college libraries, thereby enriching the learning experience of future educators and contributing to the broader goals of educational excellence in Gujarat.

Keywords- ICT, Information and Communication Technology, Library Services, Teacher Education Colleges, Government Grant-in-Aid Libraries, Gujarat, Library Automation, E-Resources, Digital Library, Changing Landscape

I. Introduction

The last five decades have witnessed unprecedented changes in the way information is generated, processed, stored, retrieved, and disseminated. Information and Communication Technology (ICT) has brought about a paradigm shift in every sphere of human endeavor, and libraries are no exception. The advent of computers, the internet, and digital technologies has revolutionized the traditional concept of libraries, transforming them from mere repositories of printed materials to dynamic knowledge centers that provide seamless access to a vast array of information resources in multiple formats.

Teacher education institutions occupy a unique position in the educational ecosystem. They are entrusted with the responsibility of preparing the next generation of educators who will shape the future of society. The libraries of these institutions, therefore, bear a special responsibility—they must not only support the academic and research needs of their immediate users but also model best practices in information management and dissemination for future teachers to emulate. In this context, the integration of ICT in teacher education college libraries assumes critical significance.

Gujarat State has a robust network of government and grant-in-aid teacher education colleges that contribute significantly to the preparation of qualified teachers for schools

International Journal for Research Trends in Social Science & Humanities
ISSN: 2584-2455
Volume 4, Issue 6
Nov-Dec- 2026, PP 1-22

across the state. With 59 such institutions, the collective impact of their libraries on the quality of teacher education is immense. The present study is an attempt to comprehensively examine how these libraries are adapting to the ICT-driven transformation and what changes are visible in their service delivery mechanisms.

The study is guided by the recognition that the fourth law of Library Science—"Save the time of the reader"—has acquired renewed relevance in the digital age. ICT tools and technologies enable libraries to fulfill this fundamental law more effectively than ever before, provided they are properly implemented and utilized. However, the adoption of ICT in libraries is not merely a technological challenge; it involves significant investments in infrastructure, human resource development, and organizational change.

The researcher seeks to explore the changing landscape of library services in the ICT environment at government and grant-in-aid teacher education college libraries in Gujarat, identifying the current status, challenges, and opportunities for improvement.

II. Information and Communication Technology: An Overview

1. Definition of ICT

Information and Communication Technology (ICT) encompasses a broad range of computer-related hardware and software that enable the creation, collection, consolidation, communication, management, and dissemination of information in multimedia and various digital formats for diverse purposes. According to the International Library Association (ILA) Glossary, ICT refers to "the application of computers and other latest technologies to the acquisition, organization, storage, retrieval, and dissemination of information."

The American Library Association (1983) defined Information Technology (IT) as "the application of computers and other technologies to the acquisition, organization, storage, retrieval, and dissemination of information." This definition, while focusing primarily on IT, laid the foundation for understanding the broader concept of ICT that emerged later.

International Journal for Research Trends in Social Science & Humanities
ISSN: 2584-2455
Volume 4, Issue 6
Nov-Dec- 2026, PP 1-22

David (2001) described ICT as "the technologies that enable society to create, collect, consolidate, communicate, manage, and process information in multimedia and various digital formats for different purposes, i.e., computing and telecommunications technologies like personal computers, CD-ROM, cable TV, cellular phones, and the Internet."

2. Components of ICT

The main components of ICT include:

- Computers and Hardware: Central Processing Units (CPUs), printers, scanners, digital cameras, audio-visual equipment, and other peripheral devices
- Networking Infrastructure: Local Area Networks (LANs), Wide Area Networks (WANs), routers, switches, and cabling systems
- Internet and Connectivity: Broadband connections, Wi-Fi facilities, and internet service providers
- Display Screen Technologies: Monitors, projectors, interactive whiteboards, and other display devices
- Information Systems and Software: Library management systems, integrated library systems, digital library software, and application software
- Human ware: Skilled and trained personnel who can effectively utilize ICT tools and technologies

3. Impact of ICT on Libraries

The impact of ICT on libraries has been profound and multifaceted:

- Anywhere, Anytime Availability: ICT enables users to access library resources and services 24/7 from any location
- Global Reach: Libraries can now serve users beyond their physical boundaries, reaching global audiences
- Cost-Effectiveness: Digital resources and automated processes reduce operational costs in the long run
- Direct to End-User Delivery: Information can be delivered directly to users' devices without intermediaries

International Journal for Research Trends in Social Science & Humanities
ISSN: 2584-2455
Volume 4, Issue 6
Nov-Dec- 2026, PP 1-22

- Changing Role of Librarians: Librarians have evolved from custodians of books to facilitators of information access
- Networking and Resource Sharing: Libraries can share resources and collaborate through networks and consortia
- Online Access and File Transfer: Users can access and download resources remotely
- Digital Information Creation: Information is increasingly created, stored, and disseminated in digital formats
- Remote Access: Users can access digital information from remote sites
- Hybrid Libraries: Modern libraries maintain both physical collections and digital resources, offering a blended approach to information services

III. Teacher Education in Gujarat: An Overview

1. Importance of Teacher Education

Teacher education is the foundation upon which the entire edifice of quality education rests. It encompasses the policies, procedures, and provisions designed to equip prospective teachers with the knowledge, attitudes, behaviors, and skills they require to perform their tasks effectively in the classroom, school, and wider community. In an era characterized by rapid technological advancements and changing educational paradigms, teacher education institutions must continually evolve to prepare educators who can navigate and leverage the digital landscape.

2. Teacher Education Colleges in Gujarat

Gujarat State has a well-developed network of teacher education institutions, including government colleges, grant-in-aid colleges, and self-financed institutions. The 59 government and grant-in-aid teacher education colleges included in this study represent a significant segment of the state's institutional capacity for teacher preparation. These colleges offer various programs, including Bachelor of Education (B.Ed.), Master of Education (M.Ed.), and specialized courses in educational leadership and pedagogy.

International Journal for Research Trends in Social Science & Humanities
ISSN: 2584-2455
Volume 4, Issue 6
Nov-Dec- 2026, PP 1-22

The libraries of these institutions serve a diverse user community comprising undergraduate and postgraduate students, research scholars, faculty members, and practicing teachers who return for professional development. The information needs of this user community are varied and complex, ranging from curriculum-related materials and pedagogical resources to research publications and professional development literature.

3. The Role of Libraries in Teacher Education

Libraries in teacher education colleges play a multifaceted role:

- **Supporting Curriculum Delivery:** Providing textbooks, reference materials, and supplementary readings aligned with the curriculum
- **Facilitating Research:** Offering access to research journals, databases, and scholarly publications for faculty and student research
- **Promoting Information Literacy:** Developing the information literacy skills of future teachers who will need to navigate complex information landscapes
- **Modeling Best Practices:** Demonstrating effective use of ICT and information management practices that future teachers can replicate in their own classrooms
- **Professional Development:** Serving as resources for practicing teachers engaged in continuous professional development

IV. Review of Literature

A comprehensive review of literature was conducted to understand the existing body of research on ICT applications in libraries, particularly focusing on academic and teacher education libraries in India and abroad.

Sampath Kumar and Biradar (2010) examined the use of ICT in 31 college libraries in Karnataka, India, investigating ICT infrastructure, current status of library automation, barriers to implementation, and librarians' attitudes toward ICT. The study found that ICT application had not reached a high level due to lack of IT skills, lack of manpower, and lack of financial support.

International Journal for Research Trends in Social Science & Humanities
ISSN: 2584-2455
Volume 4, Issue 6
Nov-Dec- 2026, PP 1-22

Sheeja (2010) conducted a study to investigate ICT application in university libraries in Kerala, India. The study examined the current state of ICT application levels, ICT-based resources, services, and infrastructure. It found that university libraries in Kerala were far behind in ICT application, though all libraries had Local Area Networks and provided internet services. Inadequate funds for infrastructure emerged as a major obstacle.

Okon et al. (2005) investigated the extent of ICT adoption in university libraries in Nigeria. The survey results showed that only six university libraries were fully computerized, nine were about to be computerized, seven had installed local area networks, five had online public access catalogues (OPACs), and only four provided internet services. Inadequate funds and poor electricity supply were identified as major obstacles.

Agrawal and Singh conducted a study on ICT application in academic libraries of Banaras Hindu University Library Systems, discussing library automation, digitization, e-resources, and electronic services. The study examined the impact of ICT using primary data from personal experiences, observations, visitor records, circulation records, websites, and discussions with colleagues.

Gamit (2015) studied the impact of ICT-based e-resource library services on faculty and researchers in agricultural university libraries of Gujarat State, highlighting the growing importance of e-resources in academic libraries.

Hussain (2013) conducted a case study of ICT-based library and information services in B-Schools in Delhi and NCR region, providing insights into the status of ICT implementation in management education libraries.

Kannappanavar and Rajanikanta (2008) studied the effective use of e-learning materials in medical college libraries in Karnataka, emphasizing the role of digital resources in specialized academic contexts.

International Journal for Research Trends in Social Science & Humanities
ISSN: 2584-2455
Volume 4, Issue 6
Nov-Dec- 2026, PP 1-22

Mishra and Mishra (2014) examined ICT resources and services in university libraries, providing a broad overview of the available technologies and their applications.

Sivakumaren, Geetha, and Jeyaprakash (2011) studied ICT facilities in university libraries, contributing to the understanding of infrastructure requirements for effective ICT implementation.

Velmurugan and Amudha (2014) studied the use of ICT-based resources and services among users of arts and science colleges in Virudhunagar district, providing user perspectives on ICT adoption.

Patel and Darbar (2016) studied internet usage among students at C.K. Shah Vijapurwala Institute of Management Library, Vadodara, contributing to the understanding of user behavior in the digital environment.

Kude (2016) discussed the use of ICT for information services and smart librarianship, highlighting emerging trends in library service delivery.

Singh (2015) studied ICT and its impact on library and information services through a case study of Kendriya Vidyalaya libraries, providing insights from the school library context.

Merugu and Anil Kumar (2014) studied ICT application in libraries of Warangal district, contributing to the understanding of ICT adoption at the district level.

Kadam (2013) conducted an analytical study of ICT use in engineering college libraries in Maharashtra, providing insights from the technical education context.

Kalbande, Shinde, and Ingle (2013) studied e-resource use by faculty members, highlighting the growing dependence on digital resources in academic settings.

Jerry and Ramasesh (2011) discussed emerging trends and technologies, examining the impact of ICT on libraries and LIS professionals.

International Journal for Research Trends in Social Science & Humanities
ISSN: 2584-2455
Volume 4, Issue 6
Nov-Dec- 2026, PP 1-22

Md. Shariful Islam and Md. Nazmul Islam (2007) conducted an empirical study of ICT use in selected libraries in Bangladesh, providing a comparative perspective from a neighboring country.

Ravichandran (2013) studied ICT-based information search patterns of students and research scholars in engineering colleges in Tamil Nadu, contributing to the understanding of user information-seeking behavior in the digital age.

Sangale discussed ICT application and web-based services in library and information science, highlighting the importance of web technologies in modern library services.

Vijayakumar and Vijayan (2011) provided an overview of information technology applications in libraries, tracing the evolution of library automation and digitization.

The literature review reveals that while numerous studies have examined ICT applications in various types of libraries across India and abroad, there is a notable gap in research specifically focusing on government and grant-in-aid teacher education college libraries in Gujarat. The present study aims to fill this gap by providing a comprehensive analysis of the changing landscape of library services in the ICT environment at 59 such institutions in Gujarat State.

V. Research Methodology

1. Objectives of the Study

The present study was undertaken with the following specific objectives:

- To examine the availability of ICT resources and infrastructure in government and grant-in-aid teacher education college libraries in Gujarat State
- To assess the current status of library automation and digital library initiatives in these libraries
- To identify the range of ICT-based library services offered to users
- To determine the annual budget allocation for ICT implementation and its adequacy

International Journal for Research Trends in Social Science & Humanities
ISSN: 2584-2455
Volume 4, Issue 6
Nov-Dec- 2026, PP 1-22

- To identify the challenges and problems faced by these libraries in implementing ICT
- To document the future plans of these libraries for ICT integration
- To propose recommendations for enhancing ICT adoption and improving library services

2. Research Design

The study adopted a descriptive survey research design, which is appropriate for gathering information about the current status of ICT resources and services across a large number of institutions. This design enabled the researcher to collect quantitative data through structured questionnaires while also allowing for qualitative observations and informal interactions with library professionals.

3. Population and Sample

The population for the study comprised all 59 government and grant-in-aid teacher education colleges in Gujarat State. Given the manageable size of the population, a census approach was adopted, and all 59 institutions were included in the study. However, complete responses were received from 52 institutions, representing a response rate of approximately 88%, which is considered excellent for survey research.

4. Data Collection Tools and Techniques

A structured questionnaire was designed as the primary data collection tool. The questionnaire was carefully constructed to capture comprehensive information about:

- General information about the institution and library
- Available ICT infrastructure (hardware, software, networking)
- Library automation status
- E-resources and e-database subscriptions
- Internet connectivity and Wi-Fi facilities
- Digital library initiatives
- ICT-based library services offered
- Annual budget allocation for ICT
- Problems and challenges in ICT implementation
- Future plans for ICT integration

International Journal for Research Trends in Social Science & Humanities
ISSN: 2584-2455
Volume 4, Issue 6
Nov-Dec- 2026, PP 1-22

The questionnaire was pre-tested with a small group of librarians to ensure clarity, relevance, and reliability. Based on the feedback received, necessary modifications were made before the final distribution.

In addition to the questionnaire, the researcher conducted informal interviews and observations at selected institutions to gain deeper insights into the practical challenges and successes of ICT implementation. Documentary evidence, such as annual reports, library brochures, and institutional websites, was also consulted to corroborate the survey findings.

5. Data Collection Procedure

The questionnaires were distributed to the librarians of the selected institutions through multiple channels—in person, by post, and via email. Follow-up reminders were sent to ensure a high response rate. The data collection process spanned approximately six months, from January to June 2025.

6. Data Analysis

The collected data was organized, coded, and analyzed using appropriate statistical techniques. Descriptive statistics, including frequencies, percentages, and measures of central tendency, were used to summarize the data. Cross-tabulations were employed to examine relationships between variables. The findings were presented in tables and charts for clarity and easy interpretation.

VI. Data Analysis and Interpretation

1. Profile of Respondent Institutions

The study covered 52 government and grant-in-aid teacher education colleges across Gujarat State. The distribution of respondent institutions by type reveals that 18 (34.62%) were government colleges and 34 (65.38%) were grant-in-aid colleges. This distribution reflects the broader landscape of teacher education in the state, where grant-in-aid institutions constitute a significant proportion.

International Journal for Research Trends in Social Science & Humanities
ISSN: 2584-2455
Volume 4, Issue 6
Nov-Dec- 2026, PP 1-22

In terms of geographic distribution, the institutions were spread across various districts of Gujarat, including Ahmedabad, Surat, Vadodara, Rajkot, Bhavnagar, Jamnagar, Junagadh, and others. This wide distribution ensures that the findings are representative of the state as a whole.

2. Availability of ICT Infrastructure

Hardware Resources

The survey revealed the availability of various hardware resources across the respondent libraries:

Table 1: Availability of Hardware Resources (N = 52)

Hardware Resource	Institutions Having	Percentage
Desktop Computers	52	100%
Laptop Computers	38	73.08%
Printers	52	100%
Scanners	46	88.46%
LCD Projectors	42	80.77%
Barcode Scanners	34	65.38%
RFID Equipment	8	15.38%
Digital Cameras	28	53.85%
UPS/Power Backup	48	92.31%

The data indicates that desktop computers and printers are universally available, which is encouraging. However, the availability of advanced equipment such as RFID systems (15.38%) and barcode scanners (65.38%) suggests that many libraries are still in the early stages of automation. The relatively low penetration of RFID technology represents a significant opportunity for improvement, as RFID can dramatically enhance circulation efficiency and security.

Software Resources

Regarding software availability:

International Journal for Research Trends in Social Science & Humanities
ISSN: 2584-2455
Volume 4, Issue 6
Nov-Dec- 2026, PP 1-22

Table 2: Availability of Software Resources (N = 52)

Software Type	Institutions Having	Percentage
Library Management Software	48	92.31%
Operating Systems (Windows/Linux)	52	100%
Office Productivity Software	52	100%
Antivirus Software	48	92.31%
Digital Library Software (DSpace, etc.)	18	34.62%
Statistical Software	12	23.08%

The widespread availability of library management software (92.31%) indicates that most libraries have recognized the importance of automating their core operations. However, the relatively low adoption of digital library software (34.62%) suggests that many libraries have not yet initiated digitization projects. This is a significant gap, given the growing importance of digital repositories in academic institutions.

Among the libraries using library management software, SOUL (Software for University Libraries) developed by INFLIBNET was the most popular choice, used by 22 institutions (45.83%). KOHA, an open-source integrated library system, was used by 14 institutions (29.17%), while commercial packages such as LibSys and EasyLib were used by the remaining institutions.

3. Status of Library Automation

The survey examined the status of automation across various library operations:

Table 3: Status of Library Automation Across Operations (N = 52)

Operation	Fully Automated	Partially Automated	Not Automated
Cataloguing	44 (84.62%)	6 (11.54%)	2 (3.85%)
Circulation	42 (80.77%)	7 (13.46%)	3 (5.77%)
Acquisition	36 (69.23%)	10 (19.23%)	6 (11.54%)
Serial Control	32 (61.54%)	12 (23.08%)	8 (15.38%)
OPAC	44 (84.62%)	5 (9.62%)	3 (5.77%)
Reference Service	24 (46.15%)	14 (26.92%)	14 (26.92%)

International Journal for Research Trends in Social Science & Humanities
ISSN: 2584-2455
Volume 4, Issue 6
Nov-Dec- 2026, PP 1-22

The data reveals that cataloguing and circulation are the most commonly automated operations, with over 80% of libraries reporting full automation in these areas. This is consistent with the general pattern observed in academic libraries, where these core functions are typically prioritized for automation. However, reference services lag behind, with only 46.15% of libraries reporting full automation. This suggests that many libraries have not yet fully exploited the potential of ICT for reference and information services.

4. E-Resources and E-Databases

The availability of electronic resources is a key indicator of ICT adoption in libraries:

Table 4: Availability of E-Resources and E-Databases (N = 52)

E-Resource Type	Institutions Subscribing	Percentage
E-Journals	46	88.46%
E-Books	38	73.08%
E-Databases	34	65.38%
Online Reference Sources	28	53.85%
Audio-Visual Resources	32	61.54%
Open Access Resources	44	84.62%

The high percentage of libraries subscribing to e-journals (88.46%) and utilizing open access resources (84.62%) is encouraging. It indicates that libraries are increasingly recognizing the value of electronic resources in supplementing their print collections. However, the relatively lower adoption of e-databases (65.38%) and online reference sources (53.85%) suggests that there is room for improvement in this area.

Among the e-databases available, N-LIST (National Library and Information Services Infrastructure for Scholarly Content) was the most commonly used resource, with 28 institutions (53.85%) reporting access. DELNET and other consortia-based resources were also mentioned. The availability of these resources through consortia

International Journal for Research Trends in Social Science & Humanities
ISSN: 2584-2455
Volume 4, Issue 6
Nov-Dec- 2026, PP 1-22

arrangements is particularly important for smaller institutions with limited budgets, as it enables them to access a wider range of resources at reduced costs.

5. Internet Connectivity and Wi-Fi Facilities

All surveyed libraries (100%) reported having internet connectivity, which is a significant achievement. However, the quality and speed of connectivity varied:

Table 5: Internet Connectivity and Wi-Fi Facilities (N = 52)

Connection Type	Institutions Having	Percentage
Broadband (Below 10 Mbps)	12	23.08%
Broadband (10–50 Mbps)	24	46.15%
Broadband (Above 50 Mbps)	16	30.77%
Wi-Fi Facility	46	88.46%
Dedicated Internet for Library	38	73.08%

While all libraries have internet connectivity, only 30.77% have high-speed connections (above 50 Mbps). Given the growing demand for bandwidth-intensive applications such as video streaming and large-file downloads, this represents a significant constraint. The availability of Wi-Fi facilities in 88.46% of libraries is commendable, as it enables users to access resources from their personal devices.

6. Digital Library Facilities

The survey examined the status of digital library initiatives:

Table 6: Status of Digital Library Facilities (N = 52)

Digital Library Facility	Institutions Having	Percentage
Institutional Digital Repository	18	34.62%
Digitized Rare Materials	12	23.08%
Digital Thesis/Project Repository	16	30.77%
Remote Access to Digital Resources	24	46.15%
Digital Display/Information Kiosk	10	19.23%

International Journal for Research Trends in Social Science & Humanities
ISSN: 2584-2455
Volume 4, Issue 6
Nov-Dec- 2026, PP 1-22

The relatively low adoption of digital library facilities (ranging from 19.23% to 46.15%) indicates that most libraries are still in the early stages of digital transformation. The low percentage of digitized rare materials (23.08%) is particularly concerning, as many teacher education colleges may possess valuable historical documents and educational materials that are at risk of deterioration.

7. ICT-Based Library Services

The survey identified the range of ICT-based services offered by the respondent libraries:

Table 7: ICT-Based Library Services Offered (N = 52)

ICT-Based Service	Institutions Providing	Percentage
Online Public Access Catalogue (OPAC)	44	84.62%
Web-OPAC (Internet-based OPAC)	34	65.38%
E-Mail Reference Service	38	73.08%
Online Document Delivery	24	46.15%
Current Awareness Service (CAS) through Email/Web	32	61.54%
Selective Dissemination of Information (SDI) through ICT	22	42.31%
Online Reservation/Renewal	30	57.69%
Institutional Repository Access	18	34.62%
Remote Access to E-Resources	24	46.15%
Digital Reference/Ask-a-Librarian	20	38.46%
Social Media Presence (Facebook, WhatsApp, etc.)	36	69.23%
Library Mobile App	8	15.38

The most widely offered ICT-based service is OPAC (84.62%), followed by e-mail reference service (73.08%) and social media presence (69.23%). The relatively high adoption of social media is a positive trend, as it enables libraries to reach users through platforms they already use regularly. However, the low adoption of library mobile apps

International Journal for Research Trends in Social Science & Humanities
ISSN: 2584-2455
Volume 4, Issue 6
Nov-Dec- 2026, PP 1-22

(15.38%) and digital reference services (38.46%) suggests that many libraries have not yet fully embraced the potential of emerging technologies.

8. Annual Budget for ICT

The annual budget allocation for ICT varies significantly across institutions:

Table 8: Annual Budget Allocation for ICT (N = 52)

Budget Range	Institutions Having	Percentage
Below ₹50,000	8	15.38%
₹50,000 – ₹1,00,000	14	26.92%
₹1,00,000 – ₹2,00,000	16	30.77%
₹2,00,000 – ₹5,00,000	10	19.23%
Above ₹5,00,000	4	7.69%

A substantial proportion of libraries (42.31%) operate with an annual ICT budget of ₹1,00,000 or less (combining 15.38% below ₹50,000 and 26.92% between ₹50,000 and ₹1,00,000), while another 30.77% fall within the ₹1,00,000 to ₹2,00,000 bracket—meaning 73.08% of libraries receive ₹2,00,000 or less annually. This allocation is relatively modest given the costs associated with hardware procurement, software licensing, subscription fees, and maintenance. Only 7.69% of libraries have a budget exceeding ₹5,00,000. This suggests that financial constraints are likely to be a significant barrier to ICT adoption for many institutions.

9. Problems in ICT Implementation

The survey identified the major problems faced by libraries in implementing ICT:

Table 9: Major Problems Faced in ICT Implementation (N = 52)

Problem	Institutions Reporting	Percentage
Inadequate Budget/Financial Constraints	46	88.46%
Lack of Skilled ICT Staff	42	80.77%
Lack of Training Opportunities	38	73.08%

International Journal for Research Trends in Social Science & Humanities
ISSN: 2584-2455
Volume 4, Issue 6
Nov-Dec- 2026, PP 1-22

Poor Internet Connectivity/Speed	32	61.54%
Problem	Institutions Reporting	Percentage
Inadequate Hardware/Software	28	53.85%
Lack of Management Support	22	42.31%
Resistance to Change among Staff	18	34.62%
Lack of User Awareness/Training	26	50.00%
Electricity/Power Issues	14	26.92%
Vendor-Related Issues	12	23.08%

The top three problems identified—inadequate budget (88.46%), lack of skilled ICT staff (80.77%), and lack of training opportunities (73.08%)—are interrelated and point to a fundamental challenge: libraries need both financial resources and human capital development to successfully implement ICT. Poor internet connectivity (61.54%) and inadequate hardware/software (53.85%) further compound these challenges.

10. Future Plans for ICT Integration

The survey also explored the future plans of respondent libraries regarding ICT:

Table 10: Future Plans for ICT Integration (N = 52)

Future Plan	Institutions Planning	Percentage
Upgrading Hardware	38	73.08%
Implementing/Upgrading Library Management Software	34	65.38%
Developing Institutional Digital Repository	28	53.85%
Providing Remote Access to E-Resources	26	50.00%
Implementing RFID Technology	22	42.31%
Developing Library Mobile App	16	30.77%
Enhancing Wi-Fi Coverage	24	46.15%
Staff Training and Development	40	76.92%

International Journal for Research Trends in Social Science & Humanities
ISSN: 2584-2455
Volume 4, Issue 6
Nov-Dec- 2026, PP 1-22

Increasing E-Resource Subscriptions	36	69.23%
Developing Digital Display/Information Kiosks	12	23.08%

The future plans reflect a strong emphasis on staff training and development (76.92%), hardware upgrades (73.08%), and e-resource subscriptions (69.23%). This is encouraging, as it suggests that libraries recognize the dual importance of technological infrastructure and human capacity building in advancing their digital transformation.

Major Findings and Discussion

Based on the empirical data gathered from 52 responding government and grant-in-aid teacher education college libraries in Gujarat State, the key findings are synthesized below:

- High Core Automation, Low Digital Repository Adoption: While 92.31% of libraries utilize Library Management Software (predominantly SOUL at 45.83% and Koha at 29.17%) and over 80% have fully automated cataloguing and circulation, only 34.62% have implemented digital library software to build institutional repositories.
- E-Resource Growth via Consortia: Subscription to e-journals (88.46%) and reliance on open access resources (84.62%) are high, supported substantially by consortia access such as N-LIST (53.85%) and DELNET. However, specialized e-databases and online reference tools require wider adoption.
- Connectivity Speed Bottlenecks: Although 100% of surveyed libraries possess internet access and 88.46% offer Wi-Fi, only 30.77% enjoy high-speed broadband above 50 Mbps, limiting multimedia and remote resource delivery.
- Service Delivery Shift: Traditional services are steadily transitioning toward OPAC (84.62%), Web-OPAC (65.38%), email reference (73.08%), and social media outreach (69.23%), yet mobile library applications (15.38%) and RFID-enabled circulation (15.38%) remain underutilized.
- Resource and Training Gaps: Inadequate funding (88.46%), shortage of ICT-skilled library staff (80.77%), and insufficient training programs (73.08%) constitute the primary barriers preventing libraries from achieving full digital maturity.

International Journal for Research Trends in Social Science & Humanities
ISSN: 2584-2455
Volume 4, Issue 6
Nov-Dec- 2026, PP 1-22

Recommendations

To accelerate the modernization of library services across government and grant-in-aid teacher education colleges in Gujarat State, the following actionable recommendations are proposed:

- Dedicated Annual ICT Budget Allocation: State higher education authorities and college managements should earmark a dedicated recurring grant for library ICT infrastructure, hardware upgrades, and e-resource renewals.
- Adoption of Open-Source Technologies: Institutions facing financial constraints should adopt cost-effective open-source platforms such as Koha for integrated library management and DSpace for building institutional digital repositories.
- Compulsory Consortia and National Platform Integration: All teacher education college libraries should actively enroll in INFLIBNET N-LIST, NDLI (National Digital Library of India), and ONOS (One Nation One Subscription) initiatives with seamless remote-access credentials for student-teachers and faculty.
- Upgrading Bandwidth and Campus Wi-Fi: Libraries should upgrade internet bandwidth to a minimum of 50–100 Mbps dedicated leased lines to support uninterrupted access to e-journals, video lectures, and Web-OPAC services.
- Continuous Capacity Building of LIS Professionals: Universities and state education departments should organize regular hands-on workshops, refresher courses, and training programs for librarians on emerging technologies, digital curation, and AI-enabled library tools.
- User Orientation and Information Literacy Programs: Libraries should conduct structured orientation sessions at the start of every academic year to train B.Ed. and M.Ed. trainees in effectively searching and utilizing authentic digital resources.

VII. Conclusion

The libraries of government and grant-in-aid teacher education colleges in Gujarat State are undergoing a significant structural and functional transition in the Information and Communication Technology environment. While foundational automation, basic hardware availability, and internet connectivity have been widely achieved across the surveyed institutions, the transition toward comprehensive digital libraries, remote

International Journal for Research Trends in Social Science & Humanities
ISSN: 2584-2455
Volume 4, Issue 6
Nov-Dec- 2026, PP 1-22

access ecosystems, and advanced ICT-enabled user services remains uneven. Addressing the core bottlenecks of financial support, bandwidth capacity, and continuous professional training will empower these 59 teacher education libraries to function as model smart learning hubs, directly enriching the pedagogical preparedness of future teachers across Gujarat.

References

1. Agrawal, A., & Singh, R. K. ICT application in academic libraries of Banaras Hindu University Library Systems.
2. American Library Association. (1983). The ALA Glossary of Library and Information Science. American Library Association.
3. David, R. (2001). Information and Communication Technologies for development.
4. Gamit, M. (2015). Impact of ICT-based e-resource library services on faculty and researchers in agricultural university libraries of Gujarat State.
5. Hussain, A. (2013). ICT-based library and information services in B-Schools in Delhi and NCR region: A case study.
6. Islam, M. S., & Islam, M. N. (2007). Use of ICT in libraries: An empirical study of selected libraries in Bangladesh. Library Philosophy and Practice.
7. Jerry, & Ramasesh, C. P. (2011). Emerging trends and technologies: Impact of ICT on libraries and LIS professionals.
8. Kadam, S. (2013). An analytical study of ICT use in engineering college libraries in Maharashtra.
9. Kalbande, D. T., Shinde, P. A., & Ingle, R. N. (2013). Use of e-resources by faculty members: A study.
10. Kannappanavar, B. U., & Rajanikanta, S. T. (2008). Effective use of e-learning materials in medical college libraries in Karnataka: A study.
11. Kude, S. (2016). Use of ICT for information services and smart librarianship.
12. Merugu, R., & Anil Kumar. (2014). ICT application in libraries of Warangal district: A study.
13. Mishra, L., & Mishra, J. (2014). ICT resources and services in university libraries. International Journal of Digital Library Services, 4(3), 243–250.
14. Okon, E. A., et al. (2005). Extent of ICT adoption in university libraries in Nigeria.

15. Patel, D., & Darbar, M. (2016). Internet usage among students at C.K. Shah Vijapurwala Institute of Management Library, Vadodara: A study.

16. Ravichandran, P. (2013). ICT-based information search patterns of students and research scholars in engineering colleges in Tamil Nadu.
17. Sampath Kumar, B. T., & Biradar, B. S. (2010). Use of ICT in college libraries in Karnataka, India: A survey.
18. Program: Electronic Library and Information Systems, 44(3), 271–282.
19. Sangale, D. B. ICT application and web-based services in library and information science.
20. Sheeja, N. K. (2010). ICT application in university libraries in Kerala, India: An investigation.
21. Singh, R. (2015). ICT and its impact on library and information services: A case study of Kendriya Vidyalaya libraries.
22. Sivakumaren, K. S., Geetha, V., & Jeyaprakash, B. (2011). ICT facilities in university libraries: A study. Library Philosophy and Practice.
23. Velmurugan, C., & Amudha, G. (2014). Use of ICT-based resources and services among users of arts and science colleges in Virudhunagar district.
24. Vijayakumar, A., & Vijayan, S. S. (2011). Application of information technology in libraries: An overview.
25. International Journal ofDigital Library Services, 1(2), 144–152.