

Study And Analysis the Impact of Ict Application on Public and University library Management and Services

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Abstract

There is a growing degree of integration between IT and ICT (information and communication technology). The internet and other communication technologies have evolved since its introduction, and university libraries in this digital age could not function without them. More specifically, the use of information and communication technologies. When it comes to the preservation, storage, and dissemination of information resources—printed or not—information and communication technologies are transforming ALL libraries, not only academic ones. Libraries are becoming more efficient and effective service providers thanks to the newest generation of information and communication technology (ICT) applications, which are also transforming librarians' work. In addition to providing library directors with additional authority, information and communication technology (ICT) in libraries facilitates the security of library materials and opens up new web-based services to patrons. Since libraries began utilising ICT more extensively, a number of developments have occurred. Their operations and the services they provide have undergone these transformations. The use of digital resources and campus technology is growing in significance for college-level coursework and research. Public libraries continue to provide community information requirements, despite decreasing ICT usage and user knowledge. Male respondents dominated library use, however female involvement was high, especially in university libraries. This development shows more women are studying and seeking information. The results show that libraries must create inclusive ICT services and digital learning environments that help men and women access information efficiently. Based on user status, students were the largest group, followed by research researchers and academics.

Keywords: *ICT application in Libraries, Information Technology (IT), Library services, Digital Age, Digital Learning Environment.*

I. INTRODUCTION

One of the many ways in which information technology is used is the phrase information communication technology. "Information and Communication Technology" is an umbrella word covering a variety of related fields and tools. In most cases, computers and information technology come together to produce information communication technology. Information technology, in its simplest form, refers to the framework and network of interrelated components that enable contemporary computing. The phrase "information and communication technology" (ICT) has no universally accepted definition. Everything that allows two or more entities to interact digitally is collectively known as "information communication technology." This includes networking components, software, and systems. "Information technology" and "information communication technology" used to be synonymous. While "information technology" encompasses a wide range of topics related to computers and digital media, "information communication technology" encompasses all of these areas and more. Two of the most fundamental aspects of ICT are these. There are two basic components: the first is concerned with information technology and the primary function of storing information resources correctly, and the second is concerned with the distribution of information via different networking devices. Because of its pervasiveness and importance, information and communication technology is fundamental to human survival. Libraries are not immune to the pervasive effects of this technology on all facets of human life. Information and communication technology's primary goals are to provide easy access to information and to promote global connection on a single platform.

1.1 Concept and Meaning of ICT

There is a growing degree of integration between IT and ICT (information and communication technology). The internet and other communication technologies have evolved since its introduction, and university libraries in this digital age could not function without them. More specifically, the use of information and communication technologies. It is now more simpler to collect, process, and transmit data thanks to advancements in information and communication technologies.

1.2 Definition of Information Communication Technology

Computing, data organisation, storage, retrieval, and dissemination are all aspects of information technology (ALA Glossary).

Data science is a subfield of computer engineering that deals with the storage, retrieval, transmission, and modification of data via the use of computers and information networks. [1] According to John Daintith's 2009 edition,

According to Wikipedia, the core of information communication technology is unified communications, which involves the integration of computers, telecoms (wireless signals and phone lines), corporate software, storage, middleware, and audiovisual. These enable users to retrieve, save, transmit, and edit data.

1.3 Why are needs of information communication technology in library?

Information and communication technology (ICT) is expanding rapidly and is utilised by numerous individuals due to its pervasiveness and wide range of applications in sectors including education, healthcare, and business. Data handling by hand has also become more challenging due to the massive volume of data. Any library is susceptible to this. Using information and communication technologies is crucial for managers. Everything that is known about a topic may be found in a library's collection of books, periodicals, and other written works. Given this context, libraries must immediately begin implementing ICT strategies. Libraries should prioritise adopting information and communication technologies for the following reasons:

- Due to information explosion
- New uses for information and communication technologies
- Information resources' ever-increasing costs
- Day to day shrink library budget
- Due to changing user's information needs

1.4 Components of information communication technology:

These are the following components of information communication technology –

- 1.4.1 Computer Technology:** A "computer" is an electronic device that can store and retrieve large amounts of data or information entered by multiple users at any given moment and from any location. It processes millions of bits of data per second, far outpacing the brain's processing speed. A computer is just another name for a man-made gadget that can process numerical data. You have 24/7 access to the millions of records it can store and process. The hardware and software components of a computer are its two primary elements. Hardware refers to the many components that make up a computer, such as the keyboard, mouse, and display. In contrast, software is a collection of instructions that explains to hardware how and what to do.
- 1.4.2 Communication Technology:** An additional vital component of ICT is communication technology. Information technology stands for communication technology. The term "communication technology" encompasses any and all systems, tools, and software that facilitate the transfer of information from one person to another. Internet, multimedia, email, telephone, and other comparable audiovisual communication tools are all part of communication technology. Modern civilisation and library and information centre advancements are largely attributable to the pervasive impact of communication technologies, which have undergone rapid growth in the field of information and communication technology. It has an impact on every facet of human existence, not only libraries and information centres.
- 1.4.3 Multimedia Technology:** One subset of communication technology is multimedia. However, multimedia technology has some fundamental differences. for example, audiovisual, textual, etc. The primary function of multimedia technology is the broadcast of information via the use of various computer-based applications that include text, video, sound images, and animation. Playing a key role in the distribution of information in many formats is essential. Users are able to share ideas and information across several platforms using these technologies.

II. USE OF ICT IN PUBLIC AND ACADEMIC LIBRARIES

Libraries at universities are sometimes referred to as "knowledge centres." It benefits consumers and safeguards information resources for users both now and in the future. This is due to the fact that libraries are increasingly using information and communication technologies to enhance their services and accomplish other goals, since these tools are gaining widespread usage. Improving library services relies heavily on information and communication technologies. According to Singh, A. (2015) [2], libraries have become hubs for information access via the use of various forms of information and communication technology, allowing patrons to access books whenever and wherever they need them. With libraries being open around the clock, patrons have access to books, databases, and other resources whenever they need them. Additionally, libraries provide a central

location from which to access a wealth of information. Many online resources and conventional library cards are available now as a result of the proliferation of information and communication technologies. The use of information technology in libraries has several benefits, including improved learning outcomes and time savings for patrons and staff alike.

2.1 Application of ICT in Libraries in Bundelkhand Region.

There are a lot of occupations that rely on libraries and the internet and other technology that we use on a daily basis. It is essential that all college libraries utilise information and communication technology for their everyday activities if they want to stay up with the latest applications and features. Users' information and preference demands are evolving, so libraries must swiftly implement apps, according to many research. Libraries in the Bundelkhand region, whether public and academic, will feel the effects of this. Further investigation confirmed that the majority of libraries in the Bundelkhand region make use of information technology in order to better assist their patrons. Ehikioya, Simeon, and Eseoh (2014). For tasks such as collecting books, renting them out, arranging them, and tracking their serial numbers, libraries rely on application information and communication technology.[3] Checking that university libraries have the proper digital resources and analysing their ICT usage (Joshi, 2015)[5].

2.2 Impact of ICT on Library Environment

The proliferation of information and communication technologies is one factor necessitating a reevaluation of these offerings. When it comes to the preservation, storage, and dissemination of information resources—printed or not—information and communication technologies are transforming ALL libraries, not only academic ones. The utilisation of new forms of information and communication technology (ICT) applications in libraries is revolutionising librarians' work processes, leading to enhanced library services and increased productivity (Spacey, Goulding & Murray, 2003)[4]. Library directors gain authority and patrons benefit from new web-based services made possible by information and communication technology (Islam & Islam, 2006)[6]. Since libraries began utilising ICT more extensively, a number of developments have occurred. Their operations and the services they provide have undergone these transformations. These days, no library can function efficiently without incorporating technology into its knowledge exchange and operational processes. Both library patrons' information needs and the methods libraries utilise to promote their services are dynamic and ever-evolving.

III.OBJECTIVES OF THE STUDY

1. To study on application of ICT in Public & University libraries in Bundelkhand Region.
2. To study on impact of ICT on library environment.

IV.RESEARCH METHOD

4.1 Research Design

Study research strategies should be carefully considered as they influence data collection and analysis methods, as well as the validity and trustworthiness of the findings in relation to the research objectives. This study's optimal research strategy is to investigate the

Researchers in the Bundelkhand region utilised a descriptive research design to investigate how various public and academic libraries have incorporated ICT and what effects this has had. The study's aims, the composition of the research team, and the feasibility of data collection informed this decision.

4.2 Research Sample

This study's overarching goal is to evaluate the impact of ICT on public and university libraries in the Bundelkhand region so that we may better comprehend this phenomenon. This area encompasses a part of Uttar Pradesh. This specific study endeavour includes examining libraries located in Jhansi, Lalitpur, Banda, Chitrakoot, and Orai. India is home to these libraries.

An investigation of the current situation of ICT use in Public and University libraries in Bundelkhand region was one of the original goals of the project. Nevertheless, despite this, the scope was strategically adjusted to account for the challenges of accessing reliable data and to guarantee the website's feasibility. Libraries, both public and university, in the Bundelkhand region were the subject of this study. The region is known for its semi-urban and rural populations and the significant role that information and communication technology plays in helping close the knowledge gap there. We wanted to know how this integration would play out, so we did the research.

In order to conduct a thorough investigation, a total of ten libraries were selected. These libraries are as follows:

Public Libraries:

1. Jhansi public library
2. Lalitpur public library
3. Banda public library
4. Chitrakoot public library
5. Orai public library

University Libraries:

1. Bundelkhand University- Jhansi
2. Rani laxmibai central agriculture University- Jhansi
3. JagadguruRambhadracharyaDivyanga State University, Chitrakoot
4. Mahatma Gandhi chitrakootgramodayavishwavidyalaya, Chitrakoot
5. Banda University of Agriculture and Technology, Banda

V. DATA COLLECTION TOOLS

To get thorough, valid, and contextually relevant results for a research investigating the effects of ICT on public and university libraries in the Bundelkhand area, the selection and layout of data gathering instruments are crucial. It was decided to use a mix of structured questionnaires, systematic field observations, and informal interviews due to the variety of the target population and the complexity of the study aims. This study's credibility and reliability are bolstered by its multi-method approach, which captures both quantitative and qualitative features to enrich the data and validates conclusions via triangulation (Dutta, Bimal Kumar ,1970) [9].

Structured questionnaires were designed to meet the study aims and hypotheses and were used as the main method for data collection. Thorough and iterative procedures were used in the design of these surveys. The initial stage involved doing a comprehensive literature study on library ICT, including user studies and the methodologies employed in comparable cases in India and beyond. Thanks to this lesson, we now know what kinds of questions are most often asked, what factors influence user satisfaction and ICT acceptability, and where our surveys may have fallen short, such as in rural areas like Bundelkhand.

5.1 Data Recording and Statistical Analysis

A well-crafted observation checklist was used to systematically record initial replies from participants throughout the fieldwork phase and interview processes. This method of hand-written notes helps keep the data comprehensive and rich from the start by preventing the loss of crucial contextual elements, non-verbal clues, and qualitative insights. The approach of documenting information as it happened during interviews and visits helped reduce recollection bias and ensured accurate data input afterwards. Data integrity was ensured by conducting a comprehensive verification procedure prior to applying any statistical tests. In order to find and fix inconsistencies or mistakes in data input, the Excel dataset was compared to the original handwritten records. To do this, we compared the main field notes with the statistics and category codes, paying close attention to detail in each field. In order to lessen the possibility of bias and strengthen the analysis's credibility, such verification was crucial. Since it is compatible with structured survey data and has powerful statistical capabilities, SPSS version 20.0 was chosen for the final analysis phase. Mean, median, and standard deviation were among the descriptive statistics computed as part of the statistical analysis, which served to describe the answers' major patterns and variances. Further, inferential statistical tests were performed to determine the significance of correlations between various independent factors and dependent variables, such as library type, user demographics, and frequency of ICT usage and user happiness. The results of these tests allowed researchers to evaluate their hypotheses and look for trends in the data.

VI. RESULT AND DISCUSSION

6.1 Gender-Wise Responses

Table 6.1 Gender-wise Responses

S. No.	Name of Libraries	Male	Female	Total
1	Jhansi Public Library	49	31	80
2	Orai Public Library	43	26	69
3	Banda Public Library	40	24	64
4	Chitrakoot Public Library	37	23	60
5	Lalitpur Public Library	41	24	65
6	Central Library, Bundelkhand University, Jhansi	70	43	113
7	Central Library, Rani Lakshmbai Central Agricultural University, Jhansi	65	41	106

8	Central Library, Jagadguru Rambhadracharya Divyanka State University, Chitrakoot	57	35	92
9	Central Library, Banda University of Agriculture and Technology, Banda	59	37	96
10	Central Library, Mahatma Gandhi Chitrakoot Gramodaya Vishwavidyalaya, Chitrakoot	51	34	85
	Total	512	318	830

Jhansi Public Library documented 80 respondents, comprising 49 males and 31 females. The Orai Public Library had 69 responses, comprising 43 males and 26 females. The Banda Public Library provided 64 respondents, including 40 males and 24 females. Chitrakoot Public Library documented 60 respondents, whereas Lalitpur Public Library noted 65 respondents, including 41 males and 24 females. These statistics reflect modest engagement among public library patrons in the area.

Bundelkhand University Central Library had the greatest number of responders among university libraries, with 113 participants including 70 males and 43 females. The Central Library of Rani Lakshmbai Central Agricultural University documented 106 responses,

consisting of 65 males and 41 females. These universities had superior responder involvement relative to the majority of public libraries, signifying an elevated degree of academic engagement and library consumption among university patrons. The Central Library of Jagadguru Rambhadracharya Divyang State University came up with 92 responses. Out of this total, 57 were male and 35 were female. Banda University of Agriculture and Technology's Central Library recorded 96 responses, including those from 37 women and 59 males. Out of the 85 respondents, 51 are male and 34 are female, and they are all gathered at the Central Library of Mahatma Gandhi Chitrakoot Gramodaya Vishwavidyalaya. The statistics show that college library patrons, whether male and female, are equally engaged and fair. The analysis indicates that university libraries garnered a greater number of respondents compared to public libraries. Male respondents were the majority of the sample; yet, female respondents constituted a significant fraction of the research population. The findings indicate a growing knowledge and use of library services among both genders, especially in higher educational institutions in the Bundelkhand area.

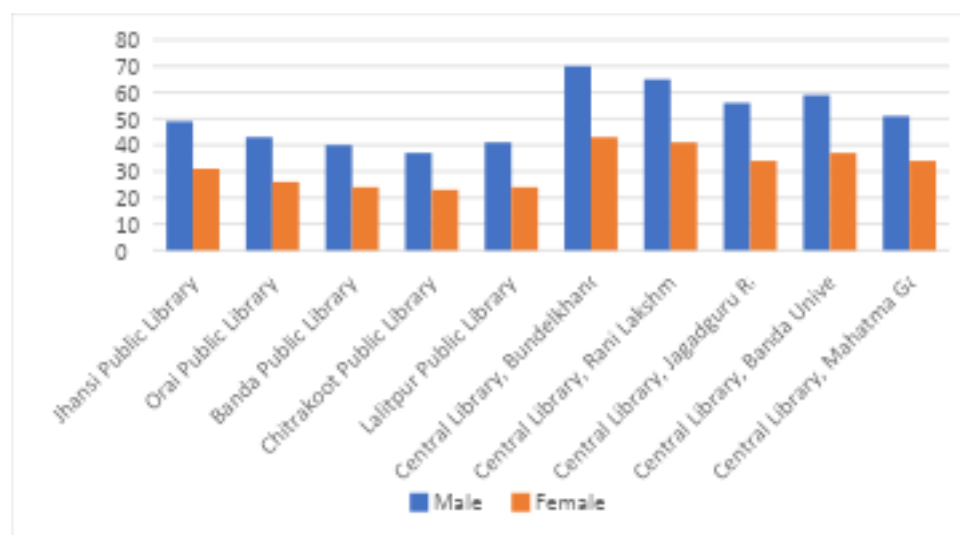


Figure 1 Gender-wise Responses

6.2 Status of User

The table 6.2 illustrates the distribution of respondents categorized by type from designated public and university libraries in the Bundelkhand area. Students, study researchers, and faculty members were the three categories that participated. The total number of participants was 830, including 534 students, 215 researchers, and 81 employees. The majority of responses were certainly students, according to the data. This demonstrates that students primarily utilise libraries to complete school assignments, prepare for exams, and gain access to educational resources.

Jhansi Public Library documented 80 replies, comprising 60 students, 20 research researchers. The Orai Public Library surveyed 69 respondents, comprising 51 students, 18 research researchers. Likewise, Banda Public Library and Chitrakoot Public Library saw greater engagement from students in comparison to research scholar. The Lalitpur Public Library exhibited a similar pattern with 49 student responders and 16 research scholar,

demonstrating that public libraries are extensively utilized by students for educational and informational objectives.(Islam, S. and Islam, N. , 2006)[6]

Bundelkhand University Central Library had the greatest number of responders among university libraries, totaling 113 participants, which included 65 students, 30 research researchers, and 18 faculty members. At Rani Lakshmi bai Central Agricultural University's Central Library, 106 people have taken the time to answer. The largest group, including 60 individuals, consists of students. According to the findings, university libraries play a crucial role in assisting both students and professionals in their academic pursuits.

In addition, faculty and staff personnel were less active than students at Banda University of Agriculture and Technology, Mahatma Gandhi Chitrakoot Gramodaya Vishwavidyalaya, and Jagadguru Rambhadracharya Divyang State University. Despite the considerably reduced number of research scholars relative to students, their involvement remained substantial, underscoring the critical role of libraries in supporting research and academic endeavors. Faculty engagement was rather restricted across all libraries, suggesting less reliance on physical library visits or increased dependency on digital resources.

The analysis indicates that students constituted the predominant user group in both public and university libraries, including 534 respondents from the whole sample. Research researchers were the second-largest category with 215 answers, and faculty members represented the smallest group with 81 respondents. The results underscore the pivotal function of libraries in facilitating the academic and research requirements of students and scholars in the Bundelkhand area.

Table 6.2 Status of User

S. No.	Name of Libraries	Students	Research Scholars	Faculty	Total
1	Jhansi Public Library	60	20	00	80
2	Orai Public Library	51	18	00	69
3	Banda Public Library	47	17	00	64
4	Chitrakoot Public Library	45	15	00	60
5	Lalitpur Public Library	49	16	00	65
6	Bundelkhand University Central Library	65	30	18	113
7	Rani Lakshmbai Central Agricultural University	60	28	18	106
8	Jagadguru Rambhadracharya Divyanka State University	52	24	16	92
9	Banda University of Agriculture and Technology	56	25	15	96
10	Mahatma Gandhi Chitrakoot Gramodaya Vishwavidyalaya	49	22	14	85
	Total	534	215	81	830

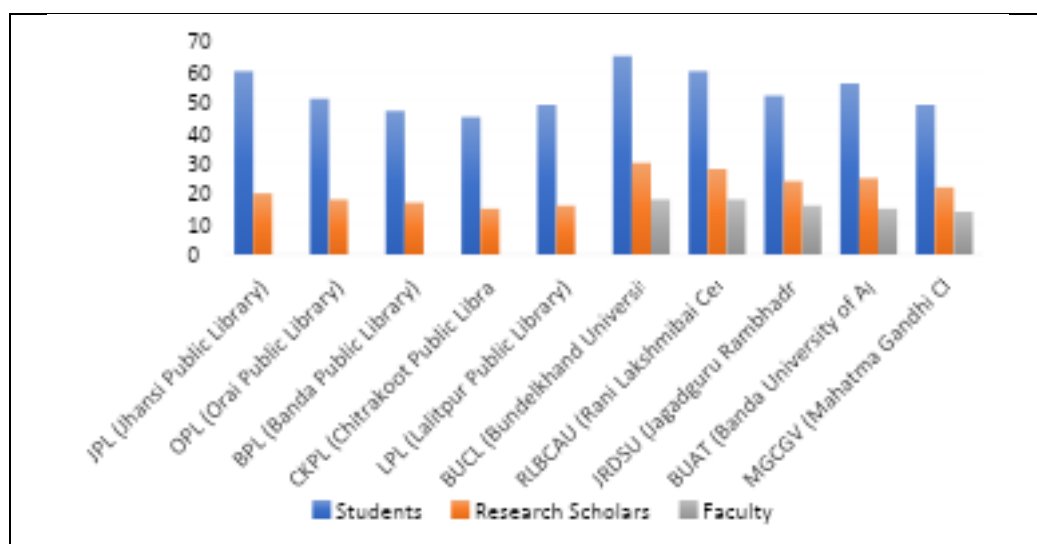


Figure 2 Statuses of Users

6.3 Awareness of the ICT based services in library

The level of knowledge about information and communication technology (ICT) services in Bundelkhand area libraries is shown in Table 6.3. Table shows the level of awareness of ICT-based library services among 830 respondents from selected public and university libraries in the Bundelkhand region. The results indicate that Web OPAC recorded the highest overall mean score (3.96), demonstrating that most users are familiar with online catalog systems used to search library materials.(Lawal, O. O., & Udofia, U. I. , 1994) [7].

The awareness of E-learning services (3.69) and SMS alert services (3.53) is also relatively high, indicating that users are increasingly utilizing digital learning platforms and mobile-based notification services provided by libraries. Moderate awareness levels are observed for book reservation services (3.45), current awareness services (3.40), and institutional repository services (3.38). These services are known to many respondents but may not yet be widely utilized (Sathikumar, C. S. ,1993) [8].

It appears that many consumers do not have a thorough understanding of these specialist information and communication technology services, as seen by the lower knowledge levels for electronic document delivery services (3.25) and SDI services (3.16).Library patrons at universities with higher mean values are more likely to be familiar with information and communication technology (ICT) services; this is especially true at BUCL, RLBCAU, and BUAT. Conversely, public libraries such as CKPL, BPL, and OPL possess a lesser amount of information. This can be due to a lack of user training sessions or adequate information and communication technology (ICT) equipment. As a whole, the data demonstrates that consumers are conversant with fundamental information and communication technology services, such as online public access catalogues and online education. Nevertheless, libraries should continue to advocate for increasingly sophisticated information and communication technology services by holding user education programmes, seminars, and orientation sessions to raise awareness and encourage patrons to make use of them (Jagdish, M., 1979 [10]).

Table 6.3 Awareness of the ICT based services in library

S. N o.	Name of Libraries	E- Learning	Institution al Repositor y	Current Awareness	Web OP AC	Electro nic Docume nt Delivery	SDI Servi ce	SMS Alert	Book Reserva tion	Mea n Val ue
1	JPL	3.52	3.21	3.30	3.85	3.05	3.00	3.41	3.28	3.33
2	OPL	3.44	3.10	3.22	3.76	3.01	2.95	3.35	3.20	3.25
3	BPL	3.36	3.05	3.14	3.70	2.98	2.90	3.28	3.15	3.20
4	CKPL	3.28	2.98	3.05	3.60	2.90	2.88	3.20	3.10	3.12
5	LPL	3.40	3.06	3.18	3.72	2.96	2.92	3.26	3.18	3.21
6	BUCL	4.10	3.82	3.75	4.35	3.68	3.54	3.90	3.86	3.88
7	RLBCAU	4.05	3.76	3.70	4.30	3.60	3.48	3.84	3.78	3.81
8	JRDSU	3.92	3.60	3.55	4.12	3.45	3.30	3.70	3.65	3.66
9	BUAT	3.96	3.66	3.60	4.18	3.50	3.35	3.75	3.70	3.71
10	MGCGV	3.88	3.54	3.48	4.05	3.40	3.25	3.66	3.60	3.61
	Total Mean	3.69	3.38	3.40	3.96	3.25	3.16	3.53	3.45	3.48

Table: 6.3 Chi-Square Test Showing Variations in ICT-Based Services among Selected Libraries

Library Service	χ^2 Value	df	Asymp. Sig. (2-sided)
E-Learning Service	246.318	9	.000*
Institutional Repository Service	201.447	9	.000*
Current Awareness Service	215.662	9	.000*
Web OPAC	268.905	9	.000*
Electronic Document Delivery Service	233.174	9	.000*
SDI Service	219.506	9	.000*
SMS Alert Service	224.381	9	.000*
Book Reservation Service	238.742	9	.000*

Note:

χ^2 = Pearson Chi-Square value

df = Degree of Freedom

Significant at 0.05 level

To determine if the selected libraries significantly differ in their provision of information and communication technology (ICT) services, the Chi-square test was employed. For every service, the asymptotic significance values are .000, which is statistically significant at the 0.05 level or below. That the number of persons using the various information and communication technology services offered by the libraries varies significantly from one another is supported by statistical evidence. The capacity to reserve books, electronic document delivery, web-based public access catalogue (OPAC), current awareness services, SDI services, SMS alerts, and e-learning are all examples of information and communication technology (ICT) services. Because of this, we may conclude that the libraries under investigation do, in fact, make use of information and communication technology services to varying degrees, and reject the null hypothesis.

VII. CONCLUSION

The present study assessed ICT-based service use and awareness among Bundelkhand public and university library users. University libraries have better user involvement and ICT service engagement than public

libraries. Digital resources and technology facilities are increasingly important for higher education academic and research operations. Public libraries continue to provide community information requirements, despite decreasing ICT usage and user knowledge. Male respondents dominated library use, however female involvement was high, especially in university libraries. This development shows more women are studying and seeking information. The results show that libraries must create inclusive ICT services and digital learning environments that help men and women access information efficiently. The majority of users were students, with researchers and academics following closely after. This highlights the significance of libraries for academic purposes, including research, exam preparation, and schoolwork. The growing number of patrons at Bundelkhand's university libraries is indicative of the vital role these institutions play in the state's academic landscape. In terms of information and communication technology (ICT) services, the survey found that most respondents were familiar with Web OPAC, E-learning platforms, SMS alert systems, and the capacity to make bookings. People are becoming more adept at utilising online catalogues to locate library materials, as indicated by Web OPAC having the highest mean score. There has to be an increase in user-centered and ICT-literate programming as fewer people are familiar with SDI services and electronic document exchange. It was found using the Chi-square test that the selected libraries provide and utilise ICT-based services in diverse ways. Since every level of significance was lower than 0.05, we may conclude that the null hypothesis is not correct. This suggests that Bundelkhand public and university libraries deploy ICT infrastructure and digital library services differently. The study indicates that ICT-based library services are essential to modern library systems and improve information access, learning, and research. Libraries should build ICT infrastructure, run frequent user awareness and training programs, promote digital resource accessibility, and encourage all users to adopt sophisticated ICT services to improve these services.

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