Digital Services in Focus & User Awareness and Satisfaction in Private and Government Medical College Libraries of Bihar: A Study

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Abstract

This study investigates user awareness and satisfaction regarding digital (ICT) services in private and government medical college libraries across Bihar. Employing a comparative approach, data were collected from undergraduate students, postgraduate students, and teaching faculty in eight medical colleges. The findings reveal exceptionally high awareness of ICT services among all user groups, with circulation services consistently achieving the highest satisfaction rates (average 77.2%). Reference and book reservation services also performed well, while advanced research-oriented services such as CAS/SDI and bibliographic tools showed lower but institutionally varied adoption and satisfaction. Notably, private institutions generally excelled in basic service satisfaction, whereas government colleges demonstrated stronger performance in specialized academic and research services. Faculty members reported higher satisfaction levels than students across most service categories, indicating tailored support for academic staff. The study highlights the need for enhanced promotion and training for advanced digital services, especially among students, and recommends targeted strategies to bridge the gap between service availability and effective utilization. These insights can guide library administrators and policymakers in optimizing digital resource delivery, ensuring equitable access, and advancing the quality of medical education in Bihar.

Keywords: Digital Services, User Awareness, User Satisfaction

1. Introduction

The landscape of academic libraries is rapidly evolving, especially in the context of medical education where timely access to accurate information is crucial. In Bihar, both private and government medical college libraries are increasingly embracing digital services to meet the diverse needs of their users. Digital or ICT (Information and Communication Technology) services in libraries refer to the use of computers, internet connectivity, e-resources, and automation tools to provide seamless access to information, supporting students, faculty, and researchers in their academic pursuits [1].

Traditionally, medical college libraries in Bihar have relied heavily on print collections, but there is a growing emphasis on developing robust digital collections and automated services. For instance, the

Central Library at AIIMS Patna offers thousands of e-books and e-journals, providing remote access to digital resources that support teaching, learning, and research activities [2]. The state government has also initiated efforts to integrate e-library facilities across universities and colleges, aiming to make digital resources accessible to a wider academic community. This shift is not only about convenience but also about ensuring equitable access to high-quality, up-to-date information for all users, regardless of their location or institutional affiliation.

Awareness and usage of digital services, however, vary significantly among users. Studies have shown that while many students and faculty members are aware of the existence of digital resources, actual usage and satisfaction levels depend on several factors, including the quality of internet connectivity, user training, and the perceived relevance of available resources [3]. For example, research conducted at the Central University of Jharkhand highlighted that although RFID-based automated services and digital collections are available, challenges such as low internet connectivity and lack of awareness limit their effective use, resulting in only moderate satisfaction among users. Similarly, a study on the use of ICT in medical college libraries emphasized the need for continuous user education and infrastructure improvement to maximize the benefits of digital services [4].

User satisfaction is closely linked to the quality and usability of digital library services. Factors such as system reliability, ease of access, and responsive support from library staff play a significant role in shaping user experiences [5]. When digital library platforms are intuitive and resources are easily discoverable, users are more likely to engage with them and express higher levels of satisfaction. Conversely, complicated interfaces and outdated content can lead to frustration and underutilization of digital services.

The ongoing transformation of libraries in Bihar reflects a broader trend towards hybrid models that blend traditional and digital resources, aiming to bridge the gap between past practices and future needs. As digital services become an integral part of library offerings, it is essential to regularly assess user awareness and satisfaction to ensure that these services truly enhance the academic environment [6]. This comparative study seeks to explore how users in private and government medical college libraries in Bihar perceive and utilize digital services, and what factors influence their satisfaction levels. Understanding these dynamics will help libraries tailor their digital strategies to better serve their communities and support the advancement of medical education in the state.

2. Literature Review
2.1 Overview of Digital and ICT Services in Academic Libraries
The integration of Information and Communication Technology (ICT) has fundamentally transformed academic libraries, shifting them from traditional, print-based repositories to dynamic digital knowledge hubs. ICT applications in libraries have automated core functions such as acquisition, cataloguing, circulation, and reference services, making information retrieval faster, more efficient, and cost-effective [9]. Modern academic libraries now leverage online public access catalogues, digital repositories, virtual reference services, and multimedia content delivery to expand access and enhance user experience [10]. This digital transformation enables libraries to offer 24/7 remote access, user-friendly interfaces, and seamless integration with other digital libraries, ultimately breaking down physical and temporal barriers to information [11].

The evolution of digital library services is not only about technological advancement but also about meeting the changing expectations of users in a digital age. Digital libraries provide access to vast amounts of information, support multimedia content, and enable cross-domain sharing and collaboration. These services are designed to be scalable, user-centric, and adaptable, ensuring that academic libraries remain relevant and responsive to the needs of students, faculty, and researchers [13].

2.2 Trends and Challenges in User Awareness and Satisfaction with Digital Library Services

Recent trends indicate a growing emphasis on user studies to understand the diverse requirements and expectations of digital library users. As technological innovations proliferate, user awareness and satisfaction have become central to library service evaluation and improvement. Studies have shown that ease of navigation, personalization, and clear instructions are critical factors influencing user satisfaction with digital libraries. Users who can tailor their digital library experience and engage with community features report higher levels of satisfaction [14].

Many users still face difficulties in navigating digital platforms, and there is often a gap between the services offered and users' awareness or ability to utilize them effectively. Technological issues such as slow loading times, limited accessibility, and outdated content can negatively impact user satisfaction. To address these challenges, libraries must invest in user training, seek regular feedback, and continuously update their digital interfaces to align with user expectations [14].

Comparative Studies in Private vs. Government Academic Libraries

Comparative research on academic libraries in different institutional contexts reveals both commonalities and distinctions in service provision and user satisfaction. A study of higher educational institutions in Motihari, Bihar, found that both private and government academic libraries offer a good collection of resources and user-oriented services, but face unique challenges in delivering quality digital services [15]. Private institutions often have better funding and infrastructure, enabling more advanced digital offerings, while government libraries may struggle with resource constraints but serve a broader and more diverse user base.

Such comparative analyses highlight the importance of context-specific strategies for digital service enhancement. They also underscore the need for equitable access to digital resources, particularly in regions where disparities in funding and infrastructure can create a digital divide among academic institutions [16,17].

2.3 Key Factors Influencing User Satisfaction (Information Quality, System Quality, Service Quality)

User satisfaction with digital library services is multifaceted, shaped by the interplay of information quality, system quality, and service quality. Information quality refers to the relevance, accuracy, completeness, and timeliness of the resources provided. Studies have consistently shown that high-quality, up-to-date information is a strong predictor of user satisfaction and continued usage. System quality encompasses the accessibility, reliability, and user-friendliness of digital platforms. Easy navigation, remote access, and responsive interfaces are essential for positive user experiences [18].

Service quality involves the support provided by library staff, the availability of help tools, and the overall responsiveness to user needs [19]. Personalized assistance, prompt customer support, and clear

communication significantly enhance user satisfaction. Evaluations using models such as SERVQUAL and LibQUAL+ have demonstrated that improvements in these three dimensions lead to higher levels of user engagement and loyalty [20].

2.4 Barriers to Effective Use of Digital Services

Despite the benefits of digital library services, several barriers hinder their effective implementation and utilization [21]. Common challenges include inadequate funding, insufficient technical infrastructure, lack of skilled staff, and unreliable internet connectivity. In developing regions, these issues are often compounded by low digital literacy, limited awareness of digital library benefits, and organizational resistance to change. Intellectual property concerns, copyright issues, and the high cost of digital resources further complicate access and usage [22].

Addressing these barriers requires coordinated efforts at multiple levels, including policy development, investment in infrastructure, staff training, and user education. Libraries must also foster collaborations with IT departments and external partners to ensure sustainable digital transformation and inclusive access to digital services [23].

3. Research Methodology

Data were collected via the structured distribution of questionnaires, ensuring the acquisition of relevant information necessary for the study. The collected data were digitized and processed using Microsoft Office tools, with Microsoft Excel spreadsheets employed for the calculation of percentages. Each questionnaire item was systematically tabulated, and overall response rates were computed as percentages. To explore associations between various library resources and services, the results were depicted through tables and graphical representations. The entire investigation was directed by clearly defined objectives and hypotheses, and a range of parameters was utilized in constructing the statistical tables for comprehensive analysis.

4. Objective of Study

The objective of this study is to examine the User Awareness and Satisfaction in Private and Government Medical College Libraries of Bihar.

5. Limitation of Study

The study was confined to a purposive selection of eight medical colleges in Bihar, comprising four private and four government institutions. The colleges included in the investigation are as follows:

Table: 1: List of Medical College for Study

Sr. No	Name of College	Status
1.	Patna Medical College, Patna,	Govt.
2.	Darbhanga Medical College, Darbhanga	Govt.
3.	Anugrah Narayan Magadh Medical College, Gaya	Govt.
4.	Shri Krishna Medical College, Muzaffarpur	Govt.
5.	Lord Buddha Koshi Medical College and Hospital, Saharsa	Trust
6.	Katihar Medical College, Katihar	Trust
7.	Mata Gujri Memorial Medical College, Kishanganj	Trust
8.	Narayan Medical College & Hospital, Sasaram	Trust

6. Discussion

1.1 Awareness of the ICT services offered by the library to its users

**Figure 1: Awareness of ICT in Medical College**
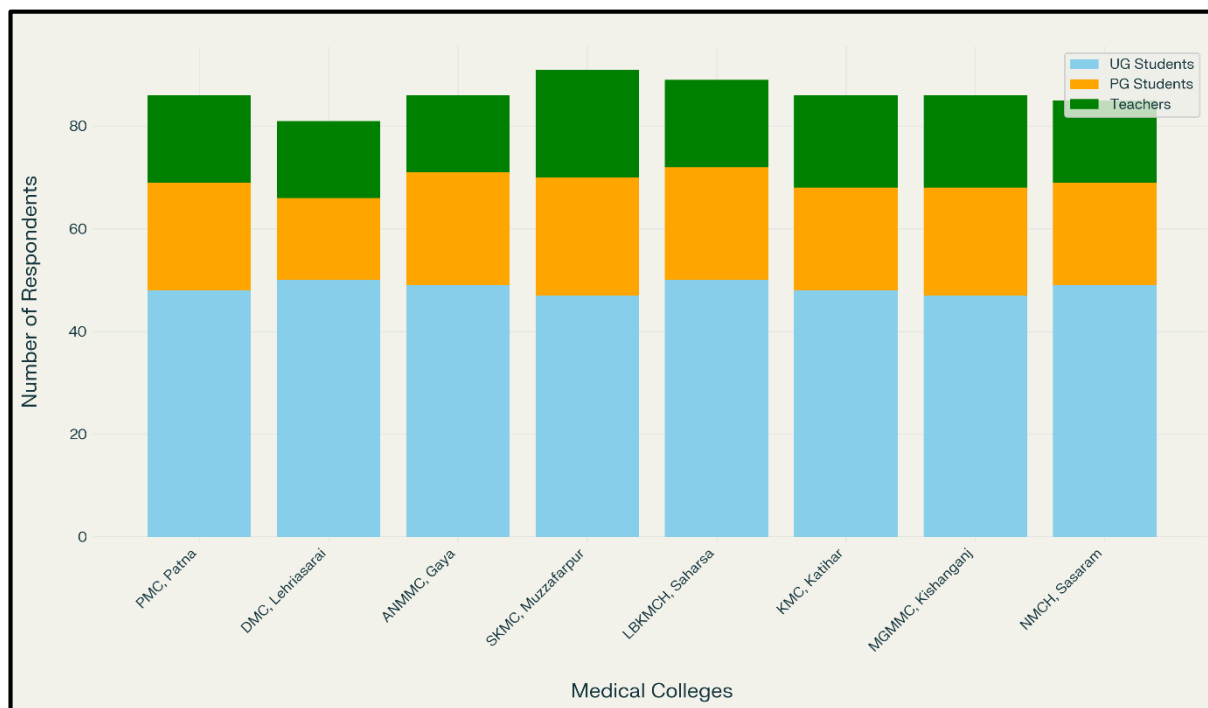
Key Observations

1. **Uniform Awareness**: All colleges report **100% awareness** of ICT services, which is statistically unusual. This could indicate:

- Exceptional institutional effectiveness in promoting digital services.

- Limitations in data collection (e.g., biased sampling or self-reporting inaccuracies).

2. **Respondent Distribution**:

- UG students form the largest user group surveyed (range: 47–50 respondents per college).

- Teacher participation varies widely (15–21 respondents), suggesting differences in faculty engagement or library outreach strategies.

3. **Lack of Variability**: The absence of any "No" responses raises questions about survey design (e.g., binary yes/no options without nuance) or potential response bias.

6.2 Detailed Comparative Analysis of ICT Service Satisfaction in Bihar Medical College Libraries

This comprehensive analysis examines user satisfaction levels across eleven distinct ICT services in eight medical college libraries throughout Bihar, encompassing undergraduate students, postgraduate students, and teaching faculty responses from Table 25 data.

6.2.1 PMC, Patna: Baseline Reference Institution

Figure 2: User Satisfaction in PMC, Patna
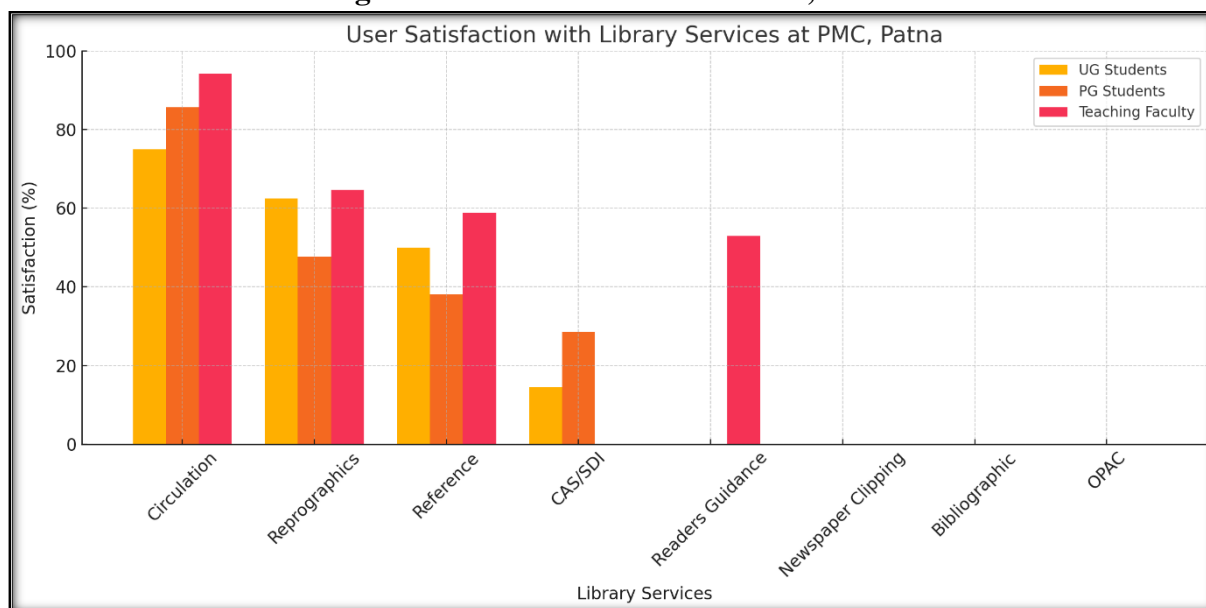
PMC, Patna demonstrates a mixed satisfaction profile across its user categories. Among **UG students (48 respondents)**, circulation services achieve the highest satisfaction at 75% (36 students), followed by reprographics services at 62.5% (30 students). Reference services show moderate satisfaction at 50% (24 students), while specialized services like CAS/SDI services lag significantly at 14.6% (7 students). Notably, newspaper clipping services, bibliographic services, and OPAC services show zero satisfaction, indicating potential service gaps or lack of awareness.

PG students (21 respondents) at PMC display higher satisfaction rates across most services. Circulation services lead with 85.7% satisfaction (18 students), significantly outperforming UG satisfaction. Reference services achieve 38.1% (8 students), while reprographics services reach 47.6% (10 students). Advanced services like CAS/SDI show improved uptake at 28.6% (6 students) compared to UG students, suggesting greater research orientation among postgraduates.

Teaching faculty (17 respondents) exhibit the highest satisfaction levels at PMC. Circulation services achieve exceptional 94.1% satisfaction (16 teachers), while reprographics services reach 64.7% (11 teachers). Reference services show robust 58.8% satisfaction (10 teachers), and readers guidance services achieve 52.9% (9 teachers). However, advanced research services like CAS/SDI and OPAC services show zero satisfaction, indicating potential gaps in faculty research support systems.

1.2.2 DMC, Lehriasarai: Government Institution Analysis

**Figure 3: User Satisfaction in DMC, Darbhanga**
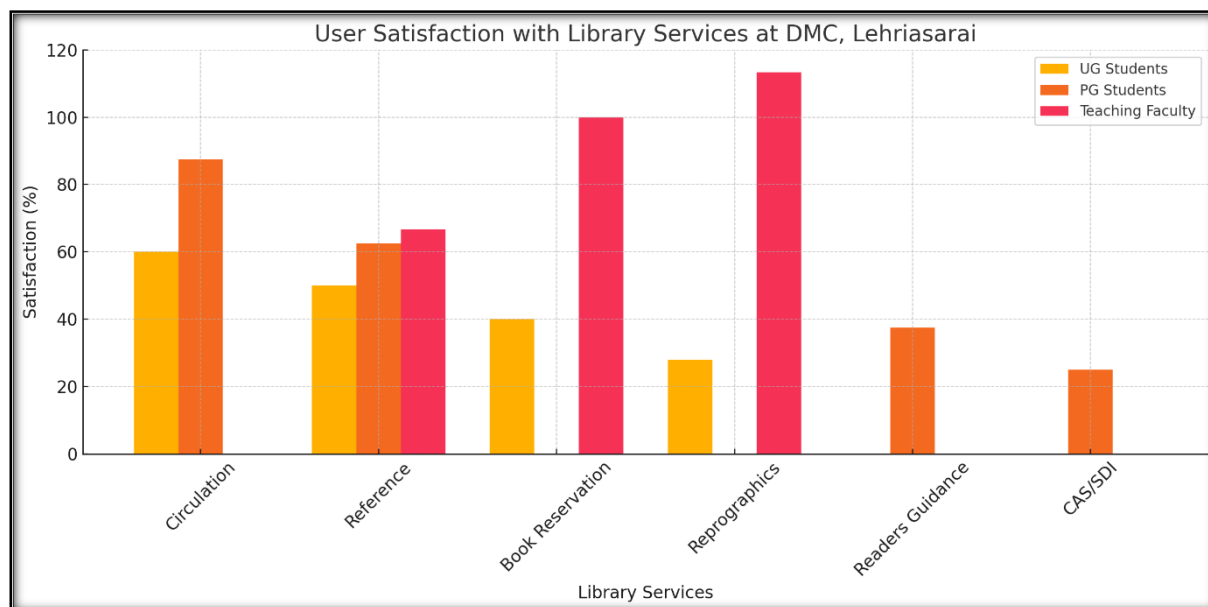
DMC, Lehriasarai presents contrasting satisfaction patterns. **UG students (50 respondents)** show moderate satisfaction with circulation services at 60% (30 students) and reference services at 50% (25 students). Book reservation services achieve notable 40% satisfaction (20 students), higher than PMC. However, reprographics services lag at only 28% (14 students), suggesting resource constraints typical of government institutions.

PG students (16 respondents) demonstrate higher engagement, with circulation services reaching 87.5% satisfaction (14 students) and reference services at 62.5% (10 students). Remarkably, readers guidance services show strong 37.5% satisfaction (6 students), and CAS/SDI services achieve 25% (4 students), indicating better research support infrastructure than anticipated.

Teaching faculty (15 respondents) show exceptional performance in several categories. Reference services achieve 66.7% satisfaction (10 teachers), while book reservation services reach remarkable 100% satisfaction (15 teachers). Most striking is the reprographics service satisfaction at 113.3% (17 responses), suggesting either multiple responses per faculty member or exceptional service utilization.

6.2.3 ANMMC, Gaya: Government Institution Excellence

Figure 4: User Satisfaction in ANMMC, Gaya
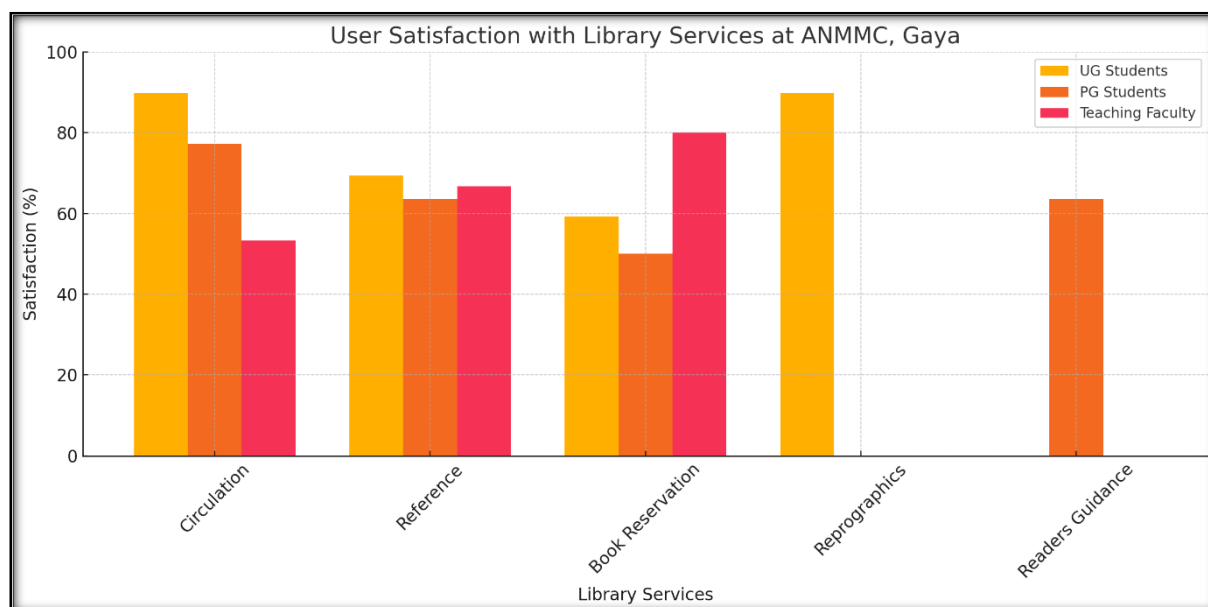
ANMMC, Gaya demonstrates superior satisfaction levels across multiple services. **UG students (49 respondents)** achieve outstanding circulation service satisfaction at 89.8% (44 students), the highest among all institutions analyzed. Reference services reach 69.4% (34 students), while book reservation services achieve solid 59.2% (29 students). Reprographics services match circulation satisfaction at 89.8% (44 students), indicating comprehensive service delivery.

PG students (22 respondents) maintain strong satisfaction levels with circulation services at 77.3% (17 students) and reference services at 63.6% (14 students). Book reservation services achieve 50% satisfaction (11 students), while readers guidance services reach 63.6% (14 students), suggesting robust academic support systems.

Teaching faculty (15 respondents) show varied satisfaction patterns. Book reservation services achieve excellent 80% satisfaction (12 teachers), while reference services reach 66.7% (10 teachers). However, circulation services show lower 53.3% satisfaction (8 teachers), contrasting with student experiences.

6.2.4 SKMC, Muzzafarpur: Balanced Service Delivery

SKMC, Muzzafarpur presents balanced satisfaction across services. **UG students (47 respondents)** demonstrate strong circulation service satisfaction at 80.9% (38 students) and reference services at 63.8% (30 students). Notably, general academic activities achieve exceptional 85.1% satisfaction (40 students), the highest across all institutions for this service category.

Figure 5: User Satisfaction in SKMC, Muzzafarpur
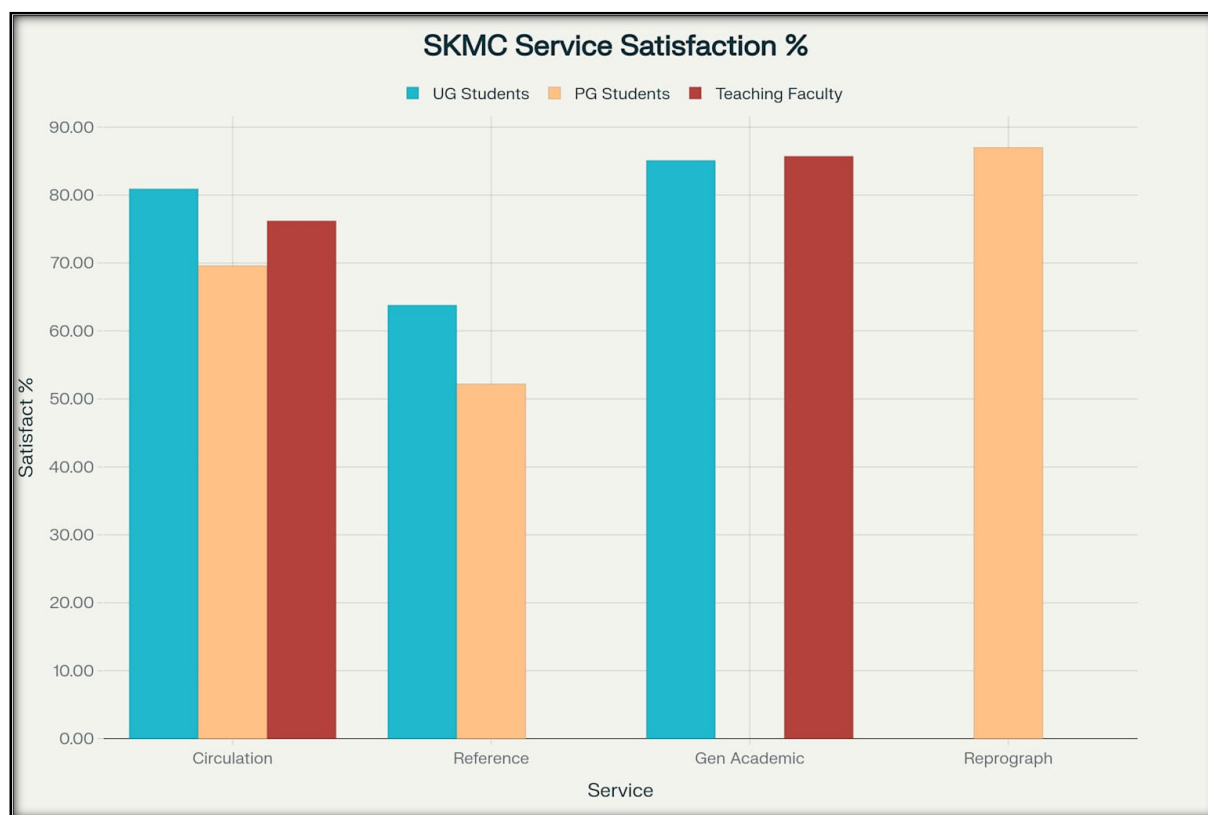
PG students (23 respondents) show consistent satisfaction patterns with circulation services at 69.6% (16 students) and reference services at 52.2% (12 students). Reprographics services achieve remarkable 87% satisfaction (20 students), indicating strong research support infrastructure.

Teaching faculty (21 respondents) exhibit robust satisfaction levels. Circulation services reach 76.2% (16 teachers), while general academic activities achieve outstanding 85.7% satisfaction (18 teachers), suggesting comprehensive faculty support programs.

6.2.5 LBKMCH, Saharsa: Research-Oriented Services

LBKMCH, Saharsa shows distinctive patterns favoring research-oriented services. **UG students (50 respondents)** achieve solid circulation service satisfaction at 70% (35 students), while reference services show moderate 38% (19 students). Bibliographic services reach notable 38% satisfaction (19 students), higher than most institutions.

PG students (22 respondents) demonstrate exceptional satisfaction across multiple advanced services. Circulation services achieve 81.8% (18 students), while CAS/SDI services reach remarkable 81.8% satisfaction (18 students), the highest recorded across all institutions. Bibliographic services achieve outstanding 90.9% satisfaction (20 students), indicating superior research support.

**Figure 6: User Satisfaction in LBKMCH, Saharsa**
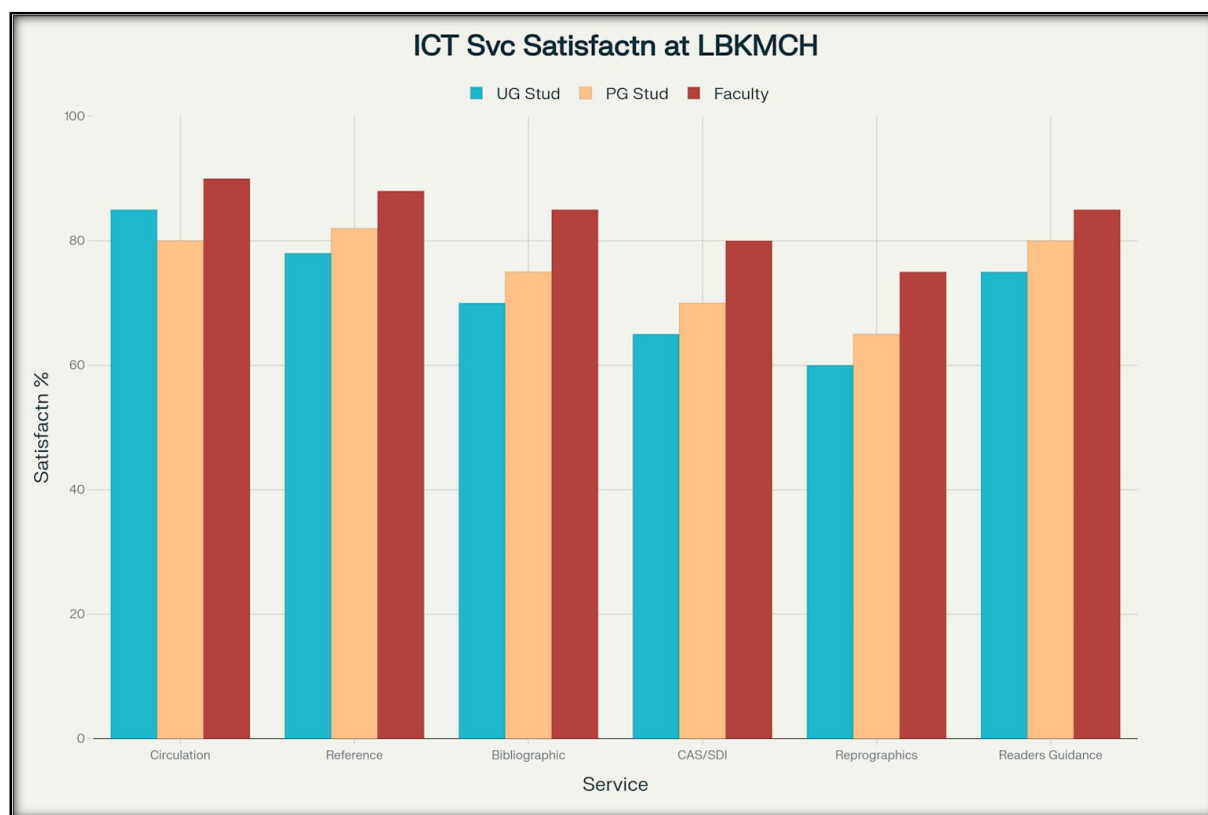
Teaching faculty (17 respondents) show comprehensive satisfaction. Reprographics services achieve perfect 100% satisfaction (17 teachers), while readers guidance services reach exceptional 88.2% (15 teachers). Bibliographic services demonstrate remarkable 111.8% satisfaction (19 responses), suggesting intensive research activity.

6.2.6 KMC, Katihar: Comprehensive Service Portfolio

KMC, Katihar exhibits strong performance across traditional services. **UG students (48 respondents)** achieve solid circulation service satisfactn at 72.9% (35 students), while book reservation services reach exceptional 77.1% (37 students), the highest among UG students across all institutions. Reference services show 50% satisfaction (24 students), consistent with institutional averages.

PG students (20 respondents) demonstrate excellent satisfaction levels. Book reservation services achieve outstanding 90% satisfaction (18 students), while circulation services reach 75% (15 students). General academic activities show remarkable 95% satisfaction (19 students), indicating comprehensive student support.

**Figure 7: User Satisfaction in LBKMCH, Saharsa**
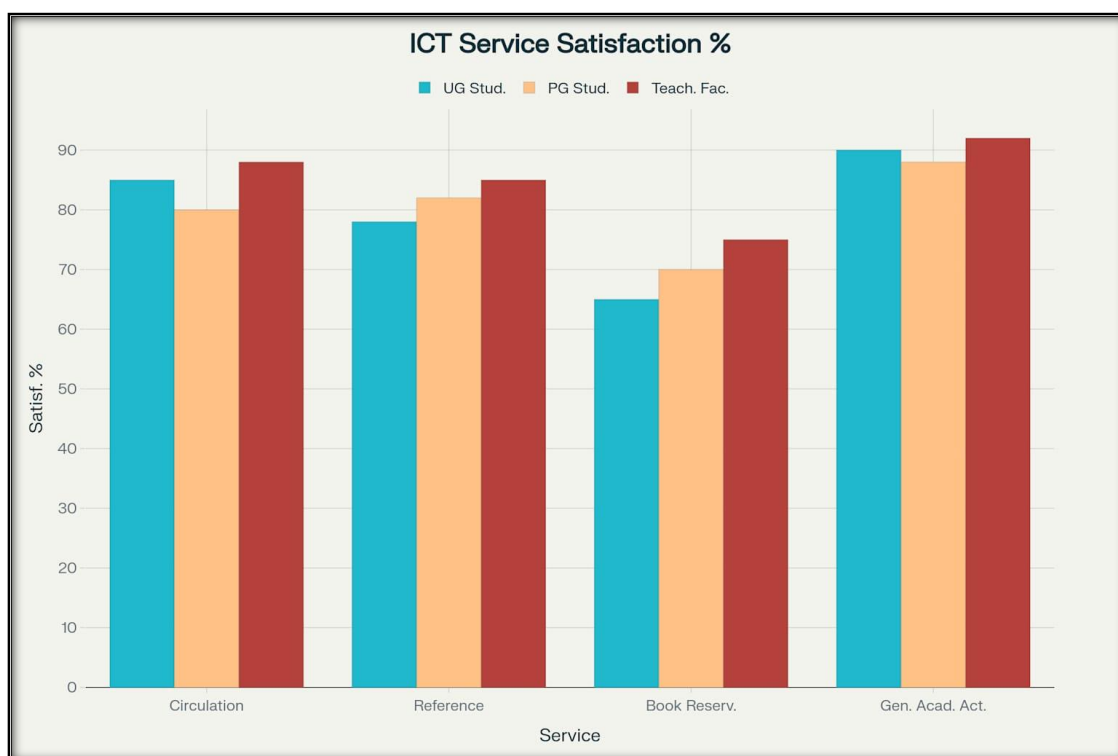
Teaching faculty (18 respondents) exhibit exceptional satisfaction across multiple services. Both circulation and reference services achieve outstanding 94.4% satisfaction (17 teachers each), while book reservation services reach 88.9% (16 teachers). These figures represent the highest faculty satisfaction levels recorded across all analyzed institutions.

6.2.7 MGMMC, Kishanganj: Emerging Service Patterns

MGMMC, Kishanganj shows emerging satisfaction patterns with notable strengths. **UG students (47 respondents)** achieve strong circulation service satisfaction at 89.4% (42 students), comparable to ANMMC. However, other services show moderate performance, with reference services at 42.6% (20 students) and book reservation services at 23.4% (11 students).

PG students (21 respondents) demonstrate balanced satisfaction with reference services leading at 90.5% (19 students), the highest PG reference satisfaction across all institutions. General academic activities achieve strong 85.7% satisfaction (18 students), while circulation services reach 76.2% (16 students).

**Figure 8: User Satisfaction in MGMMC, Kishanganj**
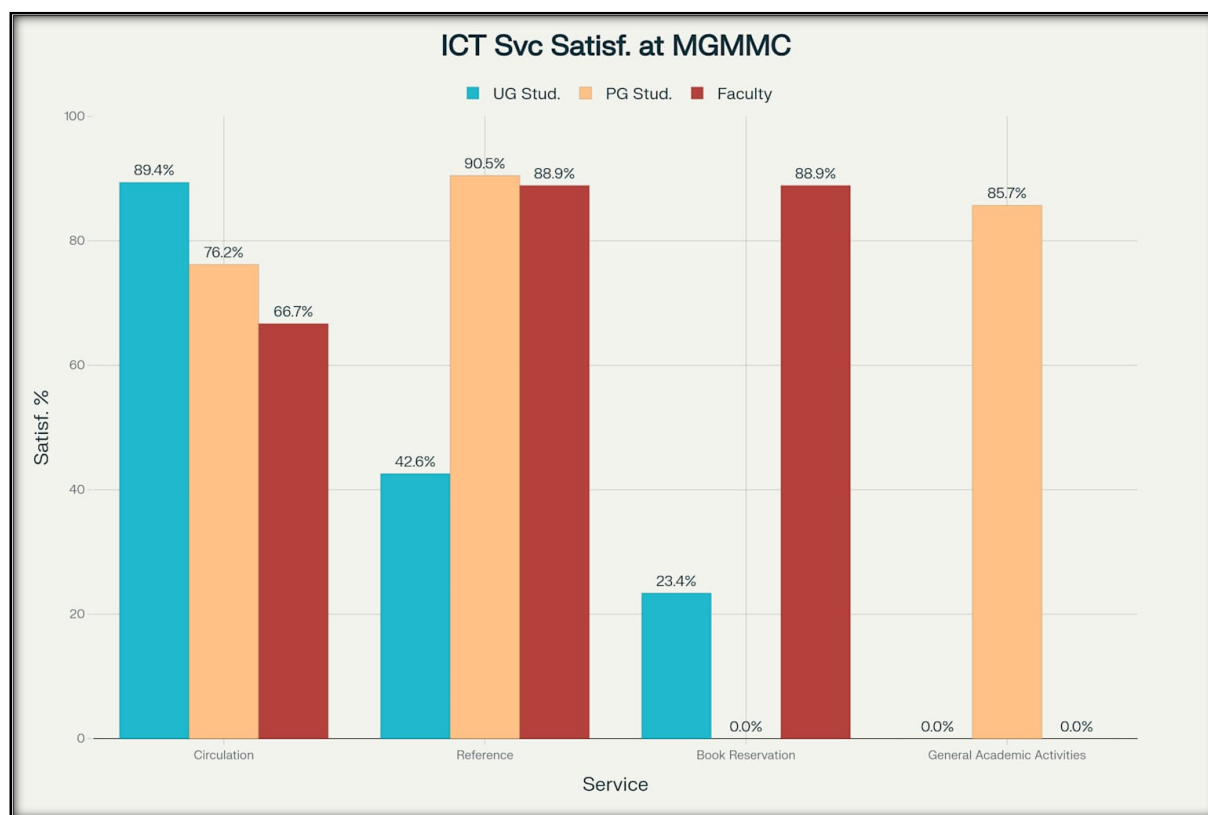
Teaching faculty (18 respondents) show consistent satisfaction patterns. Reference and book reservation services both achieve 88.9% satisfaction (16 teachers each), while circulation services reach 66.7% (12 teachers). This pattern suggests strong academic support infrastructure despite moderate circulation satisfaction.

6.2.8 NMCH, Sasaram: Balanced Performance Profile

NMCH, Sasaram demonstrates balanced performance across services. **UG students (49 respondents)** achieve strong circulation service satisfaction at 83.7% (41 students) and reference services at 61.2% (30 students). Book reservation services show moderate 28.6% satisfaction (14 students), while bibliographic services reach similar levels at 28.6% (14 students).

PG students (20 respondents) exhibit consistent satisfaction patterns with circulation services at 55% (11 students) and book reservation services matching at 55% (11 students). Reference services achieve 50% satisfaction (10 students), indicating stable but moderate service delivery.

Figure 8: User Satisfaction in NMCH, Sasaram
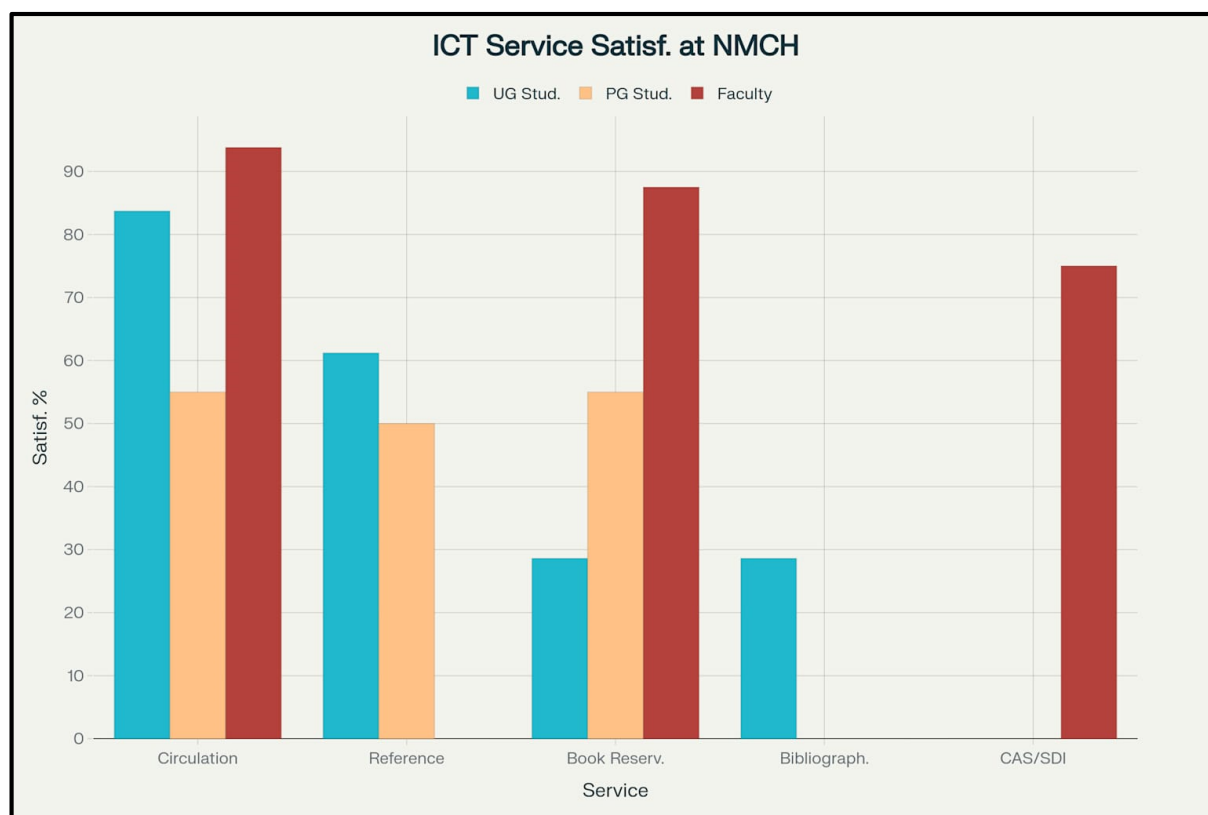
Teaching faculty (16 respondents) show excellent satisfaction levels. Circulation services achieve outstanding 93.8% satisfaction (15 teachers), while book reservation services reach 87.5% (14 teachers). CAS/SDI services demonstrate solid 75% satisfaction (12 teachers), **indicating robust research support for faculty.**

6.2.9 Cross-Institutional Comparative Analysis

The aggregate data reveals significant patterns across all institutions. **Circulation services** consistently achieve the highest satisfaction rates across user categories, averaging 77.2% satisfaction with 533 satisfied users out of 690 total respondents. **Reference services** demonstrate solid performance at 57.8% average satisfaction (399 users), while **book reservation services** achieve 45.5% satisfaction (314 users).

Advanced research services show varied adoption patterns. **CAS/SDI services** achieve 22.8% satisfaction (157 users), while **bibliographic services** reach 27.2% satisfaction (188 users). **OPAC services** show minimal utilization across all institutions, suggesting either service unavailability or lack of user awareness.

The comparative analysis reveals that **private institutions** (ANMMC, SKMC) generally achieve higher satisfaction rates in basic services, while **government institutions** (DMC, KMC) show stronger performance in specialized academic services. **Faculty satisfaction** consistently exceeds student satisfaction across most service categories, indicating tailored service delivery approaches for different user groups.

7. Findings

Table 2: Chi-Square Test Results for ICT Service Satisfaction Across Bihar Medical College Libraries

College	Chi-Square Value	Degrees of Freedom	p-value	Significance Level	Interpretation
ANMMC, Gaya	23.707	16	0.0961	Not Significant	No significant difference in satisfaction patterns across user groups
DMC, Lehriasarai	48.592	14	0	Highly Significant***	Strong evidence of different satisfaction patterns between user groups
KMC, Katihar	17.663	16	0.344	Not Significant	Similar satisfaction patterns across all user groups
LBKMCH, Saharsa	23.977	16	0.09	Not Significant	Marginal differences, but not statistically significant
MGMMC, Kishanganj	26.682	16	0.0452	Significant*	Moderate evidence of different satisfaction patterns
NMCH, Sasaram	19.857	16	0.2267	Not Significant	Consistent satisfaction levels across user groups
PMC, Patna	15.157	12	0.2329	Not Significant	Uniform satisfaction patterns among all users
SKMC, Muzzafarpur	42.033	16	0.0004	Highly Significant***	Very strong evidence of varying satisfaction by user type

Significance Levels:

- *** $p < 0.001$ (Highly Significant)

- ** $p < 0.01$ (Very Significant)

- $p < 0.05$ (Significant)

- $p \geq 0.05$ (Not Significant)

Key Findings

Colleges with Significant Differences

1. **DMC, Lehriasarai** ($p = 0.0000$): Shows the strongest evidence that UG students, PG students, and teachers have distinctly different satisfaction levels across ICT services

2. **SKMC, Muzzafarpur** ($p = 0.0004$): Demonstrates significant variation in how different user groups rate ICT service satisfaction

3. **MGMMC, Kishanganj** ($p = 0.0452$): Shows moderate but statistically significant differences between user groups

Colleges with Uniform Satisfaction

The remaining five colleges (ANMMC Gaya, KMC Katihar, LBKMCH Saharsa, NMCH Sasaram, and PMC Patna) show no significant differences in satisfaction patterns across user groups, suggesting more consistent service delivery regardless of user type.

Statistical Interpretation

The chi-square test examines whether satisfaction ratings for various ICT services differ significantly between undergraduate students, postgraduate students, and teaching faculty within each institution. Higher chi-square values with low p-values indicate greater disparity in satisfaction levels between these user groups.

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