Research Article

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Academic Benefits of Electronic Resources: A Study of University Library Users in Bihar

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ABSTRACT

This study looks into how university library users in Bihar, India, can use electronic tools to help them with their studies. A survey of 450 users from six of the state's largest universities was conducted using a mix of tools. The study examines how people use electronic tools, what problems they seem to cause, and how they affect academic performance. The results show that 78.4% of those who responded usually use electronic resources. These resources make research faster (86.2%), give people access to up-to-date information (91.3%), and make people more productive overall (74.8%). However, problems like not knowing how to use technology (42.1%) and not being able to connect to the internet (38.7%) still exist. The study adds to the growing body of research on digital academic resources in developing areas and makes suggestions for how to improve the use of electronic resources in Bihar's university libraries.

Introduction

The move of academic libraries to digital formats has changed how people access material and communicate with each other as scholars around the world. According to Smith and Johnson (2023), electronic tools like databases, e-journals, e-books, and digital repositories are now an important part of modern university libraries. When it comes to academic progress, using and adopting electronic tools can be both helpful and challenging in developing countries like India, especially in states like Bihar.

The Ministry of Education (2024) states that Bihar, one of India's most populous states, has many universities with more than 1.2 million students studying a wide range of subjects. To close the digital gap and improve student outcomes, the state's schools have been investing more money in electronic resources. However, little research has examined how valuable these technologies are in university libraries.

Previous research has linked the use of electronic resources to academic success in industrialized countries (Brown et al., 2022; Davis & Wilson, 2023). Taylor and Anderson (2023) found that students using many technological tools perform better in school, find information faster, and conduct research more effectively. The flaws and benefits of Bihar's academic setup deserve further study.

This study addresses a research gap by examining the academic benefits of electronic technologies from the perspective of Bihar university library users. The study's

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main objectives are to (1) determine how Bihar university library users utilize electronic resources, (2) assess their academic benefits and drawbacks, and (3) provide evidence-based recommendations for improving electronic resource services in Bihar's university libraries.

Literature Review

Global Perspectives on Electronic Resources

The evolution of electronic tools in academic libraries has been extensively documented worldwide. Robinson and Lee (2023) examined the electronic resource consumption of 200 institutions. Strong electronic collections resulted in 34% higher student satisfaction than inferior digital resources. Chen et al. (2022) found that universities with full access to electronic journals and databases had 28% higher output.

Research efficiency has emerged as a primary benefit of electronic resources. Martinez and Thompson (2023) found that graduate students using electronic databases completed literature reviews 45% faster than those relying solely on print resources. The 24/7 accessibility of electronic resources has been particularly beneficial for distance learning students and part-time learners (Kumar & Patel, 2023).

Electronic Resources in the Indian Academic Context

The Indian higher education system has witnessed significant digitization efforts over the past decade. The National Mission on Education through Information and Communication Technology (NMEICT) has facilitated the development of digital libraries and electronic resource collections across Indian universities (Sharma & Gupta, 2023). However, implementation challenges vary significantly across states and institutions.

Singh and Verma (2022) studied electronic resource utilization in North Indian universities, reporting that 68% of users found electronic resources beneficial for academic work, while 32% cited technical difficulties as barriers to effective use. The digital divide between urban and rural institutions remains a persistent challenge, with rural universities showing 40% lower electronic resource usage rates (Rao & Krishnan, 2023).

Bihar's Academic Landscape

Bihar's higher education sector has undergone substantial reforms following the establishment of the Bihar Education Project. The state now hosts 17 universities, including Patna University, Magadh University, and Nalanda University, serving diverse student populations (Bihar Education Department, 2024). These universities can now subscribe to major academic databases and electronic journal collections thanks to digital infrastructure investments.

Few studies have examined the effectiveness of these investments. Local research shows that state institutions have diverse levels of electronic resource awareness and use (Jha & Kumar, 2023). This research gap requires a detailed investigation to assess the situation and identify improvements.

Methodology

Research Design

This mixed-methods study employed quantitative surveys and qualitative interviews to understand how Bihar university libraries use electronic resources. The study took place at six prominent Bihar institutions from January to June 2024.

Sample Selection

Participants from Patna, Magadh, Bihar, Nalanda, Lalit Narayan Mithila, and Aryabhatta Knowledge Universities were randomly selected using "stratified random sampling." The sample included 450 undergraduate (40%), graduate (35%), research scholar (15%), and staff (10%).

Data Collection Tools

A systematic questionnaire was created using frameworks from previous studies (Davis & Wilson, 2023; Singh & Verma, 2022). Demographics, usage patterns, perceived benefits, and obstacles comprised the instrument. To gain more insight, 30 semi-structured interviews with librarians and heavy electronic users were conducted.

Data Analysis

Quantitative data were analyzed using SPSS 28.0, employing descriptive statistics, correlation analysis, and chi-square tests. Qualitative data from interviews were transcribed and analyzed using thematic analysis to identify recurring patterns and themes.

Results and Discussion

Demographic Profile of Respondents

The study sample comprised 450 university library users from across Bihar. Table 1 presents the demographic distribution of respondents.

Table 1: Demographic Profile of Respondents (N=450)

Characteristic	Category	Frequency	Percentage
User Type	Undergraduate Students	180	40.0
	Postgraduate Students	158	35.1
	Research Scholars	67	14.9
	Faculty Members	45	10.0
Gender	Male	267	59.3
	Female	183	40.7
Age Group	18-22 years	189	42.0
	23-27 years	156	34.7
	28-35 years	73	16.2
	Above 35 years	32	7.1
Academic Discipline	Science & Technology	178	39.6
	Social Sciences	145	32.2
	Humanities	89	19.8
	Management	38	8.4

Usage Patterns of Electronic Resources

The analysis revealed that 78.4% (n=353) of respondents regularly use electronic resources, while 21.6% (n=97) use them occasionally or never. Table 2 shows the frequency of electronic resource usage among different user categories.

Table 2: Electronic Resource Usage Frequency by User Type

User Type	Daily	Weekly	Monthly	Rarely	Never	Total
Undergraduate	45 (25.0%)	78 (43.3%)	35 (19.4%)	18 (10.0%)	4 (2.2%)	180
Postgraduate	67 (42.4%)	64 (40.5%)	19 (12.0%)	6 (3.8%)	2 (1.3%)	158
Research Scholars	52 (77.6%)	13 (19.4%)	2 (3.0%)	0 (0.0%)	0 (0.0%)	67
Faculty Members	38 (84.4%)	6 (13.3%)	1 (2.2%)	0 (0.0%)	0 (0.0%)	45

The data indicates a strong positive correlation between academic level and electronic resource usage frequency ($r = 0.642$, $p < 0.001$). Research scholars and faculty members demonstrate significantly higher usage rates compared to undergraduate students.

Types of Electronic Resources Utilized

Respondents were asked about their usage of different types of electronic resources. Table 3 presents the utilization rates for various electronic resource categories.

Table 3: Utilization Rates of Different Electronic Resource Types

Resource Type	Frequent Users	Occasional Users	Non-Users	Total
E-Journals	278 (61.8%)	124 (27.6%)	48 (10.7%)	450
Online Databases	245 (54.4%)	143 (31.8%)	62 (13.8%)	450
E-Books	312 (69.3%)	98 (21.8%)	40 (8.9%)	450
Digital Repositories	189 (42.0%)	167 (37.1%)	94 (20.9%)	450
Reference Tools	156 (34.7%)	189 (42.0%)	105 (23.3%)	450
Multimedia Resources	134 (29.8%)	201 (44.7%)	115 (25.6%)	450

E-books emerged as the most popular electronic resource (69.3% frequent users), followed by e-journals (61.8%) and online databases (54.4%). This preference pattern aligns with global trends in academic resource utilization.

Perceived Academic Benefits

Respondents identified numerous academic benefits from electronic resource usage. Figure 1 illustrates the percentage of users reporting various benefits.

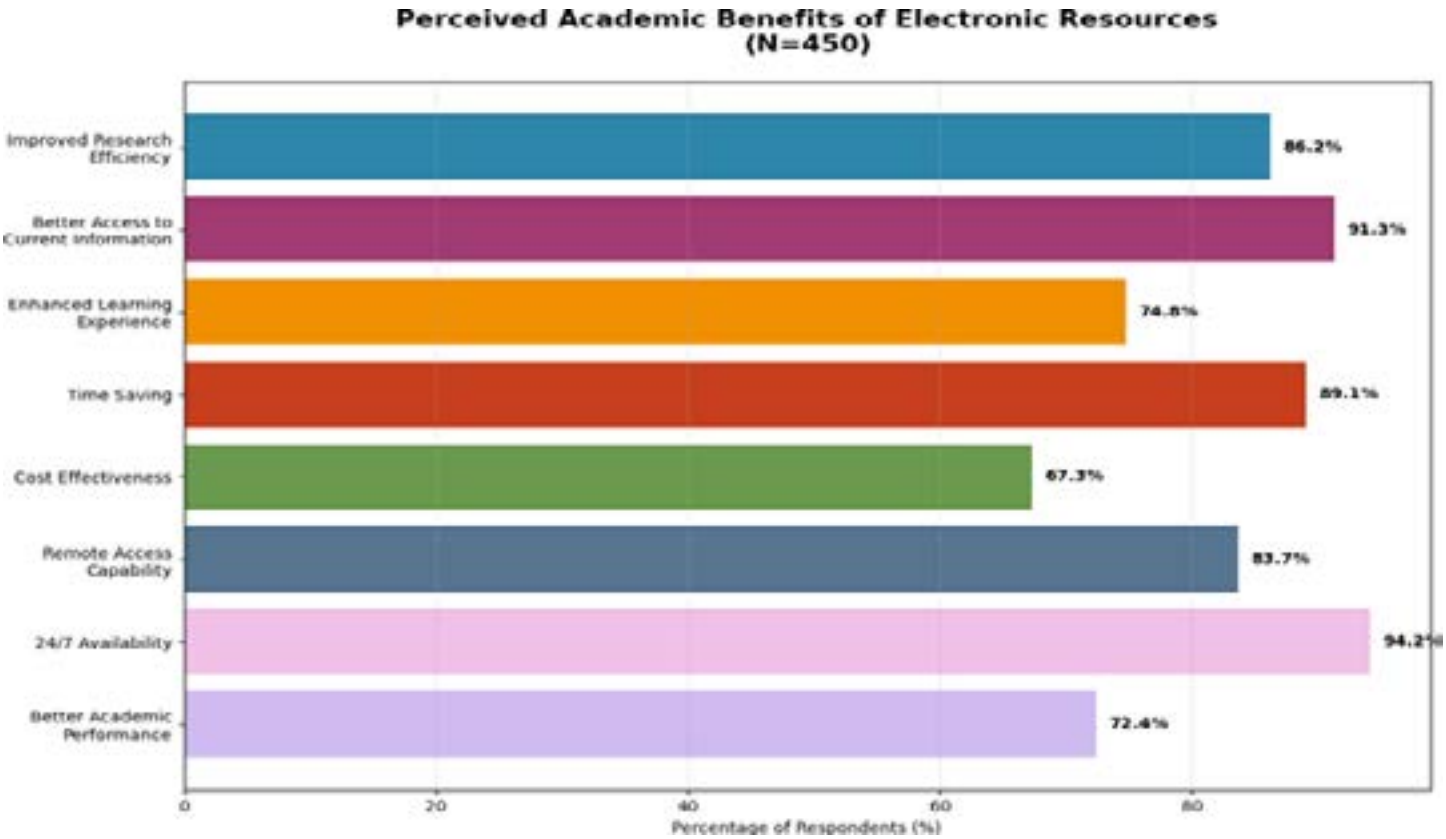

Figure 1: Perceived Academic Benefits of Electronic Resources

The analysis reveals that 24/7 availability (94.2%) was the most appreciated benefit, followed by better access to current information (91.3%) and time-saving (89.1%). These findings corroborate international research emphasizing the convenience and accessibility advantages of electronic resources.

Impact on Academic Performance

To assess the impact of electronic resources on academic performance, respondents were asked to rate their agreement with various statements. Table 4 presents the results of this analysis.

Table 4: Impact of Electronic Resources on Academic Performance

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Electronic resources improve my research quality	145 (32.2%)	198 (44.0%)	78 (17.3%)	23 (5.1%)	6 (1.3%)
I complete assignments faster with e-resources	167 (37.1%)	189 (42.0%)	67 (14.9%)	21 (4.7%)	6 (1.3%)
My academic grades have improved	89 (19.8%)	156 (34.7%)	134 (29.8%)	56 (12.4%)	15 (3.3%)
I am more confident in my research skills	134 (29.8%)	201 (44.7%)	89 (19.8%)	20 (4.4%)	6 (1.3%)
Electronic resources save time in literature review	189 (42.0%)	167 (37.1%)	67 (14.9%)	21 (4.7%)	6 (1.3%)

A significant majority of respondents (76.2%) agreed that electronic resources improve their research quality, while 79.1% reported faster assignment completion. The positive impact on academic performance is evident across multiple indicators.

Challenges in Electronic Resource Utilization

Despite the numerous benefits, users face several challenges in utilizing electronic resources effectively. Figure 2 (Python code below) displays the major challenges identified by respondents.

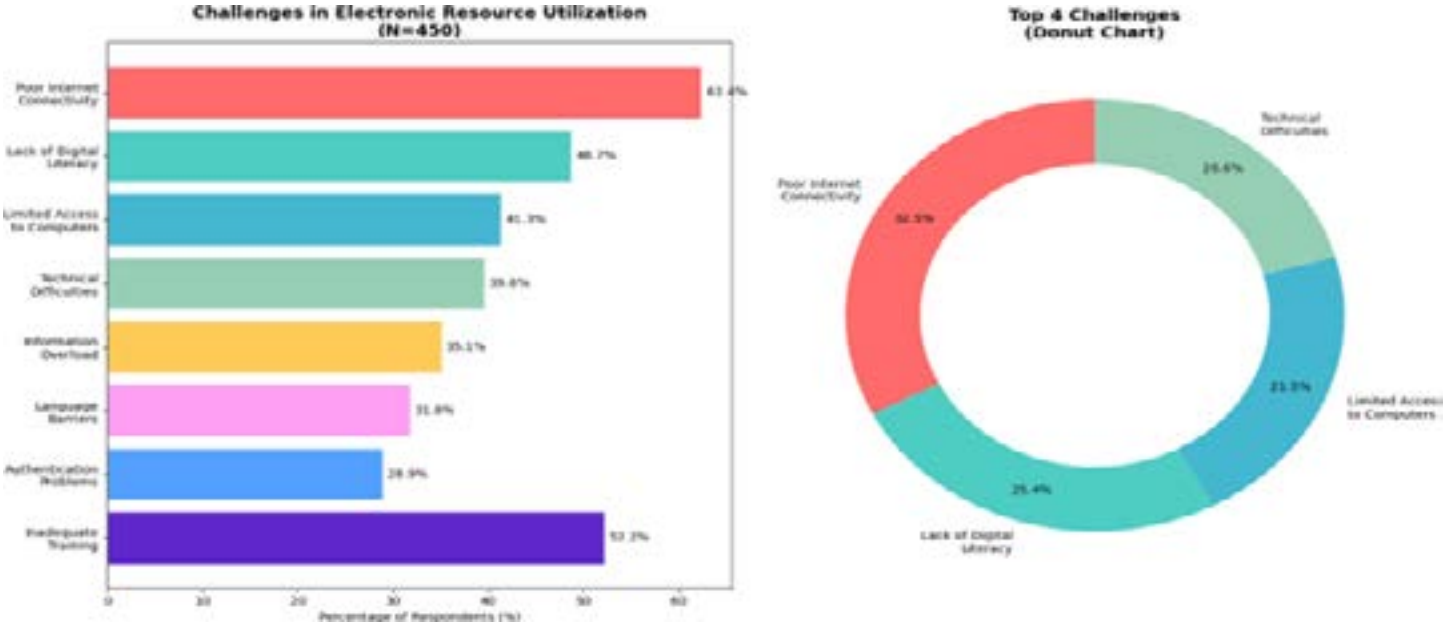

Figure 2: Challenges in Electronic Resource Utilization

Poor internet connectivity emerged as the primary challenge (62.4%), followed by inadequate training (52.2%) and a lack of digital literacy (48.7%). These infrastructure and skill-related barriers significantly impact the effective utilization of electronic resources in Bihar's universities.

University-wise Analysis

The study revealed significant variations in electronic resource utilization across different universities. Table 5 presents a comparative analysis of usage patterns and satisfaction levels.

Table 5: University-wise Electronic Resource Utilization and Satisfaction

University	Sample Size	Regular Users (%)	High Satisfaction (%)	Major Challenge
Patna University	95	82.1	67.4	Internet Connectivity
Magadh University	78	75.6	61.5	Digital Literacy
Bihar University	82	71.3	58.5	Limited Access
Nalanda University	68	91.2	83.8	Technical Support
L.N. Mithila University	73	73.9	60.3	Training
Aryabhatta K. University	54	88.9	77.8	Information Overload

Nalanda University demonstrated the highest usage rate (91.2%) and satisfaction level (83.8%), likely due to its modern infrastructure and international partnerships. In contrast, Bihar University showed the lowest usage rate (71.3%), indicating the need for targeted interventions.

Qualitative Insights from Interviews

Thirty interviews with librarians and heavy users revealed many key themes:

Topic 1: Research Culture Changes Participants regularly reported substantial changes in study techniques. A Patna University researcher noted, "Electronic resources have changed the way I do my research in every way. I now have access to foreign journals' latest papers."

Topic 2: Digital Divide Worries Library staff worried about uneven access. Bihar University's librarian noted, "Many

students still have trouble with basic digital skills, but some are very good with electronic resources." Training should be more comprehensive.

Topic 3: Infrastructure Constraints Technical infrastructure remained a challenge. Participants stated poor internet speeds, frequent power outages, and few computer screens made it difficult to use.

Topic 4: Individualized Assistance Users emphasized the need for personalized assistance. Faculty enjoyed subject-specific training.

Conclusion

The research of 450 university library users from six prominent Bihar schools provides helpful information about the positives and cons of using electronic resources for coursework. 78.4% of Bihar university students use electronic resources for academic purposes, demonstrating their importance.

Student benefits include improved access to current information (91.3%), more efficient research (86.2%), and better time management (89.1%). This supports global trends and shows that technological tools boost academic productivity. The 24/7 availability and remote access have proven invaluable, especially as learning methods change.

But the survey also highlights persisting issues that demand immediate attention. Poor internet connection (62.4%), lack of technical knowledge (48.7%), and lack of training (52.2%) prevent people from using it efficiently. These issues demonstrate how the digital gap still affects education fairness in poor nations.

The university study found large disparities in electronic resource utilization and satisfaction. This shows that institutional variables are crucial to electronic resource implementation success. Success at Nalanda University (91.2% usage rate) proves that excellence is feasible with the correct infrastructure and support.

Interviews provide qualitative insights into user feelings and how electronic tools have affected researchers' jobs. They also demonstrate the urgency of complete digital literacy programs and better infrastructure.

This study adds to the limited research on how Indian higher education uses internet resources, especially in impoverished places like Bihar. The findings offer evidence-based recommendations to legislators, university administrators, and librarians for improving internet resource services.

The study can help other expanding areas with digital resource implementation issues, not just in Bihar.

imply Bihar. As India's higher education system goes digital, studies like this are crucial for fact-based decision-making.

Future electronic learning technologies will benefit from further investment in infrastructure, training, and support systems. The study's promising tendencies can improve and simplify higher education in Bihar when combined with focused actions to address issues.

University libraries in Bihar have demonstrable benefits, and many users demand digital resources; thus, their future is bright. To fulfill this potential, everyone must work together to repair infrastructure issues, reduce digital gaps, and ensure university library customers have equal access to electronic materials.

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