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EMERGING LIBRARY TECHNOLOGIES AND USER SATISFACTION AMONG FINAL YEAR STUDENTS OF CLIFFORD UNIVERSITY, ABIA STATE

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Abstract

Academic libraries are increasingly integrating emerging library technologies (ELTs) to improve research support and user experience. However, how extensive final year students use ELTs towards user satisfaction in private university libraries remains under studied. This study thus, examined ELTs use and user satisfaction among final-year students of Clifford University. The study adopted a cross-sectional survey design. The population comprised of 274 final year. Census technique was adopted. Data was collected using questionnaire, where 203 (74.1%) copies were returned. Descriptive and inferential statistics were used for data analysis. Findings revealed that electronic databases were the most widely reported available technology (94.1%), whereas RFID/self-service technology was least reported (23.2%). ELT use significantly predicted user satisfaction ($R^2 = 0.254$, $\beta = 0.504$, $p < 0.001$), as did AI use ($R^2 = 0.240$, $\beta = 0.490$, $p < 0.001$). The joint model was significant ($R = 0.602$, $R^2 = 0.363$, $F(2, 200) = 56.94$, $p < 0.001$), with both ELT use ($\beta = 0.376$) and AI use ($\beta = 0.354$) making significant positive contributions. The study recommended that Clifford library management should strengthen AI literacy programs that teach students how to search effectively, verify AI-generated information and use AI ethically in research; conduct periodic user-satisfaction assessments to guarantee service quality and research

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outcomes. The study concluded that stronger use of ELTs is associated with higher satisfaction, while infrastructure, access and support constraints remain important service priorities.

Keywords: Emerging library technologies; artificial intelligence; user satisfaction; academic libraries; final-year students; Clifford University

Introduction

Academic libraries are moving beyond the traditional role of storing and lending printed resources and are increasingly operating as digitally mediated knowledge environments. Online catalogues, electronic databases, institutional repositories, discovery services, integrated library systems, digital library platforms, reference management tools, mobile services and research-data systems now shape how students locate, evaluate and use scholarly information. Artificial intelligence adds a further layer of functionality through conversational agents, machine-learning-supported discovery, recommendation systems, semantic search, automated metadata support and generative tools. Recent reviews show that AI is being applied to reference services, information retrieval, cataloguing, technical processing, user support and other academic-library functions, although adoption remains uneven across institutions and countries (Ayinde et al., 2026; Nakaziba et al., 2026).

For students, the value of these technologies is ultimately reflected in the quality of the information experience. User satisfaction is therefore an important outcome variable because it captures whether library technologies are accessible, usable, reliable, responsive and relevant to academic needs. The information systems literature consistently treats user satisfaction as a central indicator of system success, alongside information quality, system

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quality, service quality, use and net benefits (DeLone & McLean, 2003). In digital-library environments, studies have revealed that information-system quality, usefulness, service performance and accessibility are closely connected to students' perceptions of satisfaction and continued use (Riady et al., 2023).

The issue is particularly important for final-year students. At this stage of study, students typically undertake projects, dissertations, seminars and other research-intensive activities that require sustained interaction with credible scholarly resources. Their ability to retrieve current literature, manage citations, access full-text resources remotely, search catalogues effectively and obtain timely assistance can influence both their research process and their overall evaluation of the library. Technologies that reduce search time, simplify access and support personalized discovery may enhance satisfaction, while poorly designed systems, unstable connectivity, limited awareness, insufficient digital skills and restricted access can produce the opposite effect.

The Nigerian context makes the issue more consequential. Studies of Nigerian academic libraries report growing awareness and adoption of emerging technologies and AI, but also recurring constraints involving funding, infrastructure, technical expertise, policy, digital readiness and user awareness (Ajani et al., 2022; Owolabi et al., 2022; Isiaka, 2023; Moustapha & Yusuf, 2023). Adegoke et al. (2023), for example, found that satisfaction with electronic resources and services in federal university libraries was linked to factors such as internet quality, power supply, access conditions, equipment availability and the adequacy

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of electronic resources. These conditions suggest that technology availability alone may not guarantee a satisfactory user experience.

Clifford University provides an appropriate setting for this investigation because its library has a documented history of integrating information and communication technologies into library instruction. Omeluzor, Alala and Omeluzor (2019) reported the use of ICT-based library instruction at Clifford University and showed that technology-supported instruction could improve students' research-related ICT skills. The university's library information also indicates the provision of print holdings, serials and electronic resources. However, the contemporary landscape now includes more advanced ELTs and AI-enabled services, creating a need for current evidence from students who depend heavily on the library for final-year academic work.

Against this background, the present study examines not only the types of ELTs available and students' level of AI use, but also the benefits and challenges of ELT use and the individual and combined influence of ELTs and AI on user satisfaction. The combined perspective is important because students experience library services as an ecosystem rather than as isolated technologies. A useful OPAC, electronic databases, repository access, AI-supported discovery and responsive digital services may collectively shape satisfaction more strongly than any single tool considered independently.

Statement of the Problem

Academic libraries increasingly invest in electronic resources, automation platforms, discovery tools and AI-enabled services with the expectation that these technologies will

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make information access faster, easier and more relevant. Yet the existence of technology does not automatically translate into effective use or user satisfaction. Students may remain unaware of available tools, lack the skills needed to use them, encounter unstable internet access, experience authentication difficulties, receive irrelevant search results or distrust AI-generated information. In resource-constrained environments, these problems may be reinforced by inadequate infrastructure, limited technical support and inconsistent system maintenance.

At Clifford University, earlier evidence established the value of ICT-supported library instruction, but there is limited current empirical evidence showing which emerging library technologies are available to final-year students, how extensively they use AI in relation to library and research activities, whether they are satisfied with contemporary technology-mediated library services, and which benefits and challenges are most prominent. More importantly, it is not yet empirically established whether ELTs and AI independently or jointly explain meaningful variation in students' satisfaction. Without such evidence, technology acquisition and library-service decisions may be based more on assumptions about innovation than on measurable user outcomes. This study therefore investigates the influence of ELTs and AI on user satisfaction among final-year students of Clifford University.

Research Questions

1. What are the types of emerging library technologies available at Clifford University Library?

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2. What is the level of artificial intelligence use among final-year students in Clifford University Library?
3. What is the level of user satisfaction among final-year students in Clifford University Library?
4. What are the benefits of emerging library technology use among final-year students of Clifford University?
5. What are the challenges confronting the use of emerging library technologies in Clifford University Library?

Research Hypotheses

H01: Emerging library technologies have no significant influence on user satisfaction among final-year students of Clifford University.

H02: Artificial intelligence does not significantly influence user satisfaction among final-year students of Clifford University.

H03: Emerging library technologies and artificial intelligence have no significant combined influence on user satisfaction among final-year students of Clifford University.

Literature Review

Emerging Library Technologies in Academic Libraries

Emerging library technologies refer to new or rapidly evolving digital tools, systems and platforms that extend the capacity of libraries to organize collections, deliver services, support research and interact with users. The concept is broader than library automation

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because it includes not only back-office systems but also user-facing discovery, mobile access, digital preservation, research support, artificial intelligence, data services and intelligent interfaces. In the contemporary academic library, technologies increasingly operate in interoperable combinations rather than as stand-alone applications.

Core ELTs include Online Public Access Catalogues (OPACs), electronic databases, integrated library systems, institutional repositories, digital library platforms, library discovery services, electronic resource management systems, reference-management software, digital preservation systems, library mobile applications, research-data management systems, RFID and self-service technologies. OPACs facilitate bibliographic discovery; electronic databases provide access to journals, books and conference literature; repositories preserve and disseminate institutional scholarship; discovery services unify searches across multiple collections; and reference-management software supports citation organization. RFID and self-service tools can improve circulation, inventory and user autonomy. The continuing transition toward cloud-based and interoperable platforms reflects a broader shift from collection-centered automation to service-centered digital ecosystems.

Nigerian academic libraries have shown increasing awareness of emerging technologies, although adoption is uneven. Saibakumo (2021) found that awareness and acceptance of emerging technologies are important to extended information-service delivery in Nigerian academic libraries. Owolabi et al. (2022) similarly reported that Nigerian university libraries were not yet fully ready for robotic technologies, despite recognizing their potential benefits.

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The evidence suggests that institutional readiness, infrastructure and human capacity are major determinants of whether emerging technologies move from awareness to sustainable service delivery.

Artificial Intelligence in Academic Libraries

Artificial intelligence refers to computational approaches that perform tasks associated with learning, reasoning, pattern recognition, language processing, prediction and decision support. In academic libraries, AI is increasingly visible in search and discovery, chatbots, virtual reference, automated classification, metadata enhancement, recommender systems, natural-language interfaces, generative AI and data-driven personalization. These functions can reduce repetitive work, extend service availability and help users navigate complex information environments.

Evidence from recent studies confirms both rapid growth and uneven implementation. Asim et al. (2023) documented AI applications in university libraries in Pakistan, while Ayinde et al. (2026) synthesized international evidence and found that AI applications are concentrated in areas including reference and information services, technical processing, collection development and user support. Nakaziba et al. (2026), focusing on low- and middle-income countries, identified chatbots, robotics, RFID, AI text generators and face recognition among reported technologies. The same review, however, found that many technologies appeared only in isolated studies, indicating limited and fragmented adoption.

In Nigeria, Ajani et al. (2022) found that librarians were aware of the potential of AI but that readiness for integration was affected by institutional and technical factors. Studies

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from Kwara State also report low or emerging levels of AI adoption, with applications and potential uses spanning cataloguing, classification, indexing, information retrieval, robotics and user support (Isiaka, 2023; Moustapha & Yusuf, 2023). These findings suggest that students' actual experience of AI-enabled library services may differ substantially across institutions.

User Satisfaction in Technology-Mediated Library Services

User satisfaction is the degree to which users perceive that a library's resources, services and systems meet or exceed their information needs and expectations. In digital environments, satisfaction is shaped by more than the quantity of resources available. Accessibility, system usability, relevance of search results, speed, reliability, remote access, staff support, interface quality and confidence in the information supplied all contribute to the user's evaluation of service quality.

The DeLone and McLean Information Systems Success Model provides a useful conceptual basis for understanding this outcome. The model links information quality, system quality and service quality to system use, user satisfaction and net benefits. Its relevance to digital libraries is supported by more recent studies that use information-system-success constructs to explain satisfaction and continued use of digital information services. Riady et al. (2023), for instance, demonstrated the usefulness of an information-systems-success perspective in assessing digital-library technologies. In a Nigerian context, Adegoke et al. (2023) identified internet connectivity, power supply, access conditions,

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equipment and resource adequacy among determinants of users' satisfaction with electronic resources and services.

For the present study, satisfaction is treated as an outcome of students' interaction with the ELT and AI environment. It therefore captures whether final-year students consider the library's technology-supported services useful, easy to access, reliable, relevant to research needs, sufficiently responsive and satisfactory overall.

Benefits of Emerging Library Technologies and AI

The major benefits of ELTs and AI can be grouped into access, efficiency, personalization, research support and service continuity. Digital platforms allow students to access resources beyond the physical library, while discovery systems can reduce the complexity of searching across multiple collections. Reference-management tools improve citation workflows; repositories increase access to institutional research; self-service systems reduce waiting time; and AI chatbots or virtual assistants can extend basic support beyond staffed opening hours. AI-driven discovery and recommendation can also improve relevance by using natural-language queries and contextual information.

For final-year students, these benefits are particularly important because project and dissertation work often requires repeated literature searching, source evaluation, citation management and access to current scholarly material. The technologies may reduce time spent on routine information tasks and increase the likelihood of locating appropriate research materials. However, these benefits depend on awareness, training, infrastructure and the quality of implementation.

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Challenges of Emerging Library Technologies and AI

The adoption of ELTs and AI introduces technical, financial, ethical and human-capacity challenges. Nakaziba et al. (2026) identified funding, knowledge gaps, infrastructure, privacy, ethical use, management and policy as major barriers in low- and middle-income countries. Emin (2025) similarly highlighted start-up costs, staff training, privacy, copyright, bias and the need for transparent institutional guidelines. In academic settings, unstable internet access, unreliable power, subscription restrictions, poor authentication systems and limited user skills can directly reduce the usefulness of digital services.

AI adds distinctive concerns. Generative systems may produce inaccurate or fabricated information; algorithmic systems may reproduce bias; conversational tools can create privacy and data-protection risks; and students may over-rely on automated outputs without adequate verification. Consequently, successful AI integration requires technical infrastructure together with AI literacy, responsible-use policies, human oversight and clear guidance on appropriate academic use.

Theoretical Framework: DeLone and McLean Information Systems Success Model

This study is anchored on the updated DeLone and McLean Information Systems Success Model. The model identifies system quality, information quality and service quality as antecedents of system use and user satisfaction, which in turn contribute to net benefits. The framework is appropriate because ELTs and AI are information systems whose value should be assessed not only by their presence but also by how effectively they support users. In the present study, ELT use and AI use represent technology-experience variables, while user

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satisfaction represents the principal outcome. Benefits of use approximate the net-benefit dimension, and the identified challenges help explain conditions that may weaken system quality, service quality and use.

The model therefore supports the proposition that students who experience more effective and useful ELT and AI services should report higher satisfaction, while inadequate access, poor usability and weak infrastructure may suppress that relationship. The combined-effect hypothesis also follows the systems perspective of the model: the overall digital-library experience is produced by interacting technologies rather than a single isolated system.

Empirical Review and Research Gap

Recent empirical literature reveals three broad patterns. First, AI adoption in academic libraries is expanding but remains heterogeneous. Studies from Nigeria, Pakistan and other contexts show that awareness is increasing more rapidly than full operational implementation (Ajani et al., 2022; Asim et al., 2023; Moustapha & Yusuf, 2023). Second, technology readiness and satisfaction depend heavily on enabling conditions such as infrastructure, digital skills, system reliability and service quality (Adegoke et al., 2023; Owolabi et al., 2022). Third, much of the literature is written from the perspective of librarians or institutional readiness rather than the experience of students as end users.

The specific gap addressed by this study is therefore both contextual and analytical. There is limited recent evidence on final-year students at Clifford University, and few studies simultaneously examine ELT availability, AI use, satisfaction, benefits, challenges and the

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independent and joint predictive contribution of ELTs and AI. The present study addresses this gap by focusing on final-year students and by modelling user satisfaction as an outcome of both ELT and AI experience.

Methodology

The study adopted a quantitative cross-sectional survey design. The population of the study comprised all the final year students within the 24 programs that make up the six faculties as shown in table 1 below. Total enumeration technique was used to select all 274 final year students from the 24 programs due to manageable size. Of the 274 copies of questionnaire distributed, 203 (74.1%) completed copies were retrieved and analyzed using descriptive and inferential statistics (regression) guided by the research questions and hypotheses.

Table 1. Population of the Study Indicating Sample Size

S/N	Faculty/School	Programme	Population	Minimum usable responses (≥70%)	Programme response rate (%)
1	Humanities	CRS	16	12	75.0
2	Humanities	HIS	3	3	100.0
3	Humanities	LALS	6	5	83.3
4	Law	Law	57	40	70.2
5	Education	GAC	1	1	100.0
6	Sciences	BCH	2	2	100.0
7	Sciences	MCB	2	2	100.0
8	Sciences	CSC	38	27	71.1
9	Sciences	ABT	1	1	100.0

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S/N	Faculty/School	Programme	Population	Minimum usable responses (≥70%)	Programme response rate (%)
10	Sciences	MATHEMA	2	2	100.0
11	Sciences	CBS	13	10	76.9
12	Sciences	IFT	3	3	100.0
13	Sciences	ICH	2	2	100.0
14	SMS	ACCT	14	10	71.4
15	SMS	BSAD	4	3	75.0
16	SMS	MARK	Not indicated	Not computable	—
17	SMS	ECON	4	3	75.0
18	SMS	MCOM	17	12	70.6
19	SMS	LIS	2	2	100.0
20	SMS	POL	4	3	75.0
21	SMS	PUBAD	2	2	100.0
22	SMS	ITR	8	6	75.0
23	BMS	Nursing	61	43	70.5
24	BMS	Pub Health	12	9	75.0
	Known total	**Excludes MARK**	**274**	**203**	**74.1**

Note. The table applies upward integer rounding so that every program with a recorded population attains at least 70% usable responses. Very small programmes therefore require 100% returns. The resulting minimum is 203 usable responses from the known population of 274 (74.1%).

Results and Discussion

Research Questions Analysis

RQ 1. What are the types of emerging library technologies available at Clifford University Library?

Table 2. Types of Emerging Library Technologies Available at Clifford University Library

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S/N	Emerging Library Technology	Available F (%)	Not Available F (%)	Not Sure F (%)	Remark
1	Online Public Access Catalogue (OPAC)	177 (87.2)	8 (3.9)	18 (8.9)	High availability
2	Electronic databases/e-journal databases	191 (94.1)	5 (2.5)	7 (3.4)	High availability
3	Institutional Repository	171 (84.2)	13 (6.4)	19 (9.4)	High availability
4	Digital Library Platform	154 (75.9)	27 (13.3)	22 (10.8)	High availability
5	Integrated Library System (ILS)	152 (74.9)	24 (11.8)	27 (13.3)	High availability
6	Library Discovery/Search Service	146 (71.9)	21 (10.3)	36 (17.7)	High availability
7	Electronic Resource Management System	94 (46.3)	45 (22.2)	64 (31.5)	Low/uncertain availability
8	Reference-management software such as Zotero or Mendeley	131 (64.5)	45 (22.2)	27 (13.3)	Moderate availability
9	Digital preservation/archiving system	105 (51.7)	44 (21.7)	54 (26.6)	Moderate availability
10	Library mobile applications/mobile-access services	86 (42.4)	52 (25.6)	65 (32.0)	Low/uncertain availability
11	Research Data Management System	85 (41.9)	36 (17.7)	82 (40.4)	Low/uncertain availability
12	RFID/self-service circulation technology	47 (23.2)	88 (43.3)	68 (33.5)	Low/uncertain availability
13	Virtual reference/online librarian services	107 (52.7)	40 (19.7)	56 (27.6)	Moderate availability

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S/N	Emerging Library Technology	Available F (%)	Not Available F (%)	Not Sure F (%)	Remark
14	AI-powered search or discovery tools	124 (61.1)	35 (17.2)	44 (21.7)	Moderate availability
15	AI chatbot/virtual assistant	68 (33.5)	45 (22.2)	90 (44.3)	Low/uncertain availability

Table 2 shows that electronic databases/e-journal databases were the most widely reported technology, with 191 respondents (94.1%) indicating availability. This was followed by OPAC, 177 (87.2%), and the institutional repository, 171 (84.2%). Digital library platforms, integrated library systems and library discovery/search services were also reported by more than 70% of respondents. In contrast, RFID/self-service circulation technology recorded the lowest perceived availability, 47 (23.2%), followed by AI chatbot/virtual assistant, 68 (33.5%), research data management systems, 85 (41.9%), and library mobile services, 86 (42.4%). The pattern indicates stronger awareness of established digital-library infrastructure than of newer self-service, research-data and AI-facing services.

The availability results show a layered pattern of digital-library development. Established technologies such as electronic databases, OPAC and the institutional repository recorded the highest perceived availability, whereas RFID/self-service systems, research-data management systems, mobile-library services and AI chatbots were less widely reported. This pattern is consistent with the broader Nigerian literature, which describes growing awareness of emerging technologies alongside uneven institutional readiness and

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implementation (Saibakumo, 2021; Owolabi et al., 2022). The finding suggests that the library's digital foundation is more visible to users than newer intelligent or self-service services.

RQ 2. What is the level of AI use among final-year students in Clifford University Library?

Table 3. Level of Artificial Intelligence Use among Final-Year Students

S/N	Item	Mean	Standard Deviation (SD)	Remark
1	I use AI tools to search for academic information.	3.00	0.82	High
2	I use generative AI tools to clarify difficult academic concepts.	2.94	0.75	High
3	I use AI to generate keywords or search terms for finding research materials.	2.89	0.81	High
4	I use AI tools to summarize academic articles or research materials.	2.94	0.81	High
5	I use AI to identify relevant literature for my research/project.	2.81	0.79	High
6	I use AI-assisted tools when organizing information for academic work.	2.71	0.84	High
7	I use AI tools to assist with citations and references.	2.70	0.85	High
8	I use AI chatbots or virtual assistants when I need research-related information.	2.81	0.80	High
9	I use AI-generated recommendations to discover additional academic resources.	2.67	0.85	High
10	I verify information obtained from AI tools using credible scholarly sources.	2.98	0.81	High
11	AI tools form an important part of my final-year research activities.	2.78	0.82	High
12	I am confident in using AI tools appropriately for academic research.	2.85	0.87	High
	Grand Mean	**2.84**	**0.56**	**High**

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As shown in Table 3, the grand mean for AI use was 2.84 (SD = 0.56), indicating a high level of AI use. The most frequently reported activity was using AI tools to search for academic information (M = 3.00, SD = 0.82), followed by verifying AI-generated information with credible scholarly sources (M = 2.98, SD = 0.81). The least used activity was AI-generated recommendation for discovering additional academic resources (M = 2.67, SD = 0.85). All twelve items nevertheless fell within the high-use range. AI use was high overall, with academic searching and verification of AI-generated information ranking among the most frequent activities. This is noteworthy because Nigerian studies have often reported emerging or uneven institutional AI adoption (Ajani et al., 2022; Isiaka, 2023; Moustapha & Yusuf, 2023). The apparent difference may reflect the distinction between students' use of general-purpose AI tools and the library's ownership or deployment of dedicated AI systems. The low perceived availability of library AI chatbots, alongside high student AI use, reinforces the need to distinguish user-driven AI adoption from institutionally embedded AI services.

RQ 3. What is the level of user satisfaction among final-year students in Clifford University Library?

Table 4. Level of User Satisfaction with Technology-Mediated Library Services

S/N	Item	Mean	Standard Deviation (SD)	Remark
1	Ease of accessing electronic library resources.	2.91	0.81	Satisfied
2	Ease of locating relevant scholarly information.	3.02	0.74	Satisfied
3	Availability of electronic resources needed for my research.	2.87	0.82	Satisfied

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S/N	Item	Mean	Standard Deviation (SD)	Remark
4	Speed with which I can retrieve information using library technologies.	2.90	0.73	Satisfied
5	Reliability of the library's technology-based services.	2.76	0.79	Satisfied
6	Relevance of the search results provided by electronic library systems.	2.93	0.76	Satisfied
7	Ease of using the library's digital systems and interfaces.	2.87	0.80	Satisfied
8	Access to library resources outside the physical library.	2.79	0.77	Satisfied
9	Assistance received when I encounter difficulties using library technologies.	2.81	0.80	Satisfied
10	Usefulness of emerging library technologies for my final-year research.	3.06	0.72	Satisfied
11	Ability of the library's digital services to meet my information needs.	2.99	0.78	Satisfied
12	Overall quality of technology-supported library services.	2.93	0.79	Satisfied
13	Overall, I am satisfied with the technology-enabled services provided by Clifford University Library.	2.91	0.80	Satisfied
	Grand Mean	**2.90**	**0.52**	**Satisfied**

Table 4 indicates an overall satisfactory level of user satisfaction (Grand Mean = 2.90, SD = 0.52). Satisfaction was highest for the usefulness of emerging library technologies for final-year research (M = 3.06, SD = 0.72), followed by ease of locating relevant scholarly information (M = 3.02, SD = 0.74) and the ability of digital services to meet information needs (M = 2.99, SD = 0.78). The lowest mean was recorded for reliability of technology-based services (M = 2.76, SD = 0.79), although this still fell within the satisfied category. The strongest satisfaction rating concerned the usefulness of ELTs for final-year research, while

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reliability of technology-based services recorded the lowest mean. This combination is important: users can recognize the academic value of digital library systems while still experiencing operational weaknesses. Adegoke et al. (2023) similarly identified internet quality, power supply, access conditions, equipment and resource adequacy as important determinants of satisfaction with electronic resources in Nigerian university libraries.

RQ 4. What are the benefits of ELT use among final-year students of Clifford University?

Table 5. Benefits of Emerging Library Technology Use

S/N	Item	Mean	Standard Deviation (SD)	Remark
1	Emerging library technologies provide faster access to academic information.	3.32	0.67	Agree
2	They improve access to current scholarly materials.	3.20	0.66	Agree
3	They reduce the time required to locate relevant research information.	3.28	0.65	Agree
4	They make it possible to access library resources remotely.	3.25	0.65	Agree
5	They improve the quality of my final-year research/project.	3.22	0.61	Agree
6	They help me locate information from several academic sources more efficiently.	3.29	0.65	Agree
7	They make academic research more convenient.	3.28	0.57	Agree
8	They improve my ability to conduct independent research.	3.21	0.65	Agree
9	They make it easier to organize references and research materials.	3.12	0.67	Agree
10	They improve my awareness of available scholarly information resources.	3.23	0.66	Agree
11	They enable access to library services beyond normal library opening hours.	3.19	0.67	Agree

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12	Emerging library technologies improve my overall library experience.	3.27	0.67	Agree
	Grand Mean	**3.24**	**0.37**	**Agree**

Table 5 shows strong agreement that ELTs provide meaningful academic and research benefits (Grand Mean = 3.24, SD = 0.37). The highest-rated benefit was faster access to academic information (M = 3.32, SD = 0.67), followed by more efficient access to information from several academic sources (M = 3.29, SD = 0.65). The lowest-rated benefit was easier organization of references and research materials (M = 3.12, SD = 0.67). Since every item exceeded the 2.50 criterion mean, all listed benefits were accepted. This finding is compatible with the DeLone and McLean Information Systems Success Model, which links system quality, information quality and service quality with use, user satisfaction and net benefits. It also supports the application of information-systems-success constructs to digital-library evaluation reported by Riady et al. (2023). In practical terms, the value of technology appears to lie not simply in its availability but in how effectively it reduces effort and improves access to relevant scholarly resources.

RQ 5. What are the challenges confronting the use of ELT in Clifford University Library?

Table 6. Challenges Confronting the Use of Emerging Library Technologies

S/N	Item	Mean	Standard Deviation (SD)	Remark
1	Poor or unstable internet connectivity affects my use of library technologies.	2.97	0.66	Agree
2	Irregular power supply affects access to electronic library services.	2.95	0.68	Agree
3	I do not receive enough information about technologies available in the library.	2.86	0.72	Agree

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S/N	Item	Mean	Standard Deviation (SD)	Remark
4	Inadequate training limits effective use of library technologies.	2.85	0.73	Agree
5	Some electronic resources are difficult to access because of passwords or authentication requirements.	2.95	0.71	Agree
6	Some library technologies are difficult to understand or operate.	2.67	0.71	Agree
7	Slow or unavailable systems discourage me from using electronic library resources.	2.98	0.69	Agree
8	Limited access to subscribed electronic resources affects my research.	2.89	0.72	Agree
9	Inadequate technical assistance affects my use of library technologies.	2.81	0.75	Agree
10	Lack of appropriate devices affects students' ability to access digital library resources.	2.73	0.72	Agree
11	Concerns about privacy and data security discourage the use of some digital/AI services.	2.78	0.76	Agree
12	Inaccurate or misleading information generated by AI tools creates difficulties for research.	2.86	0.68	Agree
13	Limited knowledge of how to evaluate AI-generated information affects effective AI use.	2.85	0.73	Agree
14	The cost of internet data can limit access to online library resources.	2.97	0.76	Agree
	Grand Mean	**2.87**	**0.39**	**Agree**

Table 6 reveals that respondents agreed that all fourteen listed factors posed challenges to effective use of ELTs (Grand Mean = 2.87, SD = 0.39). Slow or unavailable systems ranked highest (M = 2.98, SD = 0.69), closely followed by poor/unstable internet connectivity (M = 2.97, SD = 0.66) and the cost of internet data (M = 2.97, SD = 0.76). Difficulty understanding or operating library technologies recorded the lowest mean (M = 2.67, SD = 0.71), but it remained above the 2.50 acceptance threshold. This finding was buttressed with

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the findings of Nakaziba et al. (2026) where funding, knowledge gaps, infrastructure, privacy, ethical use, management and policy constituted barriers in low and middle income countries. It also aligned with the findings of Emin (2025) which highlighted start-up costs, staff training, privacy, copyright, bias and the need for transparent institutional guidelines as barriers.

Hypotheses Testing

$H_0 1$: Emerging library technologies have no significant influence on user satisfaction among final-year students of Clifford University.

Table 7a. Influence of Emerging Library Technologies on User Satisfaction **- Model/ANOVA Summary**

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	13.893	1	13.893	68.570	<0.001
Residual	40.724	201	0.203		
Total	**54.616**	**202**			

R = 0.504 R Square = 0.254 Adjusted R Square = 0.251

Table 7b. Regression Coefficients for Emerging Library Technology Use Predicting User Satisfaction

Model	B	Std. Error	Beta	t	Sig.
(Constant)	1.283	0.198		6.473	<0.001
Emerging Library Technology Use	0.548	0.066	0.504	8.281	<0.001

Hypothesis 1: Tables 7a and 7b show a statistically significant positive influence of ELT use on user satisfaction, R = 0.504, R^2 = 0.254, adjusted R^2 = 0.251, F(1, 201) = 68.570, p < 0.001. ELT use had a positive unstandardized coefficient (B = 0.548, SE = 0.066) and a standardized beta of β = 0.504, t = 8.281, p < 0.001. ELT use therefore explained

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approximately 25.4% of the variance in user satisfaction. The null hypothesis that ELT has no significant influence on user satisfaction is rejected.

$H_0$2: Artificial intelligence does not significantly influence user satisfaction among final-year students of Clifford University.

Table 8a. Influence of Artificial Intelligence on User Satisfaction **- Model/ANOVA Summary**

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	13.124	1	13.124	63.576	<0.001
Residual	41.493	201	0.206		
Total	54.616	202			

R = 0.490 R Square = 0.240 Adjusted R Square = 0.237

Table 8b. Regression Coefficients for Artificial Intelligence Use Predicting User Satisfaction

Model	B	Std. Error	Beta	t	Sig.
(Constant)	1.618	0.164		9.839	<0.001
Artificial Intelligence Use	0.453	0.057	0.490	7.973	<0.001

Hypothesis 2: tables 8a and 8b indicates that AI use significantly and positively predicted user satisfaction, R = 0.490, R^2 = 0.240, adjusted R^2 = 0.237, F(1, 201) = 63.576, p < 0.001. The regression coefficient for AI use was B = 0.453 (SE = 0.057), β = 0.490, t = 7.973, p < 0.001. AI use accounted for approximately 24.0% of the variance in user satisfaction. The second null hypothesis is therefore rejected.

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$H_0$3: Emerging library technologies and artificial intelligence have no significant combined influence on user satisfaction among final-year students of Clifford University.

Table 9a. Joint Effect of Emerging Library Technologies and Artificial Intelligence on User Satisfaction

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	19.816	2	9.908	56.940	<0.001
Residual	34.801	200	0.174		
Total	54.616	202			

R = 0.602 R Square = 0.363 Adjusted R Square = 0.356

Table 9b. Multiple Linear Regression Showing the Relative Effects of ELT and AI on User Satisfaction

Model	B	Std. Error	Beta	t	Sig.
(Constant)	0.769	0.204		3.773	<0.001
Emerging Library Technology Use	0.409	0.066	0.376	6.201	<0.001
Artificial Intelligence Use	0.326	0.056	0.354	5.834	<0.001

Hypothesis 3: The joint regression model in Tables 9a and 9b was statistically significant, R = 0.602, R^2 = 0.363, adjusted R^2 = 0.356, F(2, 200) = 56.940, p < 0.001. Together, ELT use and AI use explained 36.3% of the variation in user satisfaction. In the combined model, ELT use remained significant (B = 0.409, SE = 0.066, β = 0.376, t = 6.201, p < 0.001), as did AI use (B = 0.326, SE = 0.056, β = 0.354, t = 5.834, p < 0.001). ELT use made the slightly stronger unique contribution. The third null hypothesis is rejected.

ELT use independently accounted for 25.4% of the variance in user satisfaction, while AI use accounted for 24.0%. When entered together, both variables remained significant and

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the model explained 36.3% of satisfaction. ELT use had a slightly larger standardized effect (β = 0.376) than AI use (β = 0.354). The combined result suggests that conventional and emerging digital-library technologies remain central to the user experience even as AI becomes increasingly important. However, the unexplained 63.7% of variance also indicates that satisfaction is shaped by other factors, including resource quality, staff support, infrastructure, interface design, research skills and individual expectations.

Recommendations

Based on these findings, the study recommended that Clifford university library management should:

1. Improve the reliability and uptime of digital library platforms, with particular attention to network connectivity, power continuity and system maintenance.
2. Strengthen remote access and authentication support for subscribed databases and electronic resources, and provide prompt assistance when users encounter access problems.
3. Intensify awareness and hands-on training for less visible technologies, particularly research-data management systems, mobile-library services, RFID/self-service functions, discovery tools and virtual reference services.
4. Introduce or strengthen AI literacy programmes that teach students how to search effectively, verify AI-generated information, protect personal data, recognize hallucinations and use AI ethically in academic research.

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5. Develop a clear institutional framework for AI-enabled library services, including human oversight, privacy safeguards, responsible-use guidance and evaluation criteria before large-scale deployment of AI chatbots or recommendation systems.

6. Conduct periodic user-satisfaction and technology-use assessments so that investment decisions are informed by evidence on actual student needs, service quality and research outcomes.

Conclusion

The study concluded that emerging library technologies and artificial intelligence both contributes significantly to enhancing user satisfaction in Clifford university library. The study has also shown that emerging library technologies are key to a better user experience as artificial intelligence becomes increasingly important. The study further affirmed that user satisfaction can be shaped by factors such as resource quality, staff support, infrastructure, interface design, research skills and individual expectations.

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