INTEGRATION OF INFORMATION AND COMMUNICATION TECHNOLOGIES (ICTS) INTO ACADEMIC LIBRARIES: BENEFITS AND CHALLENGES

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Abstract

This study investigates the integration of Information and Communication Technologies (ICTs) in Kashim Ibrahim Library, Ahmadu Bello University, focusing on their role in enhancing digital resource use, service responsiveness, and librarians' performance. This study aimed at investigating the perception of academic librarians of the ICT Division of Kashim Ibrahim Library on ways by which ICTs integration enhanced the use of the digital resources of the library. This study adopted a quantitative research methodology and a survey design to obtain data from 50 academic librarians using a structured questionnaire. Data obtained were analysed through frequency counts and mean scores on a four-point Likert scale. Findings reveal that the library's strategies for ICT adoption recorded a high overall mean ($\bar{x}$ = 3.54), highlighting strong commitment to staff training, budgetary allocation, and internal digital skill development. The benefits derived from ICT use, such as improved access to up-to-date information and enhanced operational efficiency, showed a moderate to high positive impact ($\bar{x}$ = 3.45). However, challenges including infrastructural deficiencies, poor funding, and low staff literacy persisted, reflected by a moderate grand mean ($\bar{x}$ = 3.23). The study concludes that while Kashim Ibrahim Library demonstrates commendable progress in ICT integration, sustainability demands continuous investment in infrastructure, capacity development, and participatory ICT governance. It recommends the implementation of comprehensive strategies, periodic evaluations, and strengthened collaborations with stakeholders to ensure consistent technological advancement and responsive service delivery in academic libraries.

Keywords: ICT integration, academic libraries, Kashim Ibrahim Library, digital resources, library services, Nigeria.

Introduction

The integration of Information and Communication Technologies (ICTs) into academic libraries, particularly universities, polytechnics, and colleges of education, has great benefits to the institutions because it supports academic programmes, expands library activities, particularly sourcing, cataloguing, classification, storage, and dissemination of acquired and subscribed information resources. It also affects how these libraries provide access to information at a very high speed, seamlessly, and with ease. All that is required is just a click away to multiple resources and sources of information necessary for improved decision-making. In addition, the integration of ICTs enables verification of library engagement outcomes, inclusion, and provides responsive library services for academic and non-academic purposes.

Globalization has also made academic libraries vital components of tertiary institutions through their contributions of local content, providing research and learning collaboration platforms, and instituting distinct models that cater to collection development, processes, organisation, and sharing of information in diverse formats to support teaching, learning, research, and community development. Benefits, such as feedback mechanisms, are relied upon to provide and support the creation of new knowledge and evidence-based practices. The integration of ICTs into academic libraries is illuminating the academic libraries and the services provided as information hubs that offer access to varied and trusted information resources (Odong, Magara, & Lutaaya, 2024).

Coincidentally, reasons why integrating ICT into academic libraries revolve around the mandate of the library to enhance use and make operations more globalized. That is, to enable access to resources and services beyond physical walls (Edom & Ihim, 2021). This made ICT serve as a powerful enabler of development, bridging physical and virtual boundaries, and strengthening collaboration between institutions, governments, and global agencies. These are some of the espoused benefits over the challenges faced by academic libraries since the turn of the post-21st century (Umeh et al., 2023).

Academic libraries face enormous challenges when they want to transform their spaces into dynamic learning and engaging environments that promote both formal and informal education (Rakte, 2025). It is glaring that such challenges are caused by inadequate funding (Adeniran, Nwalo, & Ajani, 2020), lack of technical skills and training (Agboke & Oladokun, 2025), user digital literacy gaps (Shikali & Muneja, 2024), digital divide (Yusuf, 2023), and system integration and sustainability issues such as updates, license renewals, and infrastructural obsolesces (Odong et al., 2024).

Resolving such problems no doubt may vary from one institution to another, but the institution committed to the course should prioritise ICT investment purposefully for the library through annual budgets, government agencies, private and non-governmental organisations, to secure funds and/or share infrastructure. Continuous staff training should also be strengthened using professional development programmes and workshops for competencies in areas of ICT proficiency, technical, services, and customer relationships. Therefore, providing user education and digital literacy to enhance library users' experience, ICT skills, research, and end users' assessment can guarantee the decisions of the appropriate scalable and integrated library systems that are best for the library operations.

As academic libraries engage with stakeholders, collaboration, resource sharing, and evaluation in terms of performance can be identified to ensure user satisfaction and enhance service delivery (Adeniran et al., 2020). With such performance indicators prioritised, academic libraries can fully harness the potential of ICTs to improve information access and academic productivity.

Brief on the study area

Kashim Ibrahim Library (KIL) is the headquarters of the Ahmadu Bello University Library Complex of the University Main Campus in Samaru. The complex was established for administrative convenience, organization, and management of 11 satellite libraries, 12 faculty libraries, and over 104 departmental and unit libraries, as well as 12 libraries in institutes and special centres in the University (Kasa & Abdulsalam, 2020).

The library has over 100 professionals (academic librarians) serving in the complex, and as the headquarters houses nine divisions, among the divisions is the Information and Communication (ICT) Division. The ICT Division has four units; The MTN Connect Library designated for undergraduate students, the PG e-library designated for postgraduate students, the Learning commons that is open for virtual and physical academic discussions for postgraduate students, lecturers and conferencing, and the electronic classroom designated for the training of academic staff and postgraduate students on subscribed resources, research toolkits and creation of awareness for the utilisation and familiarization with ICTs tools and platforms for academic engagements.

Statement of the problem

Despite the benefits of integration of ICTs into academic libraries to facilitate the institution and stakeholders to create new knowledge, provide access to existing knowledge, and encourage learners, lecturers, and researchers to prioritize making their contributions to knowledge visible, retrievable, and storable. The state of improving academic library services is very slow and frustrating because it makes the benefits that should be drawn from utilizing academic libraries almost deficit. From the extant literature, authors blamed low effectiveness and inefficiency on the lack of integration of ICTs in libraries across developing countries.

These have also denied library users from accessing a wide range of information resources available and accessible through digital technologies (Adeniran et al., 2020, Rawayau, 2024). This study examines the benefits and challenges of integrating ICTs in the Kashim Ibrahim Library of Ahmadu Bello University, enhancing the obligations of the library towards library use and responsive services.

Study objectives

The main objective is to investigate the perception of academic librarians of the ICT Division of Kashim Ibrahim Library on ways by which ICTs integration have been able to enhance use of the digital resources of the library. The specific objectives are:

1. Examine the strategies used by Kashim Ibrahim Library to enhance ICTs use
2. Determine the benefits derived by using ICTs in Kashim Ibrahim Library
3. Identify challenges hindering effective utilization of ICTs facilities for responsive service provision in Kashim Ibrahim Library

Literature Review

Strategies Used to Enhance ICT Use in Academic Libraries

Diverse literature has been able to establish that tertiary institutions are able to recognise that many library services are not functioning as expected. The circumstances have led to the adoption of new strategies centred on ICT-based operations. These strategies must be implemented thoughtfully to succeed. For example, creating an inviting electronic library environment helps motivate users (e.g., comfortable, accessible virtual spaces). Studies show that key factors promoting ICT use include user attitude, staff ICT competence, and favourable communication or information about the technology (Achugbue, Ahimbisibwe, Odong, & Azih, 2024).

Consequently, academic libraries are encouraged to establish ongoing instructional programmes aimed at developing soft skills in staff and users, raising awareness of library holdings, products, and services. These are strategies that bring sympathy and empathy to the library. Eye-catching changes are recorded when ICTs are integrated along with the strategies because they improve library service delivery, shift from optional to essential infrastructure (Khanam, 2023).

Critical strategies that are ICT-based, enumerated by Agboke and Oladokun (2025), that should not be neglected include: providing adequate ICT infrastructure; training and retraining staff; personalising services for users; and joining resource-sharing networks or consortia. Of significance is an ICT policy framework that illuminates the crucial roles that delineate the roles and responsibilities of stakeholders to support the utilisation and sustainability of ICT services (Rawayau, 2024).

Benefits of ICT in Academic Libraries

The benefits of ICT adoption in academic libraries are significant and influence both the library institution and its users. ICT supports inclusivity, ease of access, speed of service, independence in learning, up-to-date resources and increased outreach. According to Khanam (2023) ICT enhances the quality of library services and facilities through access to digital resources, collaborative learning opportunities, and improved library management. These are tremendous benefits that ICTs have brought to academic libraries.

Information and Communication Technology (ICT) has also helped libraries evolve into broader “information access points”, facilitating community participation, extending access beyond local confines, and helping to address the digital divide (Agboke & Oladokun, 2025). In addition, ICT tools enable the combining of data from multiple sources to support research outputs and the development of new subject fields.

Challenges Hindering Effective Utilisation of ICT in Academic Libraries

Despite the clear benefits, there remain substantial challenges which hinder full ICT utilisation in academic libraries. These include insufficient planning, weak infrastructure, limited staff skills, inadequate funding, lack of coherent ICT policy, resistance to change, poor maintenance culture, restricted internet access, and use of unlicensed software (Rawayau, 2024). Other specific issues hindering effective utilisation of ICT among academic libraries include the high inertia cost of ICT setup, products and infrastructure, rapid obsolescence of installed equipment, frequent need for training updates for people who use the infrastructure, and gross logistic support deficits.

In many developing country contexts, slow uptake of ICT is heavily influenced by funding constraints, inadequate staff capacity, and unstable logistical support (Agboke & Oladokun, 2025).

A recent study during the COVID-19 pandemic by Shikali and Muneja (2024) showed that although academic libraries adopted remote and digital services rapidly, major barriers for students included limited internet access, inadequate ICT devices and low digital and information literacy.

Methodology

This study adopted a quantitative research methodology to enable it systematically investigate the perception of academic librarians of the ICT Division of Kashim Ibrahim Library on ways by which ICTs integration have been able to enhance use of the digital resources of the library. To achieve the thrust, survey research design was adopted to gather information from all the academic librarians of the ICT division. A total of 50 academic staff who are engaged in the were constituted the target population, because the number of academic staff in the population are manageable a simple random sampling technique of probability was used to elicit data using closed-ended questionnaire which served as instrument for data collection that contained aspects of use, benefits and challenges to ICTs used in simplified language and objectives of the study. These 50 academic librarians were purposively sampled and produced a response rate of 100%. The data collected were analysed using frequency counts on four Likert-scale type adopted (4 – strongly agreed, 3 – agreed, 2 – disagreed, and 1 – strongly disagreed) and their subsequent means scores used to further present and interpret the implications of the findings. A benchmark mean of 2.5 and above was established for assessing the performance of ICTs in Kashim Ibrahim Library according to the study objectives. Similarly, a decision rule was adopted to rank and interpret the grand average mean computed. The rule ranged from $\leq$ 2.49 to imply ICT has low impact, 2.5 to 3.49 implied that ICT has moderate impact and 3.50 to 4 implied that ICTs have very high impact on the scale of 4 for the assessment of enhancing academic library use, espouse benefits and overturning challenges.

Results and Discussion

The outcome of the data collected on the integration of ICT in Kashim Ibrahim Library are presented in tabular formats. A four level Likert scale types was used to analysed the response on single item bases and combined grand mean average per table for purpose of making inference on the benefits and challenges Kashim Ibrahim Library faced while responsively integrating ICT into her facilitating and information dissemination services. The results and discussions based on the implications of the findings to the objectives of the study are hereby given:

Table 1: Perception of Academic Librarians on Strategies that Enhance the Use of ICTs

Strategy that enhance use of ICTs	Response based on Likert Scale type				Mean ($\bar{x}$)
	SA	A	D	SD	
Allocation of at least 10% of the library budgets to ICT facilities development	41	3	2	4	3.62
Encouraging staff to acquire computer literacy	42	1	2	5	3.60
Internal training of staff to boost soft skills	42	3	3	2	3.70
Developing and implementing ICT policy	40	2	2	6	3.52
Partnering with external agencies to provide ICT-based services	40	2	2	6	3.52
Engaging staff to appraise the benefits of ICTs in library operations	38	4	2	6	3.48
Updating staff on recent developments in ICT innovations as it pertained to library development	40	2	3	5	3.54
External training of staff on ICT literacy programmes	35	5	3	7	3.36
Grand mean average					**3.54**

Key: SA = strongly agree, A = Agree, D = Disagree, SD = strongly disagree
Source: Field Survey, 2025

Table 1 reveals how librarians in Kashim Ibrahim Library perceive strategies that promote ICT adoption. The grand mean ($\bar{x}$ = 3.54) indicates that the overall perception is high — librarians largely agree that the listed strategies are effective in enhancing ICT use. Among the individual items, internal training of staff to boost soft skills ($\bar{x}$ = 3.70) ranked highest, showing that staff capacity building remains the most influential factor for sustaining ICT operations. This finding agrees with Agboke and Oladokun (2025), who emphasised that continuous staff training is the foundation of ICT service delivery in academic libraries. Similarly, Umeh, Adebayo, and Okoro (2023) reported that human capital development directly influences ICT utilisation and innovation in library services.

Other high-scoring strategies include allocation of at least 10% of the library budget to ICT facilities development ($\bar{x}$ = 3.62) and encouraging staff to acquire computer literacy ($\bar{x}$ = 3.60). These results highlight the critical role of financial commitment and digital competence. Odong, Magara, and Lutaaya (2024) found that sustainable budgetary allocations for ICT infrastructure are necessary for achieving functional and responsive library systems in African universities.

Moderate mean values were recorded for developing and implementing ICT policy and partnering with external agencies ($\bar{x}$ = 3.52 each). This reflects awareness among librarians that effective ICT implementation requires structured policies and partnerships with external bodies, consistent with Rawayau (2024), who asserted that policy clarity and institutional collaboration are vital for digital transformation in libraries. The least mean ($\bar{x}$ = 3.36) for external training of staff implies that fewer librarians access training opportunities outside the institution, possibly due to funding limitations. The implication is that institutional training initiatives may be more sustainable in resource-constrained contexts.

These findings imply that Kashim Ibrahim Library commitment to human capacity development and funding is essential to sustain ICT-based library services. They library is however, expected to consistently provide internal training and adequate budgetary support to the ICT division, so that the desired digital transformation of the library operations do not stagnate despite awareness of its importance.

Table 2: Benefits of ICTs to Kashim Ibrahim Library

Benefits of ICTs	Response based on Likert Scale type				Mean ($\bar{x}$)
	SA	A	D	SD	
Provision of speedy and easy access to information and services	41	6	2	1	3.74
Provide remote and physical access to the library resources and services	31	6	5	8	3.20
Provide round-the-clock access to the library	30	8	5	7	3.22
Provide unlimited access to different sources acquired by the library	33	9	4	4	3.42
Provide up-to-date information	39	6	3	2	3.64
Provide flexible platform that accommodate diverse users information needs	32	10	3	5	3.38
Support reformation and combination of data from numerous sources	30	9	5	6	3.26
Facilitate self-education	36	8	4	2	3.56
Support library cooperation and networks	34	9	3	4	3.46
Enhance efficiency and effectiveness of library operations and services	38	7	3	2	3.62
Grand mean average					**3.45**

Key: SA = strongly agree, A = Agree, D = Disagree, SD = strongly disagree
Source: Field survey, 2025

The results in Table 2 show that respondents perceived ICT as offering substantial benefits, with a grand mean of 3.45, suggesting moderate to high positive impact. The highest-rated benefit, provision of speedy and easy access to information and services ($\bar{x}$ = 3.74), demonstrates librarians' recognition of ICT's role in improving efficiency and reducing barriers to information. This corroborates the findings of Khanam (2023) that ICT integration

enhances user satisfaction by enabling instant information retrieval and access across multiple databases.

Other strong benefits include up-to-date information ($\bar{x}$ = 3.64) and enhancement of efficiency and effectiveness of operations ($\bar{x}$ = 3.62). These align with Achugbue et al. (2024), who found that ICT-driven libraries deliver timely and reliable information that supports teaching, research, and administrative processes. Likewise, Shikali and Muneja (2024) showed that digital platforms improved access and learning continuity during the COVID-19 disruptions, confirming ICT's value in resilience and service innovation.

Moderate means were recorded for facilitating self-education ($\bar{x}$ = 3.56), supporting library cooperation and networks ($\bar{x}$ = 3.46), and providing flexible platforms for diverse information needs ($\bar{x}$ = 3.38). These suggest that ICT promotes independent learning and collaboration — attributes also reported by Iwuchukwu and Emuchay (2023), who argued that ICT has redefined academic libraries as learning commons. The lower mean for remote and physical access ($\bar{x}$ = 3.20) indicates that, although ICT expands accessibility, infrastructural gaps such as poor internet connectivity and inconsistent power supply still hinder full realisation of ICT benefits (Odong et al., 2024).

The study affirmed that ICT division is the Kashim Ibrahim Library backbone that can strengthen the library and support with the provision of equitable, efficient, and requisite round-the-clock information access platforms. However, the moderate scores obtained from respondents revealed the need for continuous infrastructure upgrading and user-support services to sustain the benefits of ICT over time.

Table 3: Overcoming ICT Challenges in Kashim Ibrahim Library

	Response based on Likert Scale type				Mean ($\bar{x}$)
	SA	A	D	SD	
Overturn the low level of staff computer literacy	30	5	10	5	3.29
Provide additional telecommunication facilities	33	3	8	6	3.26
Address the ICTs infrastructural deficiencies	35	6	5	4	3.44
Promote ICT-based awareness programmes	30	5	8	7	3.16
Train and retrain staff on specific ICT skills	30	6	10	4	3.24
Include staff in the development and implementation of ICTs use to overcome resistance	28	10	3	9	3.14
Ensure that ICT facilities are expandable and support migration to carter for the frequent changes and modifications of ICTs	27	6	4	11	2.98
Address the funding challenges	32	7	5	6	3.30
Grand mean average					**3.23**

Key: SA = strongly agree, A = Agree, D = Disagree, SD = strongly disagree
Source: Field survey, 2025

Table 3 addresses strategies for overcoming challenges that limit effective ICT use. The grand mean ($\bar{x}$ = 3.23) shows a moderate consensus among librarians that the listed strategies are necessary for improvement. The highest-rated item, addressing ICT infrastructural deficiencies

($\bar{x}$ = 3.44), suggests that infrastructure remains the greatest barrier. Similar findings by Agboke and Oladokun (2025) confirmed that outdated systems and inadequate equipment impede ICT performance in Nigerian academic libraries.

Other notable strategies include addressing funding challenges ($\bar{x}$ = 3.30) and overturning low levels of staff computer literacy ($\bar{x}$ = 3.29), highlighting persistent human-resource and financial constraints. Rawayau (2024) also observed that poor funding and low digital literacy among staff remain core impediments to ICT sustainability. The relatively lower means for ICT-based awareness programmes ($\bar{x}$ = 3.16) and including staff in ICT policy development ($\bar{x}$ = 3.14) suggest limited participatory planning, which may weaken institutional ownership of ICT innovations.

The lowest mean, ensuring ICT facilities are expandable and support migration to newer technologies ($\bar{x}$ = 2.98), indicates challenges in scalability and system updates. Shikali and Muneja (2024) similarly noted that libraries in developing regions struggle to upgrade software and hardware regularly due to cost and vendor dependency. These results implied that to overcome ICT challenges in Kashim Ibrahim Library, both the university librarian and the Vice-Chancellor are expected to be deliberate with ICT investment for the library and division. It should done strategically in sustainable infrastructure, create staff development pipelines, and institute participatory ICT governance frameworks. Without such measures, ICT adoption risks being reactive rather than transformative.

Conclusion

The study conclude that Kashim Ibrahim Library like other academic libraries needs ICTs because they are mutually indispensable. Specifically, Kashim Ibrahim Library demonstrates progressive but uneven ICT integration. The high mean values in Tables 1 and 2 indicate a strong perception of ICT's value and benefits, yet the moderate mean in Table 3 underscores persistent structural and capacity-related constraints.

Recommendations

The following recommendations are proffered:

1. The central library working committee of KIL should develop implementable strategies that address both internal and external factors influencing ICT use. These strategies should encourage positive staff attitudes toward ICT integration and foster greater engagement with library modernization efforts.
2. The head of the ICT division should establish regular evaluation procedures at each unit. Each unit head will identify the benefits of ICT integration that should be sustained and report these to the University librarian to inform ongoing improvement and planning to the University management.
3. The head of the ICT division of the library should institute measures that strengthen the collaborative relationship between the division and its stakeholders so that the library can obtain the financial and material support and overcome most of its challenges.

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