



Optimizing Digital Reference Services Utilization: A Comparative Study of Two University Libraries in Nigeria and Malaysia

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Abstract

The rapid evolution of information and communication technology (ICT) has revolutionized the delivery of library services, establishing digital reference services (DRS) as an essential component of academic libraries. This study conducts a comparative analysis of DRS utilization in two university libraries: the Kashim Ibrahim Library (KIL) at Ahmadu Bello University (ABU), Nigeria, and the Dar al-Hikmah Library (DHL) at the International Islamic University Malaysia (IIUM). The research evaluates technological frameworks, user engagement strategies, and operational practices to identify factors that influence the efficiency, effectiveness, and user satisfaction of DRS in these institutions. The analysis reveals that Dar al-Hikmah Library (DHL) accounts for 41.7% of the total digital services provided in this comparative study, demonstrating its robust adoption of advanced features such as live chat, social media integration, and institutional repository access. In contrast, Kashim Ibrahim Library (KIL) contributes 33.3%, offering essential foundational services like an online catalog and database access but lacking more interactive features. A 25% service gap highlights the absence of advanced tools, such as real-time support and chatbots integration, at KIL. The study identifies challenges such as limited infrastructure, insufficient user training, and gaps in awareness. It also emphasizes opportunities for improvement, including adopting innovative technologies, expanding digital tools, and fostering collaboration between libraries. Actionable recommendations are provided to bridge service gaps and enhance user satisfaction, ensuring that DRS platforms effectively meet the diverse academic needs of user communities in Nigeria and Malaysia.

Subject Areas

Digital Reference Service

Keywords

Digital Reference Services (DRS), Academic Libraries, Information and Communication Technology (ICT), User Satisfaction, Comparative Analysis, Library Services Innovation, Social Media Integration, Service Gaps, Nigeria, Malaysia

1. Introduction

In the digital age, academic libraries are pivotal in providing timely and reliable information to their users. With advancements in information and communication technology (ICT), libraries have transitioned from traditional physical services to digital platforms, enabling broader accessibility and more efficient service delivery. Among these advancements, digital reference services (DRS) have emerged as a cornerstone of modern library operations, allowing users to communicate with librarians and access resources seamlessly, regardless of their physical location.

According to [1] library websites play a foundational role in facilitating DRS by hosting tools and features such as live chat, email inquiries, access to databases, institutional repositories, and other digital resources. These websites serve as the interface through which users interact with the library's offerings, making their design, functionality, and content critical to user satisfaction and engagement. The Kashim Ibrahim Library (KIL) at Ahmadu Bello University, Zaria, Nigeria, and the Dar al-Hikmah Library at the International Islamic University Malaysia (IIUM) are exemplary academic libraries that have adopted DRS to enhance their service delivery. While both libraries share the goal of meeting the evolving information needs of their users, the tools, functionalities, and user experiences provided on their respective websites may vary due to differences in institutional priorities, resources, and technological capabilities. Some scholars [2] [3] are optimize that, Nigeria and Malaysia have embraced DRS to meet the academic needs of their communities, but socio-economic conditions, ICT development levels, and institutional priorities influence how these services are implemented and utilized. This study seeks to compare the DRS tools and services available on the websites of these two libraries to identify gaps, best practices, and opportunities for improvement. By analyzing these libraries' approaches to implementing DRS, this research aims to provide actionable recommendations for enhancing user engagement, satisfaction, and access to library resources in academic settings globally. However, in compares these university libraries in Nigeria and Malaysia [3] [4] highlights differences in DRS application due to varying educational contexts. Both higher education systems recognize the importance of libraries in advancing academic performance and research output.

2. Theoretical Framework

1) The framework visually compares the digital reference service (DRS) tools and platforms of Dar al-Hikmah Library (IIUM) and Kashim Ibrahim Library (ABU) by examining their structure, tools, and user engagement. Each library's tools such as live chat, online catalogs, and institutional repositories are represented in interconnected nodes to showcase their relationships and areas of focus.

2) The framework is divided into two distinct sections, each focusing on one library: Dar al-Hikmah Library (IIUM) and Kashim Ibrahim Library (ABU). These sections highlight key components of their respective digital tools and platforms, organized into interconnected nodes based on functionality, to provide a comprehensive understanding of the libraries' digital ecosystems.

3) This comparative study is grounded in The Unified Theory of Acceptance and Use of Technology (UTAUT) [5] and The Information System Success Model [6]. UTAUT helps assess how performance expectancy, effort expectancy, social influence, and facilitating conditions affect user adoption of DRS in both libraries. Meanwhile, AlHatmi Nor's model evaluates the success of digital reference services by examining system quality, information quality, service quality, user satisfaction, and net benefits.

4) By integrating these theories, the framework provides a structured comparison of DRS adoption and effectiveness at IIUM and ABU, contributing to a better understanding of digital library service optimization in different educational and technological environments. See framework 1.1 (**Figure 1**).

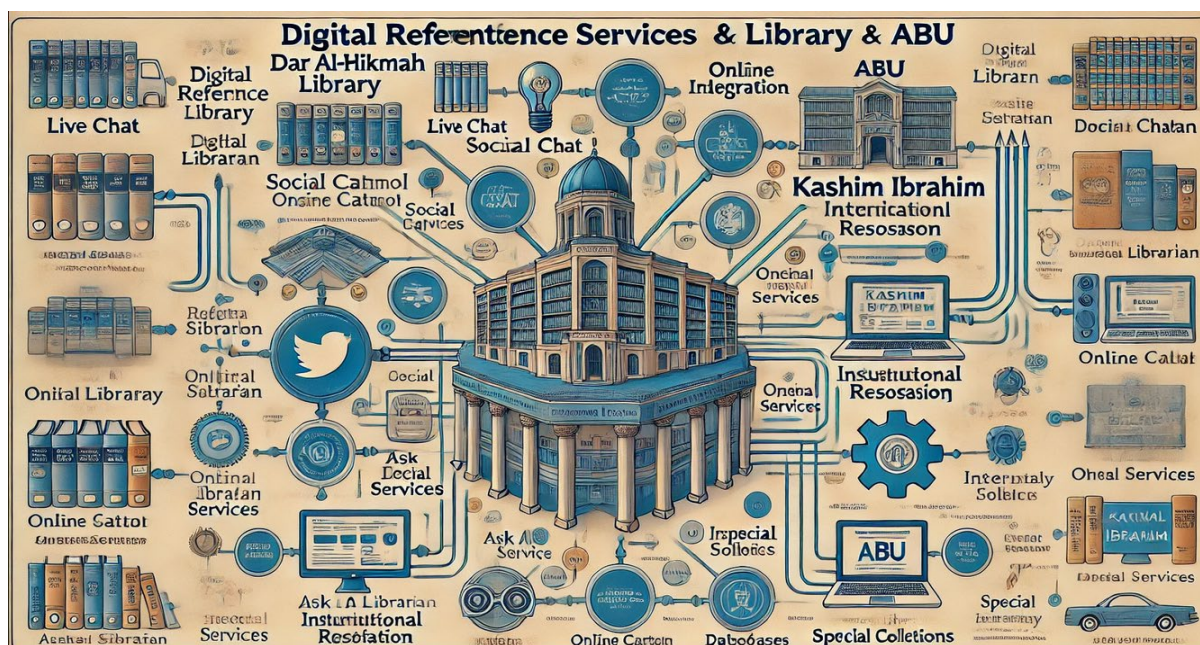


Figure 1. Source: library websites

2.1. Statement of the Problem

In the modern era marked by rapid technological advancements, academic librarians

ies are increasingly adopting digital reference services (DRS) to address the changing needs of their users. However, the effectiveness and adoption of these services vary considerably among institutions, influenced by factors such as the availability of technological infrastructure, levels of user engagement, and the approaches employed in service delivery. According to [7], despite the growing significance of DRS in improving access to information, there is a notable lack of comparative studies analyzing the tools and functionalities available on library websites.

This includes examining how user-friendly, accessible, and current these services are and identifying their strengths, weaknesses, and areas of stagnation. Addressing these gaps can lead to actionable observations and recommendations for improvement.

This research aims to evaluate the implementation and optimization of DRS within the distinct cultural and institutional contexts of academic libraries in Nigeria and Malaysia. Specifically, it focuses on Kashim Ibrahim library at Ahmadu Bello University (ABU) Zaria, Nigeria, and the Dar Al-Hikmah library at International Islamic University Malaysia (IIUM). By assessing critical factors such as service efficiency, technological readiness, and user satisfaction, the study seeks to identify both the challenges and opportunities inherent in each institution's DRS delivery.

Through a comparative analysis, this investigation will uncover the strengths and weaknesses of the digital reference tools provided by the libraries' websites, highlighting areas for improvement. The ultimate goal of the research is to offer practical recommendations to enhance the quality and utilization of DRS, thereby improving the overall library experience for users in both countries. This work fills an important gap in the literature and contributes to the development of user-centered digital reference services that meet the evolving demands of academic communities globally.

2.2. Research Objective

The primary objective of this research is to evaluate and compare the digital reference services (DRS) offered by two university libraries, focusing on identifying the tools utilized their functionality, and the existing gaps. The study also aims to propose practical strategies to enhance user satisfaction and improve the overall effectiveness of DRS platform.

2.3. Research Questions

The study seeks to address the following research questions:

1. What are the various tools employed for digital reference services (DRS) by the two university libraries, and how do these tools function?
2. What gaps exist in the DRS offerings, particularly regarding the usability and features of the university libraries' websites?
3. What are the most effective and practical recommendations for improving user satisfaction and optimizing the digital reference services provided by these libraries.

2.4. Significant of the Study

Digital reference service represents an innovative technology that is transforming the traditional methods of information delivery in libraries, including academic libraries. Both librarians and library users must embrace this advancement to optimize the retrieval and use of information. This study aims to:

1. Highlight for library administrators the critical role of information and communication technologies (ICT) in the delivery of reference and information services, emphasizing their growing importance in the modern library ecosystem.
2. Identify potential areas of weakness in the implementation and use of digital reference services. By doing so, the study seeks to provide actionable insights and novel ideas that can help enhance the effectiveness and efficiency of these services.
3. Offer a deeper understanding of how digital reference services can contribute to improving user satisfaction and academic performance, thereby encouraging more widespread adoption of these tools in academic libraries.

2.5. Methodology

This study analyzed and reviewed the official websites of the two university libraries to identify the functionalities, strengths, and weaknesses of their digital reference services (DRS) tools. Relevant literature was examined, drawing from a wide range of academic and professional sources, including conference proceedings, journal articles, and authoritative publications. Special emphasis was placed on the official websites of Dar al-Hikmah Library (IIUM) and Kashim Ibrahim Library (ABU), ensuring a focused evaluation of their DRS features. To explore the future trajectory of digital reference services, the research assessed their functionality, ease of navigation, and user-friendliness. Additional resources, such as electronic databases and advanced tools like ChatGPT, were utilized to expand the research scope. This methodological approach facilitated a comprehensive review of related studies, providing valuable insights into enhancing existing features and adopting emerging trends in DRS. By integrating diverse perspectives, this study aimed to offer actionable recommendations for improving the digital reference services of both institutions, ensuring they meet the evolving needs of their academic communities.

3. Digital Reference Tools

Digital reference pertains to the delivery of reference and information services within a digital or online context. This process encompasses the utilization of electronic communication tools and technologies to aid users in locating the information they require, addressing their inquiries, and offering guidance. Numerous scholars have emphasized [8]-[10] the extensive array of platforms and tools available, which are delineated as follows.

Website: A library website is a digital facility designed to provide users with access to a library's resources, services, and information online. It serves as a virtual gateway, enabling users to explore and utilize the library's offerings remotely

without the need to visit the physical location. Library websites are integral to modern library operations and are equipped with various tools to enhance user experience and facilitate information access. [10] outline, key features of a library website typically include an online catalog (OPAC), “Ask a Librarian” service, chat-bots functionality, live chat support, webmaster contact, email communication, user login accounts, FAQs, instructional videos, inter-library loan options for borrowing materials, news updates and announcements, operating hours for services, and integration with social media platforms. More importantly databases collaboration and linkage for easy access to the information resources.

Email: Users have the option to submit their inquiries to a specific email address, where librarians or subject matter experts review the questions and provide detailed responses with relevant information. This method allows users to receive comprehensive answers at their convenience. According to [11] the used of email in digital reference services platform was a common based on their finding of three institutional libraries in Ghana. Feature of the email characterizes the mechanism and powered document retrieval systems in DRS encompass a designated email account in a library, automated acknowledgment, and response mechanism that verifies receipt, adaptable query management enabling users to promptly submit inquiries and responses by librarians, and the integration with alternative systems by guaranteeing that each inquiry is tracked and addressed.

Chat and Instant Messaging: Live chat tool enable users to engage in real-time conversations with librarians or information specialists, facilitating prompt and personalized assistance. Through this tool, users can ask questions, seek guidance on resource navigation, and receive immediate responses to their queries. Instant messaging features also enhance convenience, allowing for more interactive exchanges that can resolve issues quickly and effectively. Additionally, some platforms may support file sharing, screen sharing, or links to relevant resources, further enriching the support experience. [12] observe that, users are able to engage in real-time communication with one another through concise textual messages by employing conventional chat application such chat bot, WhatsApp, Facebook messenger. Furthermore, these tool facilitate the clarification of intricate inquiries posed by users and endeavor to provide solution instantaneously by leveraging various resources. However, this service software enables instant Messaging and supports collaborative navigation between the librarian and users.

Online Forms: Users can submit detailed inquiries through online forms, where they specify their information needs, research topics, or any particular challenges they are facing. Librarians then review this submission and respond with tailored resources, recommendations, and relevant information. This method allows for more structured and thoughtful requests, ensuring that users provide all necessary details upfront. [13] Added that, online forms may include options for users to indicate preferred response formats or request specific types of resources, such as academic articles, books, or database access. This organized approach enables librarians to deliver more precise and customized support based on the user’s needs.

Virtual Reference Desks: Much like traditional reference desks in physical libraries, virtual reference desks offer a dedicated online platform where users can seek assistance from librarians or information specialists. Through this service, users can ask questions, request research guidance, or get help navigating library resources in a virtual environment. Virtual reference Desks often operate via live chat, video conferencing, or scheduled appointments, providing real-time or near-immediate responses. In some cases, users can also access FAQs, knowledge bases, or other self-help tools alongside live support, creating a comprehensive online assistance hub. This service expands the library's reach, allowing users to access professional guidance from any location, enhancing convenience and accessibility. And study conducted by [14] experiment has executed to document the operational parameters of devised system, which was utilized by four university librarians during the reference desk counters hours of operation at academic institution.

Social Media Social in Library Reference Services: Libraries increasingly use social media platforms like Twitter, Facebook, TikTok, Instagram, and WhatsApp to provide digital reference services. These platforms enable users to ask questions informally through comments, posts, or direct messages, often receiving quicker responses. Social media enhances communication, expands audience reach, and promotes library services in real time. As [15] (Mustapha *et al.* 2023) [16] noted, dedicated library staff manages social media to foster engagement, share updates, and build community relationships. This modern approach ensures users can access library resources anytime, improving service delivery and user interaction.

3.1. Evolution of Dar AL-Hikmah & Kashim Ibrahim Libraries

Ahmadu Bello University Zaria (ABU), Nigeria, and the International Islamic University Malaysia (IIUM) are two distinguished academic institutions located on different continents, Africa and Asia. ABU, founded on October 4, 1962, was the first university in Northern Nigeria and attained federal university status in 1975. Its central library, Kashim Ibrahim Library (KIL), was inaugurated in December 1976 and serves as the main hub within a network of 11 satellite libraries supporting 12 faculties and 83 departments. According to [17], KIL contains over 1.2 million books, 66,000 periodicals, and seating for 2,000 users, making it a crucial center for research and academic activities. KIL offers extensive electronic resources [18] supported by the National University Commission (NUC), accessible via its Database/CD-ROM Search Unit, MTN-Net Library, and Internet Training Unit, reported by [19]. Users can remotely access these resources through a secure online portal. The library's reference and information division collaborates with faculty to deliver high-quality reference services, fostering independent and life-long learning while supporting academic growth and evidence-based research. International Islamic University Malaysia (IIUM), established on May 20, 1983, in Malaysia, was inspired by the 1977 First World Conference on Muslim Education in Makkah as [19] posted that, IIUM's library network consists of five

branches, including the Dar al-Hikmah Main Library, Kuantan Medical Library, and SMNA Library. As of 2023, IIUM's collections boast approximately 3.9 million e-titles and 34.9 million items. The IIUM library website provides digital reference services, including live chat, an online catalog, off-campus access, and social media integration to enhance user engagement and accessibility.

Both institutions' libraries are tailored to meet diverse academic needs, making them suitable for comparative analysis. Such studies can reveal insights into how digital reference services enhance accessibility, user satisfaction, and academic support, showcasing their integral role in advancing education and research.

Table 1. Digital reference service tools (Two university library websites).

	Digital reference service tools	
	Dar AL-Hikmah library (IIUM)	Kashim Ibrahim library (ABU)
Table head	1. Library Catalog: Enables students to search for and locate information resources efficiently.	1. Online catalog: provide open-access search with user login for personalize services and an organogram for streamlined navigation.
	2. Off-Campus Access: Offers remote access to digital tools, ensuring that students can utilize library resources anytime, anywhere.	2. Local Resources: Accessible exclusively through the ABU network, supporting localized academic needs
	3. Databases and E-Books: The library subscribes to a vast collection of online databases with millions of articles and e-books, accessible both on-campus and remotely.	3. Database subscription: The library provides access to valuable databases such as AGORA, AJOL, EBSCOHOST and JSTOR user can obtain access details by contacting the librarian at library@abu.edu.ng
	4. IIUM Repository and Thesis Repository: Hosts a rich collection of theses, dissertations, and institutional scholarly works.	4. Institutional Repository: A Dspace-powered repository offering collections in agriculture, books, conference proceeding, seminar papers, and government documents
	5. Knowledge Management Portal: An integrated resource hub facilitating access to diverse academic materials.	5. Distance Learning Support: Offers digital resources for ABU's distance learning programs, ensuring inclusivity for remote learners.
	6. FAQ: provides a comprehensive FAQ for its digital reference services, addressing user inquiries about live chat, online catalogs, social media integration, interlibrary loans, and other academic resources. This ensures seamless support and enhances user engagement with the library's digital tools	6. Ask a Librarian: Users can email staff, including reference librarians, circulation desk officers, and webmasters (kilreference@abu.edu.ng kilcirculation@abu.edu.ng kilwebmaster@abu.edu.ng)
	7. IIUM Digital Manuscripts: Features digitized rare manuscripts for specialized research.	7. Online Ref & Info service awareness: Initiatives are in place to promote awareness of online reference and information services, ensuring users fully utilize these resources.

Continued

8. IArchives Repository: Provides access to historical records and archival materials.	8. Electronic Resource Development: plans are underway to expand the library's electronic offering with new content coming soon.
9. ICSIweb: A platform for managing and accessing information efficiently.	9. Directional Reference service: Assistant offered to guide users in locating specific resources and navigating the library system effectively.
10. Loans & Self-Service: The library's digital system enables efficient book borrowing via self-check machines and 24/7 returns through a book drop counter. Personalized assistance is available at designated service points for specialized transactions.	10. Long Range reference service: A compressive are designed to address users complex and long term research need
11. The IIUM website is consistently updated with new resources, announcement and tools to support users' research and learning need.	11. Website update: The KIL website is currently stagnant and need to be update regularly.
12. Social Media: integrated social media tools such Twitter, Facebook, Instagram, YouTube, and Telegram to enable users stay connect and navigate to website easily.	12. Social media: KIL does not integrated social media platforms into its services.
13. Live chat support: enable real time interaction with librarian for immediate assistance.	13. Live Question Handling: Plan to implement remote answering services are in development with new content to be lunch soon.
14. Publication/Announcements: The display of new arrivals, including books and videos from renowned publishers like Emerald and Taylor & Francis, ensures users stay updated with the latest academic resources.	14. Publication/Announcements: Does not provide the new update on new arrival resources.
15. Offers access to additional related collections, including IFLA, MyCite, and WoS (Web of Science) groups, enhancing the range of academic resources available to its users.	15. Special Collections: Houses unique and rare resources tailored to specialized fields of study and others access to a wealth of UN documents and reports.

3.2. Analysis and Interpretation

The data presented and analyzed through a pie chart and bar chart, represents the Digital Reference Service (DRS) tools from the two university libraries. These tools, which were derived from **Table 1** above, reflect the available and functional features of their websites. The comparison highlights the gaps in services between the two institutions, showcasing areas where one may offer more comprehensive or advanced tools than the other. This analysis helps identify opportunities for improvement and optimization in service delivery (**Figure 2**).

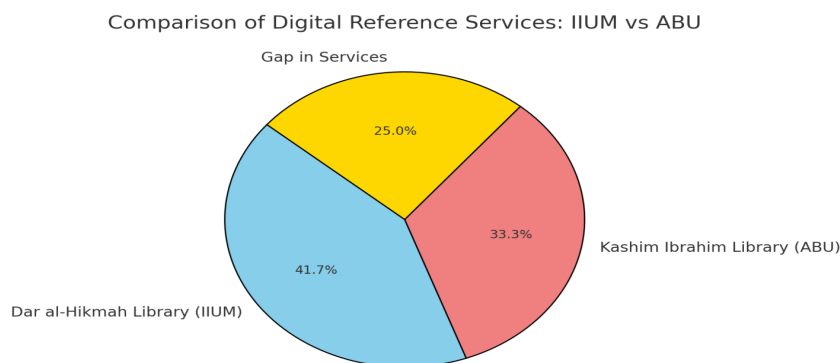


Figure 2. The pie chart illustrates the distribution of digital reference services (DRS) between Dar al-Hikmah Library (IIUM), Kashim Ibrahim Library (ABU), and the gaps in services between the two institutions. Below is the interpretation of above picture chart.

1) Dar al-Hikmah Library (IIUM) accounts for 41.7% of the total services offered, demonstrating its broader range of digital services. This indicates IIUM's focus on advanced and comprehensive digital tools and resources.

2) Kashim Ibrahim Library (ABU) contributes 33.3% of the services. While offering several essential digital services, ABU lags in implementing certain advanced features compared to IIUM.

3) Gap in Services makes up 25.0%, highlighting areas where one library offers services that the other does not. This gap primarily reflects the absence of features like live chat support, social media integration, and online payment systems in KIL (ABU).

4) Dar al-Hikmah Library (IIUM) is more advanced in its digital reference service offerings compared to Kashim Ibrahim Library (ABU). Bridging the 25% gap in services will require ABU to adopt innovative features and align with modern digital library standards.

3.3. Comparison

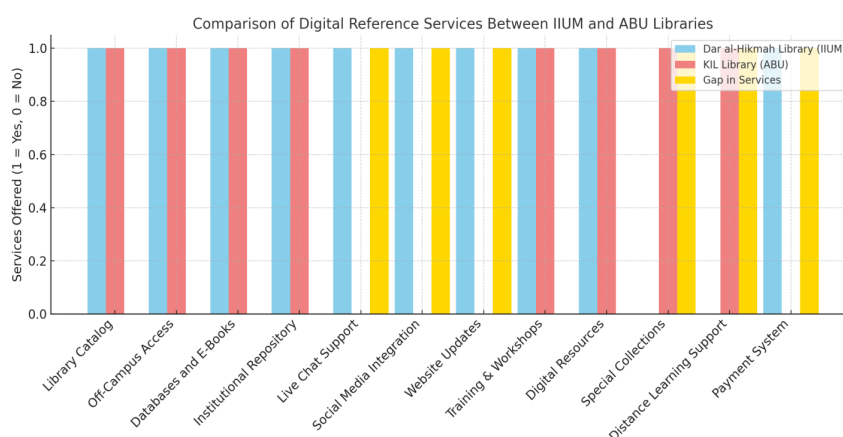


Figure 3. The bar chart compares the digital reference services offered by Dar al-Hikmah Library (IIUM) and Kashim Ibrahim Library (ABU), highlighting the gaps in services.

Table 2. Comparison (Digital reference services offered, service Gap & exclusivity).

	Comparison	
	Service offered	Service Gap
		Service exclusively
The service which commonly offered in both libraries provide basic DRS library catalogs, off campus access, Databases and e-books, institutional repositories. These are foundational services for any modern library as stated by	Live chat support: Dar al-Hikmah Library (IIUM) offers live chat support, but it is absent in Kashim Ibrahim Library (ABU). Social media integration: This service is available in Dar al-Hikmah Library but is not implemented in Kashim Ibrahim Library. Website updates and training & Workshops: Kashim Ibrahim library seems to lack robust features for website updates and workshops for user.	Dar al-Hikmah Library (IIUM) appears to provide a broader range of digital reference services compared to Kashim Ibrahim Library, highlighting a potential disparity in technological adoption and resource allocation

3.4. Discussion

Ahmadu Bello University (ABU) (**Figure 3**) contributes 33.3% of the digital reference services within its comparative framework, highlighting its important role in providing digital resources and support to its academic community. Despite offering fundamental services such as access to subscribed databases JSTOR, Science Direct, and AGORA/TEEAL noted that the most frequently used electronic resources were JSTOR (13.2%), Science Direct (9.4%), and AGORA/TEEAL (7.0%). However, awareness of the diverse range of electronic resources remains very low among users. Additionally, while the library provides remote login for off-campus access and electronic training units, it lags in adopting advanced features found in the library systems of the International Islamic University Malaysia (IIUM) (**Table 2**).

International Islamic University Malaysia (IIUM), which accounts for 41.7% of the total digital reference services offered in this comparison, demonstrates a broader and more advanced range of digital tools and resources. This focus on innovation is reflected in user satisfaction. As highlighted by, IIUM's customer satisfaction surveys revealed a positive trend in the category "Library websites and social media are informative and interactive." The mean satisfaction rating for this category improved from 4.06 in 2020 to 4.26, indicating significant progress in enhancing user engagement and digital accessibility.

IIUM has actively expanded its online presence by integrating social media platforms like Facebook, Twitter, Instagram, and Telegram. These platforms serve as effective tools for connecting with users, providing updates, and promoting library services. The library's digital platforms are further enhanced by regular updates, user-centric design improvements, and interactive features. IIUM also offers real-time support through live chat and digital reference services, empowering users to access information seamlessly.

These initiatives underscore IIUM library's commitment to leveraging technology to create a collaborative, accessible, and responsive academic environment. In contrast, ABU's Kashim Ibrahim Library, while critical in its regional context, must address gaps in user awareness, infrastructure, and advanced digital services

to match IIUM's comprehensive approach to digital reference service delivery.

4. Area of Difference

1. Advanced Digital Reference Services: While Kashim Ibrahim Library (KIL) ensures access to essential electronic resources, its digital reference services are limited by the absence of interactive features like live chat, real-time support, and chatbots integration, all of which are offered by Dar al-Hikmah Library (IIUM). Adding these functionalities could greatly improve user interaction and overall satisfaction.

2. Social Media Integration: IIUM extensively uses social media platforms such as Facebook, Twitter, Instagram, Telegram, and YouTube to engage students and faculty, facilitating access to library updates and resources. KIL has yet to fully adopt such platforms as tools for user engagement and service delivery.

3. User Awareness and Training: Studies at KIL reveal a lower level of awareness and skills among users regarding electronic resource utilization. In contrast, IIUM emphasizes user-friendly interfaces and robust training programs to familiarize users with its digital services.

4. Bandwidth and Connectivity: Limited internet bandwidth and connectivity issues at KIL have been noted as barriers, whereas IIUM leverages superior infrastructure to ensure seamless access to its digital services.

5. E-Collections and Accessibility: IIUM boasts a larger and more diverse electronic collection, including repositories, e-books, and millions of e-titles. KIL, while well-equipped, does not match the breadth and ease of access that IIUM provides.

5. Recommendations

The studies proposed ten key recommendations, which are outlined as follows:

1. Enhance User Awareness: Both libraries should prioritize awareness campaigns to educate users about the availability and benefits of electronic resources. This can include workshops, webinars, and targeted information sessions.

2. Improve Digital Infrastructure: Libraries should invest in improving internet bandwidth, connectivity, and power reliability to ensure seamless access to digital services.

3. Expand Training Programs: Regular user training on navigating subscribed databases and utilizing digital tools effectively should be provided to both staff and students. Tutorials and online guides can supplement in-person sessions.

4. Adopt Advanced Digital Tools: Kashim Ibrahim Library (KIL) should consider integrating advanced features such as live chat support, AI-driven chatbots, and social media platforms to enhance user engagement and satisfaction.

5. Collaborate with Stakeholders: Partnering with technology providers, academic departments, and external organizations can help libraries acquire advanced tools and expand their digital resources.

6. Strengthen Remote Access: Libraries should ensure robust and secure re-

mote access to digital resources, enabling users to engage with materials off-campus without technical interruptions.

7. Focus on User-Centric Design: Regularly update library websites and digital platforms to improve navigation, interactivity, and accessibility, catering to user needs.

8. Measure and Improve User Satisfaction: Conduct periodic customer satisfaction surveys to assess user experiences, identify gaps, and make necessary adjustments.

9. Increase Resource Utilization: Promote underused resources by providing detailed guides and success stories, motivating users to explore diverse offerings.

10. Encourage Cross-Institutional Collaboration: ABU and IIUM can collaborate to share best practices, resources, and innovations, benefiting both institutions.

6. Conclusions

Both Ahmadu Bello University (ABU) and the International Islamic University Malaysia (IIUM) have demonstrated significant contributions to digital reference services, with IIUM standing out for its advanced digital tools and high levels of user satisfaction. While ABU provides essential services, it faces challenges such as low user awareness, limited infrastructure, and a lack of advanced features. By implementing strategic enhancements, ABU can elevate its digital offerings to meet the evolving needs of its users.

Overall, libraries must continuously adapt to technological advancements and user expectations, creating inclusive, accessible, and innovative environments. Fostering collaboration, leveraging technology, and prioritizing user engagement will ensure that these libraries remain pivotal in supporting academic and research excellence in their respective institutions.

Conflicts of Interest

The authors declare no conflicts of interest.

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