**AVAILABILITY AND AWARENESS OF VIRTUAL REFERENCING SERVICES IN SELECTED ACADEMIC LIBRARIES IN NIGER STATE**

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## ABSTRACT

*The study's primary goals were to find out how widely available VRS infrastructure and technologies are, as well as how knowledgeable librarians and library patrons are about VRS. Three hundred (300) VRS users and thirteen (13) library professionals from the Ibrahim Badamasi Babangida University Lapai (Abubakar Gimba Library), the Federal University of Technology Minna (Ibrahim Badamasi Babangida Library), and the Niger State College of Education (Yahaya Madaki Library) provided data for the quantitative descriptive design. The results revealed that there exists sufficient infrastructure, technologies, and training facilities and programs accessible to both VRS librarians and users. The conclusions of the investigation indicated that a portion of the librarians were cognizant of VRS, however, they exhibited reluctance in becoming involved in the provision of this service. It is advisable that the awareness of both users and librarians be heightened in order to augment the quantity of VRS users, and to enlist more librarians to ensure timely responses to users. Once again, the study proposed.*

**KEY TERMS**: Academic Libraries, Niger State, Patrons, Reference Services and Virtual Referencing Services

# INTRODUCTION

Academic libraries are adopting an increasing number of technologies in order to enhance reference services and meet the needs of users in the virtual environment. The provision of reference services serves as a connection between the needs of library patrons and the available resources within the libraries (Abubakar, 2021). In recent times, the presence of technology has enabled access to library resources beyond the physical library building through computers and other electronic terminals, known as digital or virtual reference services. Virtual reference services have made significant progress in electronic or digital environments with the availability of adequate internet facilities. This is particularly prevalent among academic libraries in developed countries. Nowadays, librarians provide seamless reference services anytime and anywhere through a collaborative, web-based network of libraries. Reference service encompasses various forms of assistance provided to individuals seeking information, whether it be direct or indirect, in-person or remote. Librarians have historically offered reference services in different formats, ranging from fixed desks, telephones, and email to more recent synchronous virtual reference services.

In advanced countries, librarians have embraced web technologies to offer effective reference services to their users. However, in Africa, the response of academic libraries in adopting digital reference services needs to be addressed seriously, particularly for reference librarians (Aswath, 2017). According to Sinhababu and Kumar (2023), Mwiinga et al. (2020), and Yonus (2014), the implementation of digital reference services involves the establishment of well-developed guidelines that provide directions for the effective management of virtual reference services. However, little is known about these guidelines in Africa. Some examples of these guidelines include The International Federation of Library Associations and Institutions Digital Reference Guidelines (IFLA, 2008), The RUSA Guidelines for Implementing and Maintaining Virtual Reference Services (Glace et al., 2004), and RUSA Guidelines for Behavioral Performance of Reference and Information Service Providers (Ward et al., 2004). However, the Nigerian government mandated the establishment of virtual libraries in all higher institutions of learning in Nigeria in January 2002 (Gbaje, 2007) due to the high value placed on the availability of information.

The main purpose of libraries and the relevance of services provided by librarians is to provide users with the information materials they need, regardless of format or location. University libraries in Nigeria are making various efforts to acquire and manage information materials such as reference materials, serials, and textbooks that will meet the desired needs of users.

The challenges posed by internet technologies such as social media, Web 2.0, and the Google generation have had a significant impact on libraries and information services. These technologies have placed libraries and information on the edge, as they must contend with a large number of formal and unlicensed information brokers in digital environments in order to maintain relevance and gain trust and loyalty from users. Electronic correspondence is particularly popular among the 21st-century users, also known as the Millennial Generation, who were born between the years 1982 and 2000 (Lee, 2006). This younger age is sometimes referred to as the "Net Generation" due to their propensity for online gaming, electronic correspondence, and Internet use. They prefer instant messaging over the phone, which includes the phone app (Kern, 2009). Virtual references are the interfaces that libraries employ to interact, draw in, and communicate with their users from a distance.

Numerous studies on virtual reference services in academic library settings have been carried out, including case studies, surveys, and reviews. Among the studies are those by Nicholas and Sterling (2014), Mawhinney (2020), and Kiana and Martin (2020). For community members to have flexible access, virtual reference services must be provided around-the-clock, wherever in the world. However, the service ends when the library closes. Users and librarians alike must pick up the skills required to use digital information. Libraries will be able to interact with people in this way and help them in any way that they can. The speed at which the digital landscape is evolving has made it imperative to use other solutions, including the Virtual Reference Service offered by Academic Libraries in Niger State. Despite the potential benefits that technologies such as the internet and social media offer to revolutionize reference services, the majority of libraries in developing nations remain committed to the conventional in-person reference desk approach. The need for cooperation and collaboration among citizens' institutions and organizations has arisen from the growth of knowledge, technological transfer, and globalization. There is need to expand in scope as the users information needs increases. Moreover, innovation in library services globally has strong signal that any uncompliant libraries will remain in the dark while the others continued to advance. This is why the present study intends to bridge this knowledge gap by examining different Virtual Reference Service communication technology tools available and awareness of it implementation in academic libraries with special focus on Niger state.

## Research Questions

The research raised the following question for the study

1. What are the available infrastructural technologies for virtual reference services in Academic Libraries in Niger state
2. What is the level of awareness of the librarians concerning virtual reference services in the Academic Libraries in Niger State

# LITERATURE REVIEW

Review of the literature offers a researcher the opportunity to explore the outcome of other largely related study undertaken. Review of literature provides an in depth understanding of the subject or the topic and its significance to other studies. It identifies the methods used in previous research on the topic. Literature review directs the current research to fill in gaps and extending prior studies. Because research adds to existing knowledge, it would be therefore, difficult to conduct a study without reference to other scholars (Creswell 2020).

In this study, a review of the related literature was centered on the world, African, and Nigerian contexts. Issues surrounding virtual reference services such as reference services, concept of virtual reference services, types of virtual reference services, infrastructure and technologies for virtual reference services, level of awareness among librarian of virtual reference services in academic libraries, challenges in the management and implementation of virtual reference services and measures to improve virtual reference services were reviewed.

## Virtual reference services and their types

The term ‘virtual reference service’ is commonly used interchangeably with the term ‘digital reference services’. The two terms are used in libraries to refer to the question and answer services provided by libraries. For purposes of this study, only the term ‘virtual reference services’ is used.

Oluwabiyi, (2017) points out that virtual reference services generally comprise the following elements:

1. The user of the service: A library user who has a question to ask, etc.

2. The interface: E-mail, web form, chat, videoconference, etc.

3. The information professional: A librarian or information agent who will find and provide answers to the users; and

4. Electronic resources (including CD-based resources, web resources, local digitised material, print resources, etc.). These are sources of information where a librarian would get an answer.

There are two types of virtual reference services, namely, asynchronous and synchronous virtual reference services.

An **asynchronous virtual reference service** is a service characterised by communication in one direction at a time. A library user may use a web-based e-mail, web form, or *Ask a librarian* service to enquire about his or her information needs from a librarian. Librarians use frequently asked questions, e-mail and e-resources, which are comprised of subject guides, lists, journals and other content, to provide answers to library users (Adetayo, 2021; Uutoni, 2018 and Oluwabiyi, 2017).

Adetayo, (2021) explain that asynchronous services encompass a time delay between the question and answer, especially with e-mail based, web form or ‘*Ask a librarian*’ services. Asynchronous reference services “allow librarians to answer requests in their own time, after having conducted all necessary research, which might enhance the accuracy and completeness of replies” (Sinhababu and Kumar 2023a).

A **synchronous service** is described as ‘real-time’, with an immediate response to the query. It is a two way communication between a library user and a librarian over the Internet. The tools used for this communication are, among others, chat, instant messaging, Voice-Over Internet Protocol (VoIP) and web cam services (Adetayo, 2021; Sinhababu and Kumar, 2019; Uutoni, 2018; Oluwabiyi, 2017). With synchronous services, real time communication takes place between a library user and the librarian sitting in a library and using interactive technologies; e.g., a library user clicking a button on a web page to exchange messages with a librarian and getting feedback on their question instantly.

## Infrastructure for virtual Reference Services

On the issue of infrastructure, Hurley and Warner (2022) state that several factors should be taken into consideration when implementing a virtual reference service in libraries. In order to establish virtual reference services in academic libraries, there must be enough computers to manage virtual reference services. The cost of software, Internet connectivity and Internet enabled devices are essential element to be considered before the implementation of virtual reference services in academic libraries.

Mehta and Wang (2020) enforce that in other to develop virtual reference services in academic libraries, large information repositories, the various online databases, information products, computer storage devices on which information repositories reside, computerised networked library systems, the Internet, compact disk ROM, information products, database servers, online catalogues, and collections of computers and adequate technical support are technologies that are needed for the establishment of a successful virtual reference services in academic libraries.

Emails and web forms technologies can be used to handle asynchronous transactions. Synchronous transaction technologies include web-based chat, instant message Ask-a-librarian, among others. Also, some academic libraries had developed FAQ on their website to answer technical questions. Yonus, (2014) states that in the development of virtual reference services in academic libraries, libraries must develop good ICT infrastructure and for better performance there is an increasing need for libraries to update, upgrade and maintain their infrastructures.

## Awareness of virtual reference in Academic Libraries

As the concept of libraries evolves into virtual libraries, it becomes imperative for academic libraries to enhance their efforts in raising awareness about the utilization of virtual reference services. Academic libraries must develop a robust marketing strategy in order to effectively communicate the availability of virtual reference services within the library. Librarians should possess a comprehensive professional understanding of the preferences of library clients when seeking assistance. The exposure to and awareness of virtual reference services in the library can significantly influence the choices and preferences of library clients when seeking help (Khan, Masrek, Mahmood, and Qutab, 2017).

According to Yonus (2014), one of the techniques for marketing virtual reference services is to prominently display a link to these services on the library's homepage. The strategic placement of the virtual reference services link on the library's website facilitates easy access for users. However, Lateef and Mairaj (2023) observe that in Pakistan, many libraries have hidden the virtual reference services link among other links on their homepages, making it challenging for users to locate the service. Sinhababu and Kumar (2023) argue that academic libraries must continually implement effective marketing strategies to promote their virtual reference services. These marketing strategies would aid in exposing and advertising the virtual reference services to users. However, merely including a link to virtual reference services on the library's website is insufficient; it is equally important to promote these services through library instruction and posters. In order to maintain the momentum of virtual reference services, staff members must actively promote the service and collaborate with academic staff and researchers in utilizing the virtual reference services (Yang and Dalal, 2015).

There are several approaches that libraries and librarians can adopt to raise awareness of virtual reference services. In a study conducted by Qobose and Mologanyi (2015) at the University of Botswana library, students were asked about their awareness of virtual reference services in the library. Approximately 74% of the students strongly agreed that they were aware, while the remaining 26% disagreed. The high percentage of agreement can be attributed to the proactive promotion of virtual reference services at the University of Botswana library through library exhibitions, important campus events such as information literacy week, and presentations at faculty and departmental meetings. This indicates that a significant number of students at the University of Botswana are aware of the service available in the library.

However, a study conducted by Malik and Mahmood (2014) in Pakistan, which included 38 libraries under the Higher Education Commission (HEC), revealed that only a few libraries were prepared to offer virtual reference services, while the rest were implementing these services at a slow pace. Additionally, Akor and Alhassan (2015) conducted a study on reference services with 160 students across three Nigerian universities. The findings of their study, with a response rate of 34 (28.3%), indicated that the provision of virtual reference services was limited in these three universities.

The review examined the concept of virtual reference services was also reviewed. The existence of virtual reference service has brought a total transformation in the reference service in academic libraries much that information can be accessed electronically. Furthermore, the review investigated the infrastructure and technologies used for virtual reference services. Libraries must develop a good ICT infrastructure for better performance. Also, the review examined the role of Academic libraries plays in creating awareness in the usage of virtual reference services by providing the necessary resources needed for carrying out effective research activities.

# METHODOLOGY

This study adopted the quantitative descriptive case study, with an intention to describe the general reference model used to assess the librarians’ skills and training and to examine the challenges encountered by the librarians in providing digital reference services at the two institutions.

The Federal University of Technology Minna (FUT Minna), Ibrahim Badamasi University Lapai (IBBU Lapai) and Niger state College of Education (COE Minna) libraries were selected for the study from many libraries in Niger state because they are outstanding in terms of providing electronic services in the state capital. Also, these two libraries are the only ones providing digital reference services in the state capital currently.

Together with the heads of the various selected libraries, the population for the study was two-thousand and thirteen (2023), (Field data, 2024). This can be seen in Table 1

**Table 1 Population of the Study**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Academic library**  | **Heads of Library**  | **VRS Librarian**  | **Heads of IT**  | **Users**  | **Total**  |
| COE Minna | 1  | 2  | 1  | 732  | **736**  |
| FUT Minna | 1  | 3  | 1  | 647  | **652**  |
| IBBU Lapai | 1  | 2  | 1  | 621  | 625  |
| **Total** | 3  | 7  | 3  | 2000  | **2013**  |

Source: Field data, 2024

In order to obtain the sample size of 400, the researcher chose 20% of the total population of VRS users for each of the three institutions. The researcher chose 20% for the population of 732 to obtain a sample size of 146.4 for VRS users at COE Minna, 20% for the population of 647 to obtain a sample size of 129.4 for VRS users at FUT Minna and 20% for the population of 621 to obtain a sample size of 124.2 for users at IBBU Lapai. The sample size for the study was 400. This can be seen in Table 2.

The researcher maintained the size of VRS Librarians, heads of Library and IT in the three (3) selected academic Libraries. The sample size for the library professionals and IT heads was 13.

Thus the total sample size for the study was 413. This displayed in Table 2.

**Table 2 Sample Sizes**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Academic library**  | **Heads of Library**  | **VRS Librarian**  | **Heads of IT**  | **Users (20%)** | **Total**  |
| COE Minna | 1  | 2  | 1  | 146 | **150** |
| FUT Minna | 1  | 3  | 1  | 129  | **134** |
| IBBU Lapai | 1  | 2  | 1  | 124.2  | **128.2**  |
| **Total**  | 3  | 7  | 3  | 400  | **413**  |

Source: Field data, 2024

Purposive sampling was used to select the Heads of Library, VRS Librarians and IT head for interviews. The researcher believes that they are reliable for the study and can be used for the purposes of the study. The purposive sampling method is likely to produce the most valuable information about the research (Sahin and Öztürk 2019).

Finally, the researcher stratified the VRS users in the various institutions and employed the convenience sampling procedure. ‘‘Convenience sampling is a non-probability sampling technique where subjects are selected because of their convenient accessibility and proximity to the researcher’’ (Emerson 2021). The convenience sampling method was used to sample individual respondents of VRS users’ from the three institutions. The researcher contacted heads of IT for numbers and emails of users who had used the VRS for their informational needs from October 2023 to December 2023 (Field Data 2024). The researcher then contacted users who were available and willing to answer the research questions. The study employed a combination of two data collecting instruments. The main tools for this study were the online questionnaire for users and semi-structured interview for heads of the library, heads of IT and VRS librarians.

Descriptive statistics such as frequencies and percentages will be used to discuss the findings in relation to research questions and objectives of the study. After the research data are collected, they will be edited to ensure adherence to the data collection protocol and avoided actions that may led to missing and questionable data. The data from the questionnaires will be organized, categorised, edited, and analysed using simple percentages, tables, and graphs for discussions based on the research questions and the objectives of the study. The Google form tool will be used for the analysis of the questionnaires. This tool will be employed because the tool can be used to collect, analyse and organize data (Bennett, 2016). The interviews will be transcribed qualitatively using the thematic content analysis based on the research question and objectives of the study.

# DATA ANALYSIS AND RESULT PRESENTATION

This section presents the findings of the study obtained from the questionnaires. The findings reflected the methodological approach of mixed methods. The data analysis was thus presented in two parts – quantitative and qualitative components

## Data Analysis

Data from the questionnaire have been analysed and presented under themes. Descriptive statistics with Tables and graphs showing frequencies and percentages were used to support the analysis. Further, the 5 Point Likert scale was interpreted as follows; 1-strongly disagree 2- disagree, 3-neutral(undecided), 4- agree and 5-strongly agree. Weighted averages were calculated to show the tendency towards agree, neutral, and disagree.

### Response Rate

The respondents comprised VRS users from three academic institutions in Niger state. Online questionnaires were distributed to four hundred (400) participants via WhatsApp and email to VRS users from the three selected institution; the COE Minna, FUT Minna and IBBU Lapai One hundred (100) out of 146 online questionnaires administered to respondents from the COE Minna was fully completed. This represented 36.5% of the total respondents. Respondents from the Federal University of Technology returned 102 out of 130 completed online questionnaires and this represented 33.15 % of the total respondents. The Ibrahim Badamasi University Lapai returned 98 out of 124 online questionnaires representing 30.28% of the total respondents. In all, 300 questionnaires were fully completed giving a response rate of 75%. According to Babbie (2008), a response rate of 70% is very good for analysis and reporting. Therefore, a response rate of 75% is a very good rate for the study.

### Background Information

The gender, respondents’ category, profession and level of education of respondents that took part in the study have been represented in Table 3

**Table 3 Demographical Data of Respondents**

|  |  |  |
| --- | --- | --- |
| **Variables**  | **Frequency** | **Percentage** (%) |
| **Gender**  |
| Female  | 160 | 53.3 |
| Male  | 140 | 46.7 |
| **Category of users**  |
| Student  | 260 | 86.7 |
| Private users  | 30 | 10 |
| Faculty  | 10 | 3.3 |
| **Profession**  |
| Students  | 260 | 86.7 |
| Faculty  | 10 | 3.3 |
| Researcher  | 10 | 3.3 |
| Teacher  | 9 | 3.1 |
| Medical officer  | 7 | 2.3 |
| Banker  | 4 | 1.3 |
| **Level of Education**  |
| Tertiary  | 300 | 100 |
| **Total** | **300** | **100** |

Source: Field data, 2024

From Table 3, out of the 300 respondents, 160 (53.3%) were females whiles 140 (46.7%) were males. Observably the female respondents were more than the male respondents but the differences were not much. Respondents category of participants in the study were captured under three categories, Respondents who were students from the three institutions constitute 260 (86.7%), 30 (10%) were private users whiles 10 (3.3%) were faculty members. It was observed that the student respondent category answered the research question more than the other categories. A follow up question was asked to inquire about the profession of respondents, 260 (86.7%) were students, 10 (3.3%) were faculty members, 10 (3.3%) were also researchers, 9 (3%) were teachers, 7 (2.3%) were medical officers, whiles 4 (1.3%) were bankers. This indicated that respondents were from various professions. With their level of education, all the respondents 300 (100%) had completed tertiary. The study revealed that the majority of VRS users were students.

## Infrastructures Available

In Table 4 more than half of the total respondents 170 (56.7%) preferred TRS to VRS 130 (43.3%). Although users used both TRS and VRS for reference queries, however, they preferred TRS for reference queries especially respondents from Federal University of Technology 70 (23.3%) followed by COE Minna 50 (16.7%) and Ibrahim Badamasi University Lapai 50 (16.7%). This result has corroborated with the findings of Yonus, (2014) who states that in the development of virtual reference services in academic libraries, libraries must develop good ICT infrastructure

Moreover, the researcher asked users about the infrastructures used in providing access for VRS. The result is displayed in Table 4

**Table** 4 Infrastructures used for VRS

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable** | **COE MX** | **FUT MX** | **IBBU LAPAI** | **Total**  |
| **Medium**  | **Freq.**  | **%**  | **Freq.**  | **%**  | **Freq.**  | **%**  | **Freq.**  | **%**  |
| Mobile phone  | 50  | 16.5  | 40  | 13.3  | 70  | 23.3  | **160**  | **53.3**  |
| Laptop  | 30  | 10  | 30  | 10  | 14  | 4.6  | **74**  | **24**  |
| Tablet  | 20  | 6.7  | 32  | 10.6  | 14  | 4.6  | **66**  | **22** |

Source: Field data (2024)

Table 4 indicated that more than half of the total respondents 160 (53.3%) used the mobile phone to access VRS, 74 (24.7%) accessed with the laptops while 66 (22%) used Tablets to access VRS. Hence, mobile phones were usually used to access VRS especially VRS users from IBBU Lapai 70 (23.3%).

### Types of VRS Platforms used in Libraries

The researcher asked users to indicate the VRS platform they preferred in asking their reference questions. The responses are depicted in Figure 1.

**Figure 1:** Preferred VRS platform

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Source: Field data (2024)

Figure 1 revealed that the total respondents of 99 (33%) preferred email for their reference questions. 90 (30%) preferred Ask-a- librarian mainly for COE Minna users*,* at IBBU Lapai, 85 (28.3 %) and 14 (4.7%) users used Facebook messenger and Twitter handle respectively, whereas 12 (4%) used telephone calls at FUT Minna. However, none of the institutions used text messages. It was found that the three libraries used different types of VRS at their libraries; however, email was a common VRS platform among the three institutions FUT Minna 90 (30%) used email reference services than all the three institutions

### Awareness of Virtual Reference

The researcher asked respondents how they got to know about VRS. It was discovered from the study that, respondents got to know about VRS from the library’s website. The results are represented in Table 5

**Table 5 Channel of Awareness**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable** | **COE MX** | **FUT MX** | **IBBU LAPAI** | **Total**  |
|  | **Freq.**  | **%**  | **Freq.**  | **%**  | **Freq.**  | **%**  | **Freq.**  | **%**  |
| Library Website | 59  | 19.7 | 50 | 17 | 57 | 19 | **166** | **55.3** |
| Library Orientation | 24 | 8 | 25 | 8.3 | 15 | 5 | **64** | **21.3** |
| Word of Mouth | 10 | 3.3 | 18 | 6 | 12 | 4 | **40** | **13.3** |
| Library Guide | 7 | 2.3 | 9 | 3 | 14 | 4.6 | **30** | **10** |

From the Table 5, more than half of the total respondents 166 (55.3%) got to know about VRS via the library website, 64 (21.3%) got to know about VRS during library orientation, 40 (13.3%) was by word of mouth, whiles 30 (10%) got to know from the library guide. This indicated that library website plays a role in creating awareness in the use of VRS and users of COE Minna 59 (19.7%) recorded the highest response, followed by Ibrahim Badamasi University Lapai 57 (19%) and Federal University of Technology 50 (17%). The findings in agreement with the studies by Sinhababu and Kumar (2023) and Qobose and Mologanyi (2015) who stated that about 74% of the respondents strongly agreed that they were aware of virtual reference services.

**Table 6 Level of Awareness**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable** | **COE MX** | **FUT MX** | **IBBU LAPAI** | **Total**  |
|  | **Freq.**  | **%**  | **Freq.**  | **%**  | **Freq.**  | **%**  | **Freq.**  | **%**  |
| Highly aware | 40  | 13.3  | 30  | 10  | 40  | 13.3  | **110**  | **36.7**  |
| Partially aware  | 30  | 10  | 34  | 11.3  | 30  | 10  | **94**  | **31.3**  |
| Lowly aware | 20  | 6.7  | 30  | 10  | 20  | 6.7  | **70**  | **23.3**  |
| Not aware  | 10  | 3.3  | 8  | 2.7  | 8  | 2.7  | **26**  | **8.7**  |

**SOURCE**: Field data, (2024)

## Level of Awareness

Table 6 revealed that a total respondents of 110 (36.7%) answered they are highly aware of VRS, 94 (31.3%) responded are partially aware, 70 (23.3%) responded low awareness while, whereas 26 (8.7%) responded not aware. This indicated that librarians and users awareness of VRS is high especially in COE MX 40 (13.3%) and IBBU Lapai 40 (13.3%).

# SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

## Summary of findings

The study examined availability and awareness Virtual Reference Services (VRS) in academic libraries in Niger state. The major findings are outlined as follows:

### Infrastructure and Technologies

With regards to infrastructure, the study indicated that computer servers, operating systems, tablets, laptop computers, good bandwidth, in-software and all Internet-enabled devices were required for the implementation of VRS in academic libraries.

It was found from IT staff of the three institutions that tools such as email were needed to handle asynchronous VRS whiles web forms technology such as Ask-a-Librarian, Facebook messenger, and Twitter handle were used for synchronous VRS.

### Level of Awareness and Use of VRS in Academic Libraries

The findings of the study revealed that the three academic libraries used both traditional and digital reference services to answer users’ queries. However, users prefer the traditional reference to digital reference services. Regarding the popularity of the various VRS platforms, users preferred email to the others in the three academic libraries. Moreover, the VRS platforms were promoted especially via the library websites of the institutions. Furthermore, it emerged from the findings that the existence of VRS have increased the use of library services. Findings from the study indicated that the respondents used VRS when they were off campus. Also, users occasionally use VRS platforms during quizzes, mid-semester examinations, interim assessment and end-of- semester examinations. Most of the VRS users are final and postgraduate students who want to complete their research. The mobile phone was found to be the most common medium of access among the VRS users. It emerged from the study that respondents request for research consulting on VRS.

## Conclusion

Virtual reference services have made libraries more visible among the invisible and remote library clients. Obviously, the traditional reference services continue to be the most popular means of getting help, however, the establishment of VRS such as email, Facebook, Ask-a-librarian*,* Twitter handle, and telephone and other VRS platforms in libraries have made answering users queries more cheaper and efficient. This has made library transactions attractive. The level of awareness and use of the various VRS platforms in libraries services. It has become necessary for librarians to be on board, however, the lack of personal interest by librarians in the use of VRS resisted them. Nevertheless, VRS is not a replacement of the traditional reference service but rather another platform that works hand in hand with the traditional reference services.

Also digital reference services must be regularly evaluated to ensure the success of VRS in academic libraries. s critical for both librarians and users because it contributes to an increase use of the library

## Recommendations

The following recommendations are made within the context of the selected academic libraries:

### Infrastructure and technologies in VRS in academic libraries

1. VRS is operated online which required internet connectivity therefore, libraries must improve on their internet connectivity. This can be done by increasing bandwidth and other internet-enabled devices. Regular maintenance of the infrastructures must be done to improve the technical standard of internet connectivity.
2. The library must procure tablets for librarians to be used for VRS. This will help mitigate the problem of prompt responses and inactivity of VRS after library hours.
3. Users must be sensitized on the advantages of the use of VRS to encourage them to embrace and develop the interest in the use of VRS for their information needs. VRS will provide quick answers to their queries as well as lessen the time they spend in coming to the library.
4. Users must be trained through library orientations and information literacy courses to be informed about the procedures in the use of VRS. This would equip and teach them how to formulate, express and clarify their queries on VRS.

## Suggestions for Future Research

Much more research needs to be conducted in Niger state especially in the private academic libraries to assess the use of digital reference service in private universities.

Also, studies need to be conducted on the implementation and management of VRS in libraries.

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