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ICT Needs and Skills Requirements for Reference Services in the Post-covid Era.

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**ICT NEEDS AND SKILLS REQUIREMENTS FOR REFERENCE SERVICES IN THE
POST COVID ERA**

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Abstract

The paper examined the ICT needs and skills requirement for reference services in the post COVID era. Non-probability judgmental sampling was used to select six (6) reference librarians, two from each of three higher institutions in Ibadan: Kenneth Dike Library, University of Ibadan, University Library, Lead City University and Polytechnic Library, The Polytechnic Ibadan. Data was collected through interview and was analyzed thematically. The results revealed that the basic needs of ICT for reference services are to provide fast and accurate service to patrons, easy access and retrieval of reference material, achieve fast and effective communication between the reference librarian and the users and to facilitate feedback. Additionally, the relevant ICT skills needed for reference services in the post COVID era are word processing skills, computer literacy, mobile technology skills, social networking sites, scanner, photocopier and printer. Moreover, the study reveals that the ICT skills of the respondents is moderately high and majority of the respondents acquire their skills through trial and error, training and re-training by their colleagues and self-sponsorship. The study also revealed that the relevant ICTs used for reference services which includes Word processing, e-mail, instant messaging tools, internet, scanner, printer, photocopier, mobile technology, and social media. The major challenge revealed by this study is inadequate funding which is at the center of all other challenges highlighted in this paper. The study recommends management support for ICT skill training and ongoing professional development for reference librarians and other professionals among others.

Keywords: ICT skills, Reference services, Reference Librarian, COVID era.

Introduction

Information and communication technology (ICT) is still a major factor in societal and personal development. Information is a vital tool for the development of every sector in every nation. It is strong and nearly endless. For this reason, its application in libraries would go a long way in satisfying the people's need for knowledge. It is crucial to note that the advancement of ICT has had a considerable impact on the standard of resources made available by libraries. Additionally, it enables the provision of capable and adequate library services to users from a range of academic disciplines. In the post-COVID era, it is hard to overestimate how crucial ICT has become to library operations. The conversion of several formerly manual tasks and activities in libraries to computerized ones necessitates the employment of ICT tools in order to provide consumers with better and faster services. The term "ICT" refers to a wide range of technologies that are used to collect, store, change, and transfer information in different formats (Raji, 2018). Adopting ICT in libraries is a strategy to improve the information services provided there. Today's population demands quick and simple access to current information, which can only be provided by incorporating ICT into library services. One of the main library services that calls for ICT is the reference services.

One of the most significant and visible manifestations of the library's goals and objectives is the reference service. It is also crucial to the library's role as a center for the dissemination of information for ad hoc research and independent study. By advising, interpreting, analyzing, and employing information resources, reference services are information consultations offered by library experts to help people with specific information needs. The reference section also provides instructions so that patrons can use library materials more independently. The creation, collection, and dissemination of information by the reference department are presently made easier by ICT. Libraries are remained operating despite the COVID-19 pandemic thanks to the utilization of digital reference resources. To make more efficient and easier the use of the information resources found in the reference section of the library, which now involves the application of computer systems and networks, both the information service provider (reference librarian) and the clients must be skilled and knowledgeable in Information and Communications Technologies (ICTs). Therefore, the study seeks to find out the ICT needs and skills requirement for reference services in the post COVID era.

Research objectives

- i. To examine the ICT needs for reference services in the post COVID era
- ii. To determine the ICT skills requirement for reference services in the post COVID era
- iii. To explore the level of ICT skills possessed and method of skills acquisition by reference librarian in the post COVID era
- iv. To identify the ICT tools used for reference services in the post COVID era
- v. To determine the challenges to the use of ICTs for reference services in the post COVID era

Literature Review

During the COVID-19 epidemic, reference services underwent a transformation in order to adapt to the information demands of 21st-century information searchers. Nowadays, reference services may come in digital or virtual forms that leverage instruments from the information and communications technology industry. No library can hope to stay relevant in light of these developments if it continues to rely entirely on the conventional style of service delivery typified by in-person interactions between the librarian and library patrons. Virtual Reference Service is currently among the most popular methods of communication between academic libraries and their users. Through this innovative service, a model for providing library services and information regardless of place, time, or distance has been formed. Today, email, web-based chat, video conferencing, voice over IP, instant messaging or texting services and digital reference robots are among the preferred virtual reference techniques utilized for communication and satisfying the information demands of the academic community (Mawhinney, 2020 and Bera, 2019;).

With the use of smartphones and other communication tools, digital reference services entail responding to inquiries from library patrons via social media sites like Telegram, Facebook, WhatsApp, and the like. In addition, a digital reference service extends beyond just connecting a user to online resources for information and handling user inquiries on a regular basis. It encompasses all required to aid the user in his search for information, education, and knowledge in its most comprehensive finest growth (Owolabi and Adeyemi cited in Adamu and Iliyasu, 2019). ICT use and its effects on library professionals at government degree institutions in Kashmir state, India, were studied by Ahmad et al. (2020). According to the survey, ICT plays a key role in managing libraries and giving customers prompt, accurate library services.

In order to function effectively in the digital era, library workers understood they needed frequent training. The usage of OPAC, and barcode technology, and library automation SOUL software played a vital part in the transformation of libraries.

Jalal (2019) has outlined a number of competencies that are essential for Reference Librarians in the post-COVID era, including management, retrieval of information, technological, communication, negotiation, organisation of resources, discovery services, use of OSS (Open Source Software) to maintain information resources and implement successful etc. More training programmes on the use of different technologies for providing users with excellent Reference Services should be made available to librarians. At the north-central part of Nigeria, Basahuwa et al. (2020) examined the ICT abilities and work performance of librarians in public universities. The results showed that there was a very high degree of professional ICT Expertise. The study came to the conclusion that ICT skills had an impact on librarians' work effectiveness. In the college libraries of the University of Delhi, Babu et al. (2019) looked into the ICT skills and knowledge of librarians and information scientists. The majority of respondents preferred workshops, seminars, and conferences above colleagues/friends, self-study, trial-and-error, and other methods for learning ICT skills. In academic libraries in Nigeria's South-South area, Oyovwe-Tinuoye et al. (2021) investigated the effect of ICT skills on librarians' work performance. The results showed that self-sponsorship was the primary method used by the majority of respondents to acquire ICT skills.

According to Farkas, who was referenced by Tella et al. (2018), a reference librarian's position today necessitates technical proficiency. The researcher identified a number of skills as being essential, including the ability to work with the back-end of the OPAC (Online Public Access Catalog), the ability to translate library and information services into the online platform, the ability to troubleshoot basic computer and printer issues, or simply having a solid understanding of emerging technologies. In order for reference librarians to fulfill their duties effectively and efficiently in the post-COVID age, researchers have highlighted a variety of ICT skills that are necessary. According to Ikeagwuani, Anoka, and Ugochukwu (2020), these abilities may be divided into two major categories: The first are the skills necessary to use computer and information technology tools. These include knowledge of hardware fundamentals and troubleshooting as well as skills for using application software programmes, such as presentation software, word processing tools, scanning techniques, web development, graphic design tools,

database creation and maintenance, and software installation skills. The second group comprises computer networking abilities, web 2.0 skills, and skills for navigating the internet and computer communications systems, including the ability to efficiently seek and retrieve material on the online environment.

Email is one of the most frequently utilized communication channels on the global information highway. Studies have revealed that academic libraries utilize one type of virtual reference service, email reference services, quite a bit. (Anna & Srirahayu, 2020; Mawhinney, 2020; Karami *et al.* 2020). In a research on "digital reference services in academic libraries of Iran," Karami *et al.* (2020) state that various academic libraries in the nation provide VRS through email. Despite its widespread use in daily life, email is still regarded as the least effective way to contact or use the VRS in terms of return times and general satisfaction (Mawhinney, 2020). Instant messaging (IM), according to Bera (2019), is a type of internet-based communication that enables real-time text transmission. One of the most popular ways of communicating online is through instant messaging or online chat. Compared to an email reference service, it is more immediate. The use of IM communication technology for chat reference services is unrestricted and includes AOL, WeChat, Morris Messenger, WhatsApp, and Yahoo.

According to Iwhiwhu, Ruteyan, and Eghwubare (2010), referenced in Umar, Hussaini, and Abubakar (2019), communication in libraries took place via books, newspapers, magazines, microforms, slides, etc. before the development of ICTs. The internet was made possible by the usage of computers and phones. Additionally, they point out that integrating telecommunications with an integrated library system can boost the effectiveness of library services. The Global System for Mobile Communication (GSM) has altered how people go about their everyday lives, and it has also improved how libraries run, especially the reference function. This suggests that tasks currently performed manually and physically at the library's reference department may be carried out electronically. Reference services are getting more mobile, according to Lotts and Graves (2011), referenced in Umar, Hussaini, and Abubakar (2019), as technology enables librarians to increase service stations and outreach possibilities.

Umar, Hussaini, and Abubakar examined how information and communication technology (ICT) is used to provide reference and information services at academic libraries in Gombe State (2019), the study used 130 respondents, made up of 120 registered users (students) and 10 staff members of the library at Gombe State University. According to the report, the library under

investigation has 100% availability of CD-ROM, computers, and internet access. A total of 109 respondents, or 98.83%, agreed that the reference department of the library should include a printer and that it should be used to offer services. However, several patrons objected to the usage of the telephone, scanner, and facsimile machines as well as their presence in the library's services. Artificial intelligence-based Digital/Virtual Reference Robots are used to answer queries when a reference librarian is not available (Chandwani 2018). The author also emphasized the usage of web cameras and video conferencing as instruments for reference services. Reference interviews are now performed by video conferencing.

ICT adoption in the reference sector is not without its difficulties. For instance, Ashiq et al. (2020) claim that academic libraries in Pakistan are falling behind in terms of personnel development and training, particularly in relation to ICT and its equipment, higher education, and social media use. In a similar vein, it has been acknowledged that some reference librarians in Nigeria libraries lack the necessary digital skills and capabilities for contemporary academic librarians of the twenty-first century (Madu et al., 2018). Workload implications, inadequate communication technology infrastructure, poor guidelines and training, internet outages, a malfunctioning library website, human resources, and ongoing budget cuts or financing are the main issues from an organizational standpoint (Williams, 2020 and Madu et al., 2018). A study of the adoption and use of social media and its utilization in academic libraries in the Flanders region of Belgium and South Africa reveals funding, facilities, and management support to be key deciding elements in service delivery (Williams, 2020).

In the South-South area of Nigeria, Oyovwe-Tinuoye et al. (2021) investigated the effect of ICT skills on librarians' work performance. ICT skill development has been demonstrated to be hampered by inadequate training, poor planning and execution, lack of librarian sponsorship, and a lack of evaluation and assessment policies. The three largest barriers to the successful use of e-resources in this digital and post-COVID era were identified to be erratic power supply, sluggish internet access, and expensive data subscription costs (Ambrose & Ogunbodede, 2022). Adamu and Iliyasu (2019) noted a variety of difficulties associated with using ICTs for reference services. These include: a rigid reference service policy, a lack of technological know-how to address consumers' informational demands, an unstable power supply, and apprehension about computers taking over human jobs. Other difficulties noted were the price of subscriptions and bundles, technical difficulties such as a bad Internet connection, hardware concerns, and the like, with mean

scores over the 2.50 threshold for the acceptance of mean According to the report, respondents also complained about rigid reference service policies, a lack of knowledge, inconsistent electrical supply, and apprehension about computers taking over human jobs. Other issues with providing reference services at the library were the expense of subscriptions and packages, the absence of digital reference services, and the weak internet network.

Methodology

A descriptive qualitative design was adopted in the research process. Additionally, because the data in this study was gathered verbally, qualitative research is applicable. The population of study entails Reference Librarians in three (3) tertiary institution Library in Ibadan: Kenneth Dike Library at University of Ibadan, University Library at Lead City University, The Polytechnic Library at The Polytechnic Ibadan. The participants in this study were chosen via non-probability judgmental sampling. The researcher intentionally selected participants who are most suitable to contribute to the research topic and who would be ready to share their experiences concerning the phenomenon been investigated. Six Reference Librarians in total, were selected for the study, two from each library mentioned in the population. A semi structured interview with open-ended question was employed in this research to get deeper information from the Reference Librarians. A semi structured interview is appropriated to this research because the researcher was still allowed to asked new questions that arose during the interview process which also allowed the researcher to dig deeper into the information being provided by the respondents.

Data Analysis

Thematic analysis was done on the qualitative data obtained through interviewing. The next section provides further information.

Results

ICT needs for reference services in the post COVID era

In order to achieve the set objective, respondents were asked to comment on ICT needs for reference services in the post COVID era. Some of the reasons for the need of ICT highlighted by the respondents are: It helps the reference section to provide fast and effective service to patrons, users can easily access and retrieve material virtually through the library websites. Also, it also helps in achieving fast and effective communication between the reference librarian and user. For

example: The use of social media and the internet to answer reference queries. Materials can be sent through different online medium and even user's satisfaction and feedback is tested and gotten through them.

ICT skills requirements for reference services in the post COVID era

In order to achieve the set objective, respondents were asked to comment on the various ICT skills requirements needed by reference librarians to discharge reference services in the post COVID era. As there are several ICT tools that may be utilized for reference services, the results show that many ICT skills are necessary. Five (5) of the respondents stated that a reference librarian should be proficient in using social networking sites like Telegram, Twitter, and WhatsApp, as well as other online resources for information retrieval and information collection. Also, telephone reference service, skill to operate the computer, scanner, and photocopier machine, Word processing and sometimes PowerPoint for presentation during user education in the library. They also indicated that reference librarian must be possess the ability to use email and internet for sending email, and using search engines, One (1) of the respondents said that the set of skills to be acquired by a reference librarian depends on the type of library and the patrons. For example a reference librarian in an academic library must be skilled in using searching databases, operating open source software, CD-ROM etc. which might not necessarily be needed by a school librarian.

Level of ICT skills possessed and method of skill acquisition by reference librarian in the post COVID era

In order to achieve the set objective, respondents were asked to comment on level of the ICT skills they possess. Two (2) of the respondents said that they possess basic general ICT skills such as word processing, Microsoft excel, photocopying machine, printer and use of social media platform like WhatsApp. They clarified that each reference librarian must be proficient in word processing, a multipurpose computer program. This indicates that their ICT skill level is moderate. Moreover, Four (4) of the respondents explained that they perform basic troubleshooting as all activities now take place on computers in the library and that they can also make use of other ICT tools except the aforementioned such as: using scanner to scan document and transferring to the computer for document delivery, setting up and using projector for presentation, digital camera, printers, institution websites and use of networked computers. This indicates a moderately high level of ICT competence. On the acquisition of these skills, majority of the respondents mentioned that

they acquire these skills via seminars, training and retraining by their colleagues, self-sponsorship, and trial and error.

ICT tools used for reference services in the post COVID era

In order to achieve the set objective, respondents were asked to comment on different ICT tools used for reference services in the post COVID era. All the respondents maintained that the ICT tools needed for reference services are: Computers/Laptops, Photocopiers, Scanner, Internet, Printers, Websites and Databases. Instant messaging tool/Social media platforms like WhatsApp, Telegram and other communication platforms where information can be delivered to users without interruption was majorly emphasized by the respondents. Two (2) of the respondents said they make use of fax machine at the reference section.

Challenges associated with the use of ICT for reference services in the post COVID era

In order to achieve the set objective, respondents were asked to comment on the challenges associated with the use of ICT for reference services in the post COVID era. Inadequate electricity/Power supply is one of the major challenges mentioned by all the respondents. They explained that when there is no power supply, some of the activities they perform stops or cannot be embarked on. Another issue raised by the respondents is lack of funding. They asserted that there is no enough funds for procurement and maintenance of ICT equipment's and data subscription. More also, there is no adequate fund for staff capacity development and training. Another major challenge mentioned by the respondents is poor internet connectivity and high cost of data subscription/package. The respondents are of the opinion that majority of all the challenges facing the utilization of ICT for reference services are off shoot of inadequate funding. They explained that if the library is adequately funded most of the challenges will be eradicated and the library at large will be able to achieve its mandate.

Discussion of findings

The need for ICT for reference services has revealed by this study is to provide fast and effective services to patrons, enable users to have easy access and retrieval of reference materials anywhere and anytime, and it facilitates easy communication between the librarian and the user. This is in line with the study among library professionals at government degree institutions in Kashmir state, India, Ahmad et al. (2020) looked at how ICT was used and how it affected them. In administering

libraries and providing clients with timely, accurate library services, ICT is crucial, according to the poll.

The major ICT skills requirements for reference services are the ability to use operate the computer and machines like scanner, printer, photocopier and software packages. Also the revealed that the reference librarians should possess ability to use social media networks to carry out digital reference services. This is supported the study of Ikeagwuani, Anoka, and Ugochukwu (2020), these abilities may be divided into two major categories: The first are the skills necessary to use computer and information technology tools. These include knowledge of hardware fundamentals and troubleshooting as well as skills for using application software programmes, such as presentation software, word processing tools, scanning techniques, web development, graphic design tools, database creation and maintenance, software installation skills, computer networking abilities, and skills for navigating the internet and computer communications systems, including the ability to efficiently seek and retrieve material on the online environment.

The level of ICT competence for reference services among the respondents is moderately high as majority of the respondent possesses relevant ICT skills needed for reference services. This is in line with Basahuwa et al. (2020) research on the ICT proficiency and work performance of librarians in Nigeria's north-central public universities. According to the survey, librarians in Nigeria's north-central area had a high degree of ICT proficiency. This study also emphasized the respondent's method for learning ICT skills, which included self-sponsorship, trial and error, and peer training. This findings is also in line with Babu et al. (2019) study of the ICT skills and knowledge held by librarians and information scientists at the University of Delhi's college libraries. The majority of respondents preferred workshops, seminars, and conferences as a way to learn ICT skills, followed by trial and errors, colleagues/friends and self-study.

Also, majority of the respondents specifically emphasized on the use of instant messaging tools like WhatsApp and telegram as a major ICT tool used for reference services in the post COVID era. This findings is supported by the work of Mawhinney, (2020) who said that free IM communication tools that may be used for chat services include WeChat, Morris Messenger, AOL, Yahoo, and Yahoo Messenger. Studies on the adoption and usage of the IM or chat approach in the VRS show that it is one of the most practical ways to communicate with reference librarians in terms of ease and usability.

The prominent challenges facing the use of ICT for reference services as mentioned by the respondents are inadequate power supply, high cost of data subscription, inadequate funds for the procurement and maintenance of necessary machines and equipment, lack of staff training and development. This is in agreement with Williams (2020)'s results which claimed that funding is part of the challenges facing the utilization of ICT for reference services. This conclusion is also supported by Oyovwe-Tinuoye et al. (2021) and Ambrose & Ogunbodede (2022), who noted that poor planning and implementation, inadequate staff training, a lack of policy for evaluation and assessment, librarian non-sponsorship, erratic power supply, slow network connectivity, and expensive data subscription fees were constraints to the utilization of ICT for reference services.

Conclusion

The future of the reference department will be determined by reference librarians' ICT abilities, as demonstrated in the introduction, literature review, and discussion above. Therefore, in order for reference librarians to be effective in the digital and electronic era, they will need a wider range of ICT knowledge and abilities. The study findings has also shown various challenges that affects the use of ICT for reference services which is centered on inadequate funding. So it is important that the library device strategies to improve reference services to users. Adoption of ICT for reference service such as reference via email, video conferencing, the World Wide Web, social media, and a host of others will improve service delivery, as will productive, adjustable reference service policies, regular and frequent ICT training programs, consistent power supply, consistent Internet network supply, and a number of other factors.

Recommendations

1. To develop the essential knowledge, library management should promote and assist their staff especially reference librarians for training and retraining in computer and other ICT skills.
2. As is done at UNIJOS and other well-automated libraries in Nigeria, libraries should utilize the usage of System Analysts who are specialists on ICT-related issues to design policies and execute.
3. To prevent frequent power outages, libraries should offer alternate lighting sources such as solar and wind energy or high-quality generating sets.

4. In order to improve service delivery, libraries should be given enough funding by all levels of government in Nigeria through organizations like the Tertiary Education Trust Fund (TETFUND) and the National Information Technology and Development Agency (NITEDA).

References

Adamu, M.S. & Iliyasu J.A. (2019). Assessment of Digital Reference Resources and Services in Federal University of Technology Library, Minna, Niger State, Nigeria. *Nasarawa Journal of Library and Information Science (NAJLIS)* 3(1).

Ahmad, S., Lone, J.A., Basharat, M. Perception of using ICT in libraries: a survey of library professionals working in Government Degree Colleges of Kashmir (J&K)-India. *Pearl J. Libr. Inf. Sci.* 14, 65–70 (2020). <https://doi.org/10.14429/djlit.35.4.8844>

Anna, N. E. V., & Srirahayu, D. P. (2020). Evaluation of virtual reference and information services at University Libraries in Indonesia. *Library Philosophy and Practice (e-journal)*. 3583. <https://digitalcommons.unl.edu/libphilprac/3583>

Ashiq, M., Rehman, S. U., & Mujtaba, G. (2020). Future challenges and emerging role of academic libraries in Pakistan: a phenomenology approach. *Information Development*, 10 (10), 1-16.

Babu, B. R., Vinayagamorthy P. & Gopalakrishnan S. (2007). ICT skills among librarians in engineering educational institutions in Tamil Nadu. *DESIDOC Bulletin of Information Technology*, 27 (6), 55–64.

Basahuwa, C.B., Unegbu V.E. and Babalola Y.T. (2020). ICT Skills and job performance of librarians in public universities in North-Central, Nigeria. *ATBU Journal of Science, Technology and Education*, 8 (1). <http://www.atbuftejoste.com/index.php/joste/article/view/959>

Bera, S. W. (2019). Digital reference services in Technical College (Institution) libraries: An overview. *Research Review International Journal of Multidisciplinary*, 4 (4), 1821-1825. Foley, M. (2002). Instant messaging reference in an academic library. *College & Research Libraries*, 63 (1), 36-45.

Chandwani, A. (2018). An overview of Digital Reference Services. eprints.rclis.org. Retrieved 25 April 2018, from http://eprints.rclis.org/14295/1/DIGITAL_REFERENCE_SERVICES.pdf

Ikeagwuani J.A., Anoka S.N. & Ugochukwu K.M. (2020). Impact of information communication technology (ICTs) in the provision of reference services in the academic libraries in Nigeria: a

study of COOU library. *International Journal of Social Sciences and Humanities Reviews*, 10(1) p.49 – 59.

Karami, N., Danesh, F., Samiee, M. R., & Rashidi, V. (In press). Digital reference services in academic libraries of Iran: Webometrics study.

Madu, A. U., Usman, H., & Abba, F. (2018). Challenges of virtual reference services implementation by Nigerian academic libraries in the 21st century in Nigeria. *Sahel Analyst*, 1 (2), 144-155.

Malanga, D.F., & Kamanga, B.C.G. (2018). E-records readiness at Karonga District Council in Malawi: applying IRMT e-records readiness assessment framework. *Information Development*, 35(3), 482-491. <https://doi.org/10.1177/0266666918766971>

Masenya, T. M., & Ngulube, P. (2019). Digital preservation practices in academic libraries in South Africa in the wake of the digital revolution. *South African Journal of Information Management*, 21(1), 1-9. <https://doi.org/10.4102/sajim.v21i1.1011>

Oyovwe-Tinuoye, G. O., Omeluzor, S. U. & Ijiekhuamhen, O. P. (2021). Influence of ICT skills on job performance of librarians in university libraries of South-South, Nigeria. *Information Development*, 1-4.

Tella A. Akande T. & Bamidele S. (2018) ICT Knowledge and skills required for recruitment of academic librarians in the Digital Age. *Library Philosophy and Practice* (e-journal)

Umar S., Hussaini M. & Abubakar U. (2019) Application of Information and Communication Technology (ICT) In Reference and Information Services in Academic Libraries in Gombe State. *International Journal of Applied Technologies in Library and Information Management* 5 (3) 04 - 28-38

Williams, M. L. (2020). The adoption of Web 2.0 technologies in academic libraries: a comparative exploration: *Journal of Librarianship and Information Science*, 00 (0), 1-13