**Reference and Information Services in the Digital Age: Issues and Trends**

**Goodluck I. IFIJEH and Chidi D.ISIAKPONA**

Covenant University, Ota

Ogun State, Nigeria

**Introduction**

The library is a collection of print and non print materials ( books, serials, audio-visuals, and other electronic resources) selected, acquired, organized, interpreted and made available to meet the information, knowledge and recreation needs of users. Generally the library is unique in that it does not only select, organize, store and retrieve information, it also creates access, protects intellectual freedom and provides direct assistance and instructions to its users in the use of its information resources. One of the important means through which libraries meet their objectives is the provision of an effective reference service.

Reference services are the culmination of all library activities aimed at facilitating the use of the library and its resources. It is perhaps the most demanding aspect of librarianship and its performance can either make or mar the image of the library (Adebayo, 2009). Reference service is one of the library’s primary practices besides acquisition, classification, cataloguing and physical planning. The term reference services or sometimes referred to as reference and information services can be defined as personal assistance provided by trained personnel to library users seeking information. Such personal assistance is the essence of reference services and is the fundamental role of the reference librarian. The goal of the reference librarian is to meet the information needs of the users. How and to what extent this is done varies from library to library and depends on the type of library, technologies and services available.

**Reference Services: Conceptual Explanation, Features and Types**

Reference services can be divided into three broad categories: Information services that involve either finding the required information on behalf of the users, or assisting users in finding information; Instruction in the use of library resources and services (broadly defined as information literacy skills); User guidance, in which users are guided in selecting the most appropriate information sources and services (Dollah and Singh, 2005)

Reference services cover a wider range of activities than merely answering reference and information service enquiries. The term reference service cannot be properly described without examining some theoretical concepts. One of such theory is Fosket’s theory. In his theory, Fosket (1967) cited in Ifidon and Ifidon (2008) regards reference service as an information system concerned with the retrieval and transfer of information required by the library user. This involves translating a request into terms that can be met by a given reference source. Another concept is the Rostein theory. Rostein theory holds the view that there are three concepts of reference services – the minimum, the middling and the maximum (Ifidon and Ifidon, 2008). The minimum concept emphasizes the self-help and self-education of the user with guidance from the librarian. Ready reference service is to provide only actual information where users are expected to find their sources and do their own research. The teaching function of the library is stressed. According to Adebayo (2009), most libraries lean toward this concept expecting users to find their way after initial help from librarians. The maximum concept subordinates the teaching function to the responsibility to deliver information. It emphasizes the delivery of direct information rather than books or journals to the users; the expert knowledge of and a differentiation between categories of users and degree of services to people in each category – that is, not giving the same type of service to all users. The middling concept lies between the two extremes using elements from both. Many libraries use some elements of all the concepts as far as their staffing situation, book stock and finances permit.

Another theory of reference and information services is that propounded by Adediran (1987) cited by Ifidon and Ifidon (2008). According to him, reference and information are a system and in defining it, one invariably delves into areas of reference service and reference skills. He concludes by positing that it is the safest to approach a definition by describing what the reference librarian does. Within this context, there are four basic components in a reference system. These are the user, information, tools of access to information and the reference librarian/information scientist. In terms of the services rendered, there is the total package concept in which the user is handed the information he needs ready and digested. At the other extreme is the concept of service in which the user is given minimal assistance. In between these two are reference and information services, which are combinations of the two earlier concepts. Common to all the concepts is the human interface during which a pre-search negotiation takes place between the user and the librarian. Das, Gurey and Saha(2009) outlined three reference services theories :

**Conservative Theory**: Conservative Theory persists on education and guidance instead of boundless help. This theory states that reference work is limited to the use of ready reference sources to help the users.

**Liberal Theory**: Liberal Theory focuses on the maximum help. According to this theory Reference Librarians must apply all approaches available to retrieve the information that users need.

**Moderate Theory:** The combination of Conservative Theory and Liberal Theory is Moderate Theory which most of Reference Librarians prefer.

Accordingly, reference services are grouped into two – direct and indirect. Direct reference service is a face-to-face process in which reference librarian answers the user’s question directly. Indirect Reference Services include reference sources selection, provision and publishing the bibliographies, union catalogs, guidelines, newsletters, and reference sources evaluation.

From the theories of reference services discussed, Ifidon and Ifidon(2008) posited that some salient characteristics of reference services can be identified. These include interpersonal relationship between the library user and the librarian as well as meeting the information needs of enquirers at different levels and depths. Reference service includes the use of different types of internal and external information sources – bibliographic, paper or electronic or personal knowledge to satisfy the users’ information needs. It could come in form of directing a user to where needed information sources can be found or direct provision of required information to a given user. There is also a sense of urgency on the path of both the library patrons and the librarians which demands the use of quick and efficient techniques of retrieving information. Provision of the right information to the right user, in the right volume is also a salient characteristic of a good reference service. Reference Services can therefore be described as the professional advice and assistance provided by a trained library staff, to assist individuals (using the library's reading rooms or making enquiries by mail, telephone or on-line) in either locating information sources or access required information directly, using materials in the library's collections or elsewhere. It also includes information products such as guides, directories and databases, and the equipment and facilities that are provided to enable research to be carried out to meet information needs. The delivery of information sources from the collections to clienteles in the reading rooms is also included in the scope of reference services. Ultimately, reference service is not simply someone asking a question and someone else providing an answer. It is about someone with an information problem working with someone with information skills. The degree of user satisfaction is an indicator of correct information provided by the reference and information personnel.

**Traditional Reference Services: an Overview**

Reference services began in the late 19th and early 20th century in response to developments in society and library use. There was an increase in the volume, variety and format of information resources available, including, but not exclusively, those found in libraries. Consequently, it became more difficult for library users to find the resource they were looking for and to find the information they need within that resource without an aid from a library personnel. There was also an increase in the number and diversity of people using libraries (particularly public libraries), leading to a wider range of information needs and enquiries and sophistication with the search for information. The philosophy of reference work justifies the reasons for the establishment of reference sections in libraries – making effective use of the library resources, satisfying users’ needs, providing effective service, enhancing availability, accessibility and timeliness of information delivery. The availability of unprecedented amount of information, which has affected the method of organization and retrieval, makes it necessary to employ reference and information specialists to assist users. Seeking information or knowledge about something, wanting to know something about anything and anything about something have brought about the essential provision of reference service in libraries. The major objective of the library is to satisfy the information needs of users and ensure that the user is served within the shortest possible time. This implies that efficiency and effectiveness is the major reason for the establishment of the reference sections in libraries. Reference services are largely reactive (the assistance or service is provided when asked for by the users). However libraries have also played a key role in providing information services that anticipate user needs. Such proactive services include various forms of current awareness and selective dissemination of information services. **Selective Dissemination of Information (SDI)** service involves providing specialized information /documents or awareness service to users who have potential interest in these materials. The major objective of SDI services is to provide current information on a given subject to users who have interest in the subject area.

Reference service is made up of four components. The components are - the user, the information required, the tools for locating the information and the librarian himself.

Library users maybe classified into four groups:

1. The new library user who is probably coming to the library for the first time. For this group, the reference librarian needs to conduct orientation programmes so that the different services rendered by the library can be made known to them.
2. The occasional user who only comes to the library when pressure forces him to do so
3. The regular library user who is not new to the library, but whose library needs are basic. It is this group of users that ask simple directional reference questions
4. The researcher who is a specialist in his own field.

Each of these groups requires different types of information. The information required can only be known through asking questions. Such questions are generally called reference questions or queries. Katz (2002) categorized reference questions into four types:

**Directional questions**: These are questions that demand the reference librarian giving users the directions to places or resources within the library. Such questions could be “where is the catalogue?”, “where are the indexes?”, “where is the telephone?”

**Ready reference questions**: These are the types that require uncomplicated, straightforward answers. An example is “How long is the River Niger?” Ready reference queries maybe divided and subdivided in many ways. Crossing almost all subject lines, one may classify them as: ‘Who’, ‘What’, ‘Where’, ‘Why’ and ‘When’ questions.

**Specific-search question**: These are questions which may require giving the user a document or list or report. The difference between the specific-search and ready-reference question is important. The ready-reference queries can be answered with short answers from reference sources. Specific search answers take the form of giving the user a document, a list of citations, a book, a report, an internet site etc.

**Research questions**: A research question or query is usually identified as one coming from an adult specialist who is seeking detailed information to assist in specific work

Queries or reference questions can only be well answered if appropriate tools for locating information are available. These tools may be referred to as reference or information sources. Basic information and reference sources found in most libraries include (but not limited to) encyclopedias, handbooks, dictionaries, indexes, biographies, almanacs, guides, bibliographies and in recent times databases and the internet.

**Reference Sources**

As earlier discussed, reference or information sources are materials otherwise called reference tools which help to provide answers to reference questions. Some of them are described below:

Almanacs, yearbooks and handbooks

Almanacs, yearbooks and handbooks are often single volumes which summarize large amounts of facts about people, organizations, current and historical events, countries, statistics, and popular culture items like sports, entertainment etc. They provide quick answers to factual questions, but aren't useful for extensive research. Yearbooks provide a quick update to events occurring during that year. Handbooks usually are focused on a particular subject, while almanacs are broader in scope. Examples include Britannica Book of the Year*,* Facts on File: World News Digest with Index, Information Please Almanac: Atlas and Yearbook, The World Almanac and Book of Facts and a host of others.

Biographical sources

These are reference sources with biographical information which provide a brief summary of data or fairly detailed information about people, or references (citations) to other short or full-length biographies written about people. Brief summaries are usually found in biographical dictionaries, while other biographical sources and some encyclopedias may have more detailed information. Some cover living people and some dead people, while some cover both. Examples are McGraw-Hill Encyclopedia of World Biography, Webster's New Biographical Dictionary, Who’s Who in Africa, etc.

Dictionaries

Dictionaries give an alphabetical list of words and their definitions, but there are several useful variations also classified as dictionaries. Thesauri contain synonyms and antonyms (opposites) but usually don't define the words. Dialect and slang dictionaries present words and definitions not necessarily found in standard dictionaries. There are also dictionaries of abbreviations and acronyms and dictionaries of quotations. Examples include Oxford Learners Dictionary of English, Chambers Dictionary of Science and Technology, Websters New Third International Dictionary etc

Encyclopedias

Encyclopedias provide comprehensive coverage of an entire area of knowledge. There are general encyclopedias and subject encyclopedias, and they differ as to the level of detail provided and the complexity of the writing. Encyclopedias are good for fact-finding, getting general background information about a subject or starting a research project. Examples are Academic American Encyclopedia, Collier's Encyclopedia, Encyclopedia Americana, New Encyclopaedia Britannica etc.

Indexes and abstracts

Indexes and abstracts supplement the library catalog. Indexes are pointers to sources where particular required information could be found while abstracts are summaries of articles or other information sources.

Other reference sources include Statistics and Government documents, Geographic information like atlases and maps, Bibliographies (lists of works which help identify sources where information can be found.

Reference sources are now available in non print format. In the words of Katz (2002), ‘less than a decade ago, information sources were synonymous with the printed book; today the definition is turned on its electronic head’. Basic reference sources are available online or as CD-ROMs or DVDs. Madu (2002) is of the opinion that reference sources are mainly the stock in trade of reference libraries as they provide authoritative answers to reference questions. Reference sources are meant to be consulted for specific terms of information, which require authoritative answers. The success of any reference service depends on two factors: the possession of the right materials and the knowledge of how to get the most out of the materials. However, in a situation where the needed information source is not available in the library, the reference librarian may decide provide a **referral service** to the user. A referral service involves helping a user to locate and access needed information source from another library. This may include sending the user to a library in another location or getting the needed materials from the identified library and making it available for use in the client’s own library.

**Reference Librarian**

Reference services traditionally have been offered by a person at a designated desk within the library building, over the telephone, and through correspondence. The reference librarian handles all types of queries, from directional questions to in-depth research. The role of the reference librarian is primarily to answer patrons’ questions and secondarily to provide readers advisory services. The reference librarian flourishes under scores of designations, from the early “keeper of tablets” to the modern “information scientist” or “library customer officer”. He is expected to come up with answers to sometimes sloppy queries (Katz, 2002)

An important part of a reference service according to Chowdhury and Chowdhury (2003) is the **reference interview**, which involves a personal discussion between a user and reference librarian. Through the interview the reference librarian tries to understand the specific information need(s) of the user as well as collects background information about him or her particularly on the individual’s subject knowledge and the reason for searching for the information. With reference interview, the reference librarian is able to filter the retrieved information in order to select the most appropriate source(s) for the user.

The ability to take a query, sort it out, and provide appropriate response to the user is the skill of the reference librarian. He or she should in addition possess subject area knowledge. This means not only having a skilled appreciation of reference sources in general, but understanding better than anyone else how to dig out data from a given subject field. The reference librarian should also have good conversational skills - this means an ability to talk to all types of people, to find out what they need. Furthermore, one should know whether a formal reference interview is required or whether it is easier to simply find the citation or answer. He or she should be competent in selecting and acquiring materials – from databases to print almanacs and biographical sources. The functions of the reference librarian can be summarized as Instructing the reader in the ways of the library, assisting the reader with his queries, aiding the reader in the selection of good works, and promoting the library within the community.

Lastly, the reference librarian should have good manner of approach - the way and style with which the reference librarian approaches a user is very important as this would affect the depth and level of interaction. Apart from skills, a good reference librarian should be academically qualified and professionally trained. A qualified reference librarian should normally possess a first degree in a subject area other than librarianship and a master’s degree in library and information science. He or she must be conversant with the use of the computer and other modern day technologies. The reference librarian needs the support of other professional colleagues, paraprofessionals and library attendants from time to time.

**Information and Communication Technology (ICT) and Reference Services**

According to the International Encyclopedia of Library and Information science (2003), ‘information communication technology refers to the application of modern electronic and computing capabilities (technologies) to the creation and storage of meaningful and useful facts or data (information) and its transmission to users by various electronic means (communication)’. Oyegade (2000) sees it as a term, which encompasses the notion of the application of technologies to information handling processes, which include information generation, storage, processing, retrieval and dissemination. Information and communication technologies encompasses two terms: information technology and communication technology.

Information Technology refers to the items or equipment (hardware) and computer programme (software) that facilitate access, retrieval, storage, organization, manipulation and presentation of information by electronic means. On the other hand, Communication Technology refers to the telecommunication equipment through which information can be sought, acquired and transferred. Examples are telephones, modem etc.

The information technologies in the libraries at present are divided into three (3): Computers, storage media and telecommunications.

**Importance and Use of ICT in Reference Services**

Application of ICTs to library operations is believed to have had tremendous effect on reference services (Oyegade, 2000). Lancaster and Sandore (1997) in Ukachi (2008) enumerated the effects as modification of traditional services, introduction of new services, disintermediation of services and the extension of services to remote users.

Modification of traditional services is prevalent in libraries of all types today. The most obvious example is the gradual substitution of conventional methods with electronic access like the online public access catalogue (OPAC) for the card catalog and electronic databases for use of printed indexes and other reference tools. These developments have generally improved the quality of services rendered by the reference sections of the libraries and library users tend to prefer the new tools to the old. Furthermore, electronic methods and means have expanded the horizons of library users e.g. users access library holdings faster through online public access catalogue than the traditional card catalogue. ICTs have also enhanced significant improvement in the production of online union catalogs coupled with fax, which have greatly increased effectiveness and efficiency in the identification and delivery of documents to users.ICTs have helped reference librarians to provide services that would have been almost impossible to offer in the traditional library system. Reference librarians now provide users with databases that give access to millions of journal articles as well as access to the internet which has holdings of even more libraries and limitless variety of formal and informal sources of information. Thus, needed information can now be identified, accessed and delivered within the shortest time possible with very little effort from both the librarian and the user.The applications of ICTs now allow library users to undertake for themselves various activities previously provided for them by members of the library staff. For example, users can now search for materials from their homes using their libraries’ web based OPAC; they can also access the libraries’ databases with very little or no aid from the reference librarian. ICTs also aid reference services to remote users, as they facilitate the use of certain of the library’s resources without visiting the library or consulting any member of the library staff. This however gives the library staff more time to spend on other activities, perhaps in developing and providing new services. Adebayo (2009) in appreciation of this trend pointed out that remote reference service removes geographic and certain physical barriers (e.g services to some handicapped groups) to information access.

Most services that were very difficult or even impossible to be performed are now carried out without any form of difficulty. ICT has become a basic ingredient of information accessibility and dissemination. Studies have shown that ICT has transformed reference services by providing greater access, new frontiers to research and learning and richer contents (Madu, 2004). Ukachi (2008), in establishing the impact of ICT in guaranteeing effective reference services affirmed that remote access to the library’s electronic resources using computers, modems and networking has made the library more accessible and has potentially attracted a new population of users, who have the capability to use the library without physically entering it. More importantly, library users can now gain access to what has traditionally been classified as “library” resources, without depending on the library’s intermediary role. Ukachi (2008) also reiterated that presently, many users especially students prefer to use electronic reference sources than the print versions because their use of the electronic sources tend to give them greater personal satisfaction and improves their attitude towards the library.

One important ICT facility that promotes effective and efficient reference services in libraries is the internet.

**The Internet**

The internet as an electronic resource is having the most significant impact on the services of most professionals including librarians. The internet can be defined as ‘a system connecting computers around the world using **TCP/IP, (**which stands for Transmission Control Protocol/Internet Protocol) a set of standards for transmitting and receiving digital data. It consists of collection of billions of interconnected WebPages that are transferred using HTTP (Hypertext Transfer Protocol), and are collectively known as the World Wide Web (WWW). The Internet also uses FTP (File Transfer Protocol) to transfer files, and SMTP (Simple Mail Transfer Protocol) to transfer e-mail’ (The Free Dictionary, 2013). The internet is dynamic and provides a medium of communication that has extended the potential of libraries and librarians for interactions beyond the physical library. The internet is the most significant telecommunications medium enhancing online searching. Katz (2002) emphasized that with the internet, ready reference can be performed with even greater speed since information carrying materials can easily be downloaded from numerous sites.

Information and Communication Technologies (ICTs) play an important role in enhancing efficiency in development of reference service in libraries. More than ever, libraries need this technology. An increased number of users, a greater demand for library materials, an increase in the amount of material being published, new electronic formats and sources, and the development of new and cheaper computers are some of the reasons for the growing need for ICT in reference services in libraries today. Reference librarians, library patrons and supporters must help develop ICT-based libraries to meet the changing demands of the users.

**Digital Reference Services**

The terms digital reference services, web-based reference services, virtual reference service and electronic reference services are used interchangeably as terms with similar meaning (Su, 2002). Roesch (2006) defines digital reference services as Internet-based question and answer services that connect users with individuals who possess specialized subject or skill expertise. A digital reference service can only be said to have occurred when a question is received electronically and responded to electronically (Bertot, McClure and Ryan, 2001). Dollah and Singh (2005) cited Janes, Carter and Memmott (1999) as defining digital reference as a mechanism by which people can submit their questions and have them answered by a library staff member through some electronic means (e-mail, chat, Web forms, etc.) not in person or over the phone. A digital reference service consists of the following components: the user of the service, the interface (e-mail, web form, chat, videoconference, etc.), the information professional, and electronic resources (including electronic or CD-based resources, web resources, local digitized material etc.) (Berube (2003).

There are different models of digital reference service. Many writers have used the term ‘asynchronous’ and ‘synchronous’ to describe the two major models of digital reference service delivery. (McClennen, 2003; Francoeur, 2002 and Berube, 2003). Synchronous digital reference service involves real-time two way communication between the reference librarian and the user, using mechanisms such as `chat’, `instant messaging’ or `voice over IP’. In synchronous reference service, real time technologies are involved with patrons clicking a button on a web page to exchange messages with a librarian in real time. Synchronous transaction takes place in ‘real-time’ with an immediate response to users’ query. Examples include text-based chats, video conferencing and digital reference robots. Chat or Instant Messaging is a process that involves librarians and users ‘speaking’ to each other in real time on the Internet using special text-based software. The transaction involves a split web screen. In one screen users type question and can instantly see librarians’ responses, in the second screen; librarians can call up web pages or other electronic references where the required information can be found. Video-conferencing or web-cam service is a form of digital reference service which includes the visual element, which may be an antidote to the communications problems inherent in the mere text-based services. Librarians and users are able to use both text and speech for reference transactions. Instead of a window for the textual exchange, there is a window in which librarians and users can see each other while conducting a face-to-face interview. Digital Reference Robots essentially use artificial intelligence to respond to questions.

Asynchronous digital reference is made up of one way communication at a time, typically by e-mail or Web forms. It involves the use of FAQs (frequently asked questions), electronic resources, which may include subject guides, lists, journals, and other content, and e-mail, which may be forms-based or address-based. Since the invention of the World Wide Web, there has been a great increase in the number of reference services utilizing asynchronous electronic communication media to conduct the reference transaction. Asynchronous transaction involves time delay between the question and answer. Examples include e-mail, web forms and ask-a-service. E-mail is a major means of online information delivery. Online information delivery begins with the user sending the library an e-mail with a reference query, supplying whatever information he or she feels is necessary and the library may reply by e-mail, telephone, fax, correspondence, etc. Web Form transactions can only be initiated from a designated web site, where users must respond to specific queries in addition to asking their questions. In order to send the form, which will usually be received by the library in the form of e-mail, users must click on a ‘summit’ button specifically designated for that purpose. Ask- A- Service is usually corporate-sponsored web sites that allow users to ask questions and receive answers for free from public information located mainly on the World Wide Web or from proprietary databases and networks of field experts.

McClennen (2003) described what he called a role-based model of digital reference service. This model focuses on roles that are played by the participants based on the traditional process of librarian/patron interchange. The five roles are played by five different persons – the patron, filterer, answerer, administrator, and coordinator. The patron is the person asking the question; the filterer may be a person or an automatic process which filters the questions (for instance, repeat questions, inquiries about previous transactions, unclear, out-of-scope or spam); the answerer is the person who assists the patron with information needs; the administrator is the person who monitors workflow, clears the way for answerers and filterers to do their jobs, may assign questions and check answers for content. Lastly, the Coordinator is the person responsible for defining and implementing policies and procedures that involve the operation on the service

Another form of digital reference service is collaborative digital reference. This implies two or more libraries collaborating to offer reference services using any of the earlier mentioned formats.

Chowdhury and Margariti (2004) outlined six-step process that libraries should take to offer a successful digital reference service:

**Informing** – this involves conducting preliminary research to identify areas of need or gaps;

**Planning**-this is a process that include developing procedures, methods and policies that portray the overall organizational goals;

**Training**- which implies preparing their staff accordingly with a special training plan;

**Prototyping**- this involves pilot-testing the service before it is launched to identify problems;

**Publicity** **and** **Resource development**: to support the service

**Evaluation of the service:** to provide information in areas that the service can be improved

Digital reference services have a great role to play in modern day information society. From its historic humble beginning, it has developed into a worldwide accepted standard library service. Digital Reference service began with libraries making their catalogues available for searches on the web and offered ‘Frequently Asked Questions’ (FAQs) that answered standard questions. This evolved into presenting library services on the internet and developing an equivalent to the traditional reference service for the World Wide Web.

However, this is not the only reason for the development of digital reference services. Commercial services, such as “Google Answers”, “Lycos IQ” etc., are competing with library reference services. Therefore, digital reference had to be developed quickly to react to the challenges posed by commercial rivals and the emerging user behaviour. Digital reference services have given libraries immense advantage over search engines and web catalogues: they aim to filter and provide information that the users really require. While search engines provide information based on the syntax and the semantics of a question asked, library reference services provide a third option - pragmatic dimension. Search engines and other navigation instruments on the internet provide object-oriented services; whereas digital reference services provided by trained and highly skilled Reference Librarians offer subject-oriented services. Libraries with elaborate and functional digital reference services are therefore well prepared for the challenges of the information society – in fact, they are even more irreplaceable than before (Chowdhury and Chowdhury, 2003).

**Current Trends and Challenges in Digital Reference Services**

The digital age has heralded an era in which library users rely more on the internet for information and less patrons approach the reference desk for assistance (Tenopir, 2001); there is therefore the need for libraries to adopt modern technologies to facilitate remote communication between users and librarians. In the traditional method, libraries ‘wait’ for users to approach them; the current trend demands that libraries ‘go’ to the users if they must remain relevant. Many libraries especially in the developed world of Europe, North America and parts of Asia have responded to this need by providing reference service via the Internet, or digital reference service, to their users. A study found that 99% of 70 academic libraries offer e-mail reference and 29% offer real-time reference service to users (Tenopir, 2001). The trend is actually towards real – time reference services. Real-time reference tools can range in format from chat technologies to instant messaging. Chat technologies, which enable users to communicate on the Internet with others in real time, have been used to provide digital reference service as far back as 1995 (Shaw, 1996). More recent efforts include the use of commercially available Web-based products such as ConferenceRoom from WebMaster (Antonelli and Tarlton, 2000) as well as custom-built solutions, as in the case of Temple University Libraries' Interactive Reference Project in the United States of America (Stormont, 2001). Other products that promote live interaction between librarians and patrons include Virtual Reference Software and the 24/7 Reference. Instant messaging software products such as AOL Instant Messenger allow librarians to communicate in real-time with patrons through a series of messages sent back and forth. Instant messaging products enable librarians to indicate their availability on a contact list, share URLs and files with patrons, and record sessions. The use of the Global System Mobile (GSM) phones has also facilitated digital reference services. Currently there is ‘SMS Ref’ which is a GSM powered reference service capable of sending required information alerts to patrons.

While real-time reference introduces many benefits to librarians and patrons, it also presents several challenges including the following:

* Online chat has some negative aspects for digital reference which makes it problematic to operate. For example, question negotiation is difficult since the librarian has little knowledge of the user’s status and is short of nonverbal cues. It is also difficult to control interview time effectively in a digital conversation.
* Cost of purchase and maintenance: Software and hardware are expensive to purchase and maintain.
* Staff time: It may not be economical to have somebody wait for questions 24/7 when most questions occur within regular office hours.

In developing countries of Africa, there is the challenge of electric power supply. With incessant power failure, it is very difficult for libraries to offer computer and internet based services. Dependence on power generating plants would place a heavy financial burden on the library; as the purchase and maintenance of such power plants are very expensive. There is the problem of low internet bandwidth. Availability of trained and qualified personnel also poses a great challenge to digital reference services in libraries. Funding and adequate provisions of required infrastructure are part of the challenges faced by libraries in developing countries.

**Conclusion**

Ours is indeed a digital age**.** The use of ICT in carrying out library operations is on the increase all around the world. For libraries to achieve their objectives there is need to run an effective reference service system. The involvement of ICT in reference service is therefore imperative if libraries must attain their goals and be relevant in an age where users have alternatives. The traditional or manual methods of carrying out reference services have not been able to adequately address the needs of users especially in terms of easy and quick access to current and adequate information. Libraries therefore need to equip their reference sections with adequate ICT facilities. Reference librarians also need to acquire relevant ICT skills especially in the use of available ICT facilities in order to provide effective reference service delivery.

**Reference**

Adebayo, O. (2009) Quality Reference Service: The Fulcrum for Users’ satisfaction. In

Current Trends in Library and Information Science. Ago-Iwoye : Olabisi

Onabanjo University Library.

Antonelli, M. and Tarlton, M. (2000). The University of North Texas Libraries' online

reference help desk. In R. D. Lankes, J. W. Collins, III, and A. S. Kasowitz (Eds.),

"Digital reference service in the new millennium" (pp. 197-206). NY: Neal-

Schuman.

Bertot, J, McClure, C and Ryan,J (2001) Statistics and Performance Measures for Public

Library Networked Services. Chicago: American Library Association. 175p.

Berube, L. (2003). *Digital Reference Overview: An Issue Paper from the Networked Services Policy Task Group*. Available at http://www.ukoln.ac.uk/public/nsptg/virtual/ (Accessed on April 15, 2011)

Chowdhury,G and Chowdhury, S (2003) Introduction to Digital Libraries.

London: Facet Publishing. pp. 22-35

Chowdhury,G and Margariti,S (2004) Digital Reference Services : A Snapshot of the Current

Practices in Scottish Libraries. *Library Review*, 53(1), pp.50-60

Das,T, Gurey,P and Saha,N (2009) Evaluation of Current Trends in Reference Services in

Lieu **of** a Model: A Case Study of Central Library, Visva-Bharati. Available at:

<http://www.Crl.du.ac.in/ica109/papers/index_files/ica/-86-171-368-1-Rv.pdf>

(Accessed on April 4, 2011)

Dollah, W.K and Singh D (2005) Digital Reference Services in Academic Libraries.

<http://www.lib.usm.my/elmuequip/conference/documents/ICOL2005/Paper7wan>

(Accessed on April 26, 2011)

Francoer, S (2002) Digital Reference.

Available at: <http://www.teachinglibrarian.org/digref.htm>

(Accessed on June 24, 2011)

Ifidon, S and Ifidon, E (2008) Reference and Information Services in African Libraries.

Ibadan : Spectrum Books Ltd. 175p.

International Encyclopedia of Information and Library Science (2003) Reference Services.

Edited by John Feather and Paul Sturges. 2nd ed. London : Routledge.688p

Katz,W (2002) Introduction to Reference Work, Volume 1 : Basic Information Services.

Boston: McGraw Hill. 504p.

Madu, E.C (2002) Computerised Reference Service and Traditional Printed Reference

Sources: A Comparison of the Old and the New in Library Services. In Information

Science and Technology for Library Schools in Africa. Ibadan : Evi Coleman

Publishers.534p.

Madu, E.C (2004) Technology for Information Management and Service.

Ibadan : Evicole Publications, p.1-2

McClennen, M (2003) Software, Systems and Standards in Digital Reference:

A Research Agenda. <http://www.ip/.org/div/papers/symposium-2002/systems.html>

(accessed on May 15, 2011)

Oyegade,E.A (2000) An Overview of Information Technology in Nigerian Public Libraries.

A Paper Presented at the 10th Biennual Conference of National Association of Library and

Information Science Educators (NALISE) held at the University of Ibadan, 20-21 April,

p.63

Roesch, H (2006) Digital Reference Services: State of the Art in the Focus on Quality,

<http://www.ifla.org/IV/ifla72/index.htm> (accessed on May 11, 2011)

Shaw, E. (1996). "Real-time reference in a MOO: Promise and problems." Available at :

http://www-personal.si.umich.edu/~ejshaw/research2.html (Accessed at September

25, 2001).

Stormont, S. (2001). ‘Interactive Reference Project - Assessment after two years’ in A.S.

Kasowitz and J. Stahl (Eds.), "Facets of digital reference Online]. Available at:

http://www.vrd.org/conferences/VRD2000/proceedings/stormont.shtml

[Acessed on September 25, 2001].

SU, S (2002) ‘Web-based Reference Services: The User Intermediary Interaction

Perspective’in *The Digital Factor in Library and Information Services*. London:

Facet Publishing, pp. 185 – 207

The Free Dictionary (2013) what is Internet?

Available at <http://www.thefreedictionary.com/Internet> (Accessed on May 2nd,2013)

Tenopir, C. (2001). Virtual reference services in a real world. *Library Journal,* 126 (11)

38- 40.

Ukachi, N (2008) Impact of Information and Communication Technologies (ICTs) on Reference

Services: Case Study of Selected Academic Libraries in South-West Nigeria.

*Borno Library, Archival and Information Science Journal*, 7(2), pp.12-23

**ABOUT THE AUTHORS**

**Goodluck I. IFIJEH**  is Serials Librarian at the Centre for Learning Resources, Covenant University, Ota, Ogun State, Nigeria. He has a Master of Library and Information Studies from the University of Ibadan. Goodluck has over thirteen years experience in school, public and academic librarianship. As an academic, he has contributed numerous research articles to both local and international Journals.

**Chidi D. ISIAKPONA** works as a librarian in the Technical Services Unit of the Centre for Learning Resources, Covenant University, Ota, Nigeria. A first class graduate of University of Ibadan, she also holds a Master of Library and Information Studies from the same Institution. Chidi has published articles in both local and international Journals.