

Awareness and Utilization of Digital Information Services in NRCRI Agricultural Library

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Accepted 10 February 2026

The study examined the awareness and utilization of digital information services in NRCRI agricultural library. The study adopted a descriptive survey research design. The sample of the study was 9 librarians of NRCRI agricultural library. Instrument used for data collection was the questionnaire. Mean was used in analyzing data for the study types of digital information services available in NRCRI agricultural library include Bibliographic services, Online repositories, and E-journals. Electronic CD-ROM Database, researchers access digital information services such as Bibliographic Services, Online Repositories and E-Journals. Services such as CD ROM Database, the purposes for which researchers in NRCRI agricultural library utilize digital information services in the libraries include for conducting research, for updating knowledge, for watching online games and videos to chat with friends, for leisure and recreational services, for e-mail services, for scholarship and grants, and for job opportunities and to perform institutes official duties and researchers in the NRCRI library utilized the following digital information services at a high extent: Electronic databases and Bibliographic services. The study therefore recommended that: research institute and library management should acquire more digital information services for their libraries in order to improve both the researchers' access and utilization of those services. Agricultural libraries should make available online services for the accessibility and utilization by research scientists and other library clientele.

Keywords: Accessibility of Digital Information Resources, Utilization of Digital Information Resources, Digital Information Services

Cite This Article As: Okeuhie, NS., McAlbert F., Okereke, AUT (2026). Awareness and Utilization of Digital Information Services in NRCRI Agricultural Library. Acad. Res. J. Health. Inform. Manage. 7(1):1-16

INTRODUCTION

The rapid advancement of digital technologies has *revolutionized* access to information, transforming how individuals and organizations retrieve, process, and utilize knowledge. Digital information services, including online databases, e-libraries, institutional repositories, and open-access platforms, have become indispensable tools in education, research, and professional development. Despite their potential, awareness and utilization of these services remain uneven across different demographics, particularly in developing regions such as Nigeria. Studies indicate that while digital resources are widely available, many users lack the necessary skills or awareness to maximize their benefits (Oyediran-Tidings et al., 2020). This paper explores the current state of awareness and utilization of digital information services, identifies barriers to adoption, and suggests strategies for improvement. Understanding these dynamics is essential for policymakers, educators, and information professionals seeking to bridge the digital divide and enhance knowledge dissemination.

Library is an institution which engages in the collection, processing, preservation and dissemination of recorded information in the various formats most convenient to its target users. It is an institution crucial for promoting literacy, fostering learning and providing access to information as well as serving as the vital community hubs for research, education and cultural enrichment (Jibrin *et al.*, 2025). Meanwhile, Akande (2018) described library as a collection of information materials and the place where the materials are kept for consultation. A collection of Information resources like books in a room without a systematic organization to ease the retrieval does not make a library. Hence, the library is a repository of various forms of recorded information which may be in print and non-print formats such as books, periodicals, reference materials, manuscripts, magazines, theses and gazettes among others and non-printed materials like microforms, films, magnetic tapes, slides, videotapes and data stored in electronic media like discs, CD-ROMS are also found in libraries.

According to Okunoye (2017), investment in libraries is an act of faith in the continuity of life. Therefore, the basic purpose of the libraries is to provide access to information. In order to be able to do this, Ochogwu (2017) added that libraries and other information related organizations provide a variety of information to the society in different physical formats. These ranges from printed sources such as audio-visual materials, films, computerized/machine readable materials to their respective communities which may be staff, researchers and students in order to support teaching, learning and research needs in different libraries such as academic, public, school, national and special libraries like agricultural research institute libraries.

Digital information services in the submission of Aver (2024), connotes those information services which were in print form and converted to non-print form (soft copy) to become accessible through computer machines and other corresponding ICT tools. Digital information services are "library materials produced in electronic format including electronic journals, reference works published online, CD-ROM, bibliographic databases and other web-based services (Ebhonu *et al.*, 2021). On the other hand, Popoola in Adamu (2024) defined digital services as online information services, including bibliographic databases, electronic reference, books, search engines for full text collection and digital collection of data sets.

Digital Information Services as perceived by Umar and Ibrahim (2023) referred to the provision of access to information in a digital format, often through online platforms, allowing users to search, retrieve, and utilize data such as articles, documents, multimedia content, and databases for effective utilization of library resources. From the above definitions and in the context of this study, digital Information services (DIS) can be described as information services provided in electronic medium to facilitate research and play a complementary role to print library resources. According to Jibrin *et al.*, (2025), library resources are those materials, both print and non-print, found in libraries which support curricular and information needs.

Library resources in the viewed of Jibrin *et al.* (2025), comprises of variety of materials and services that libraries provide to support research, learning and information access. These resources of the library may include: Print Materials such as books, journals, magazines, newspapers, and reference materials. Also, digital resources such as E-books, online databases, electronic journals, and digital archives and multimedia which include: DVDs, CDs, audiobooks, and other audiovisual materials. Also, special collections like: manuscripts, rare books and unique archival materials as well as research tools such as: bibliographies, catalogs and citation guides including services like: interlibrary loans, reference assistance, workshops, and instructional programs. Library resources in the submission of Okeuhie *et al.* (2021) are all the items purchased by a library or library system to satisfy the information needs of its users such as print and non-print resources. It also encompass a wide array of materials both physical and digital materials available for accessibility and utilization within or outside a library.

Accessibility of digital information services is the process of making scientific information readily available and researchable for a particular researcher for utilization of the services and the resources which enables researchers to be effective and efficient in utilization of information resources for their research activities (Tofi & Fanafa, 2019). Access to library resources and digital services by the researchers are primarily through the library's website, using online databases, e-books, and journals, and through specialized platforms like Google Scholar, JSTOR, or Project MUSE, often requiring authentication for access (Achugbue *et al.*, 2023). In line with this assertion, it becomes imperative for agricultural research institutes to know how to make agricultural information and services readily accessible and conveniently usable to effectively meet the information needs of researchers. Odunlade (2017) noted that librarians of contemporary time should not be regarded as custodians of library materials but exploiters of information. This was an assumption that digital information services should be accessible and used purposefully by researchers. For users to be able to access and effectively use digital services, they must also have adequate skills for retrieving information and to evaluate the outputs of the search process. In this regard, for Nigerian Agricultural Research Institutes (NARIS) to make significant impact in international research and publications in this digital information age through researchers utilization of digital information services and library resources (Omehizor *et al.*, 2019).

Utilization therefore implies putting something such as a tool, skill or materials to a particular purpose. Also, it can be

described as the act of getting the best out of something. To use something, be it a thing, phenomenon or situation, entails getting out the best out of the purpose for which that thing, phenomenon or situation was established (Haruna, 2024). Interestingly, the term utilization in the context of this study referred to the practical use of information sources of a particularly library such as agricultural research institute libraries by users (students, lecturers, researchers and farmers) to achieve specific goals, such as learning, teaching and research. Therefore, utilization of library resources encompasses the effective and efficient use of all library materials and facilities, including books, journals, databases, computers, and other resources (Haruna, 2024). The primary goal of library resource utilization is to enable users to access and utilize information effectively to achieve their academic, research, and personal goals through digital information services and other medium.

Digital information services are utilized by researchers to access and share information, collaborate, and conduct research efficiently, benefiting from the convenience, cost-effectiveness, and vast resources available online. Digital information services allow researchers to easily find, access, and retrieve information from a wide range of sources, including databases, journals, articles, and online repositories. They facilitate collaboration among researchers by enabling them to share documents, data and research findings, fostering knowledge exchange and joint projects by researchers in different libraries including agricultural research institute libraries (Kabiru & Usman, 2020).

Despite the advantages of digital information services in research institutes, several literature have noted that there are a number of generally recognized constraints that hinder the effective utilization of the digital information services DIS among researchers. Cyprian in Gupta and Singh (2019) opined that researchers lack skills (competence) to search information in digital environments. These have greatly affected creativity and innovations in information centres. Some of these centres have adequate digital resources which are greatly being underutilized largely due to lack of information technology (IT) skills by researchers and students. Furthermore, absence of related infrastructural facilities in some of the information centres is a part of the challenges facing researchers when they want to access and utilize digital information and services (Omosekejimi *et al.*, 2019). Consequently, it is on this backdrop that prompted the needs to examine with empirical evidence digital information services and utilization of library resources in research institute libraries in South-South, Nigeria.

STATEMENT OF THE PROBLEM

Agricultural libraries play a pivotal role in supporting research, education, and practice in the agricultural sector by providing access to critical information resources. With the rapid advancement of digital technologies, these libraries have increasingly adopted digital information services (e.g., e-journals, databases, institutional repositories, and online extension materials) to enhance accessibility and efficiency.

However, despite the availability of these digital resources, there are concerns regarding: Limited Awareness: Many users (researchers, students, farmers, and extension workers) may not be fully aware of the digital services offered by agricultural libraries. Even when aware, users may not effectively utilize these services due to factors such as lack of digital literacy, inadequate training, or perceived irrelevance. barriers such as poor internet connectivity, subscription costs, and lack of user-friendly interfaces may hinder optimal utilization in agricultural libraries

Nevertheless, thorough study of published research works show that enough research has been carried out on digital information services, but no study has been carried out on availability, accessibility and utilization of digital information resources in NRCRI agricultural library. This shows a problem situation that should be addressed. It is based on this that this study was conducted to examine the awareness and utilization of .digital information resources in NRCRI agricultural library.

Objective of the Study

The general purpose of this study is to examine awareness and utilization of digital information services in NRCRI agricultural library. Specifically, this study sought to:

1. ascertain the types of digital resources available in NRCRI Agricultural library.
2. ascertain extent of awareness of digital information services by users in NRCRI Agricultural library.
3. identify purpose of digital information services in NRCRI Agricultural library.
4. Ascertain extent of utilization of digital information resources in NRCRI Agricultural library.

RESEARCH QUESTIONS

The following research questions were addressed in this study;

1. What are the types of digital resources available in NRCRI Agricultural library?
2. What is the extent of awareness of digital information services by users in NRCRI Agricultural library?
3. What is the purpose of digital information services in NRCRI Agricultural library?
4. What is the extent of utilization of digital information resources in NRCRI Agricultural library?

REVIEW OF RELATED LITERATURE

Digital information services encompass a broad range of platforms and tools designed to facilitate access to electronic resources. These include academic databases like JSTOR and ScienceDirect, institutional repositories, digital libraries, and government e-portals. Such services provide users with instant access to scholarly articles, e-books, research reports, and multimedia content, eliminating geographical and temporal constraints (Zhang & Liu, 2019). The shift from traditional print-based resources to digital formats has been accelerated by the increasing penetration of the internet and mobile technologies. However, the effectiveness of these services depends on user awareness, digital literacy, and institutional support. In Nigeria, for instance, while universities and research institutions subscribe to numerous digital databases, many students and faculty remain unaware of their availability (Adeleke & Emeahara, 2021). This gap underscores the need for targeted awareness campaigns and training programs to enhance utilization rates.

Digital information and services are those services that are delivered digitally through computer networks. Digital information services are technologically oriented, requiring less space for storage with easy accessibility to users and researchers. The resources of libraries are accessible and utilized from any location across the world with core needs of electricity and network availability for the Internet (Haruna, 2024). On the other hand, digital information services according to Ya'u' (2020) are information access services in which patrons enquire answers through electronic means such as email or online forms. It is responsible for the provision of customer information services and the provision of access to various information resources as well as serving as digital preservation.

Meanwhile, Gladeny (2019) stated that digital library services are also varied, but typically serve the same roles that traditional collection development and access services have in physical libraries: selection, specialization and administration. Paltridge (2022) opined that digital library services can be provided digitally by physical libraries, and services provided by digital libraries. The digital library provides more choices, enhances flexibility and will often provide the learner with instant feedback. It allows researchers to select learning materials and is convenient to access at any time and at any place (Lee, 2015). Tella *et al.* in Akidi, (2021) argued that the researchers' ability to find and retrieve information effectively is a transferable skill useful for their future life as well as enabling the positive and successful use of the digital resources while at school. They noted that in this digital era, any student at the higher level who intends to achieve better outcomes should have the ability to explore the digital environment. This entails that in as much as these resources are indispensable for research, their effective utilization requires special skills.

The world is presently witnessing the birth of digital data and communications networks as a major trend in the information market place. With the evolution of digital data and telecommunications networks, the so called digital revolution has come to bear immensely on socio-economic, cultural as well as developmental transformation of individuals, institutions, nations and the international community. With these new innovations, many libraries are digitalizing their resources (American Library Association, 2016). The emergence of digital information resources and services in libraries began in the year 1935 in the United States of America, the University of Texas, Boston public library Montclair and New Jersey in 1941. In the last decades, computer processing and electronic information has become a routine in the technologically developed world. Computers and other electronic devices are applied for the generation, storage and retrieval of information from manuscript preparation (using word processors) through composing and abstracting. The benefits of digitalization of information resources to include: Universal Access i.e, people from all over the world gained access to the same information as long as an internet connection is available (Dadzie, 2015).

The foundation stone for digital information resources as indicated by Aina in Bello (2020) may have been laid in 1945 when Vannerer Bush envisioned an automated system that would store information including books, personal records and articles. Also in 1950 Douglas Englebest hypothesizes that computers could be used to automate symbol-handling tasks and thus help people think faster better about more complex problems. Hartley (2013) observes that digital information resources started with experimental computer systems developed for the storage and retrieval of bibliographic data during the 1960's. By the end of the decade, some major bibliographic databases were available in magnetic tapes. According to Oladipo and Adebayo (2017), the Internet was the result of some visionary thinking by people in the early 1960s who saw great potential value in adding computers to share information on research and developments in scientific and military

fields. Licklider of Management Information Technology first proposed a global network of computers in 1962 and moved over to the Defence Advanced Research Projects Agency (DARPA) in late 1962 to head the work to develop it.

During the 1970s and 1980s, the availability of machine readable data resulted in the emergence of interactive computing and computer networks which enabled the online information industry to emerge. In the 1980s academic libraries began to transfer from card catalogues to online public access catalogues (OPAC). This enabled end users to search databases for information. The CD-ROMs emerged at about the same time with OPACs as information delivery vehicles. Both OPACs and CD-ROM enabled the searching of digital information resources. Then came the www. Tim Berners-Lee created the World Wide Web (www) in 1989. The subsequent development of the Mosaic browser in 1992 led to widespread use of the web beginning in 1993. The graphical interface and the later development of web search engines made resources on the internet more accessible to average patrons. The www emerged and made information available in the form of texts, images, sound etc. The information in the web is structured to facilitate browsing. It provides access to quality controlled digital information resources and services such as e-journals, e-books, etc. Each technological development in library digital information resources during the 20th century was intended to make access to resources more direct, convenient and timely for the user.

The adoption of digital information services has been made possible through the digitalization of library materials. The services have tremendously transformed information handling and management in all spheres of human endeavour including academic environments and research institutes. According to Adeyinka *et al.* (2013) digital resources encompass those objects that employ rich media and span text, images, sound, maps, video and many other formats. More so, Digital Information Resources are described as those information resources which before now were in print form, but currently found in non-print, form (soft copy) and are accessible through computer machines and other corresponding ICT tools. These resources include music, games, stories, articles from magazines and other published resources that are in soft copies. They also often include sound animated graphics, pictures and movies. The use of these resources has contributed to reshaping information retrieval process and access to information (Sejane, 2017).

Digital Information Resources and Services of an institution's library have a lot of positive effects. The digitalization promotes access to information for the end user such as researchers, lecturers and undergraduates. It also enhances the status of the institution engaged in the initiative at the global level. A digital information resource of African origin involves diverse kinds of materials (Oladipo & Adebayo, 2017). The library materials that can be digitalized: published articles, theses, dissertations, conference papers, reports, technical and working papers, photographs, newspapers, government official publications, data statistics, artefacts, maps, charts, artistic paintings, historical documents, African documents and manuscripts. Therefore, importance of digital libraries in Sarea of information and knowledge provisions to human resources in all spheres of life cannot be overemphasized. This serves as a tool for improvement and development, especially in a situation, where attention is drawn to the academic contents and ways of digitalizing and preserving them (Sejane, 2017). This implies that through the use of digital resources, researchers and students now have access to global information resources, particularly the Internet for their scholarly intercourse.

Types of digital information services available in agricultural research institute Libraries

The various types of digital information services available in agricultural research institute libraries include:

Digital Document Delivery Service (DDS) or Document Supply Service: This service is concern with the physical or electronic delivery of a document from a library collection to the residence or place of business of a library user, upon request. Fundamentally, the Digital Document Delivery Service (DDDS) empowers a library to utilize duplicates of research papers or other research report, from different libraries (Haruna, 2024). These records could be diary articles or different archives in computerized design. They are essentially in Portal Document Format (PDF) and they conveyed to library clients' work areas. A Digital Document Delivery Service (DDDS) provides users with access to documents, such as articles, books, or reports, from a library or other source, either physically or electronically, upon request. Researchers and other users can request documents through an online form or by emailing the library with the necessary bibliographic details. The library then identifies, locates, and procures the requested document, and delivers it to the user or researcher either physically or electronically (Haruna, 2024).

Digital Reference Service: The term "reference" can be described as the task of assisting library users in finding information, answering questions, and otherwise fulfilling users' information needs. Digital reference otherwise known as virtual reference is a service by which a library reference service is conducted online, and the reference transaction is a computer-mediated communication (Isaac, 2017). It is the remote, computer-mediated delivery of reference information provided by library professionals to users who cannot access or do not want face-to-face communication. Oluwabiyi (2017)

stated that digital reference service is an improvement on the traditional reference service to meet the information needs of users in a changing technological environment. He maintained that digital reference can provide support for users who find online tools and resources unfamiliar, difficult to learn, or insufficient to answer their information needs. It can provide valuable user and researcher in agricultural research institutes with feedback to collection builders so that they may better tailor their resources and maximize their investment in content creation.

Digital reference includes the use of both synchronous (IM, videoconferencing) and asynchronous communication (texting and email). Thus, "synchronous virtual reference" refers to any real-time computer-mediated communication between patron and information professional while asynchronous virtual reference is all computer-mediated communication that is sent and received at different times. Digital reference can provide support for users who find online tools and resources unfamiliar, difficult to learn, or insufficient to answer their information needs. It also provide valuable user feedback to collection builders so that they may better tailor their resources and maximize their investment in content creation (Fausat *et al.*, 2020).

The digital reference service allows individuals to submit questions to library staff using synchronous (real-time) or asynchronous technology. Library web pages and "webliographies" are new forms of delivery for the products of indirect reference service. Digital reference service provides many benefits for libraries and their users. A librarian can provide digital reference services regardless of location or person using global information. Digital reference service also adds overall vale to library services by extending reference service to physically challenged users who cannot visit or avail the library facilities due to varied reasons (Fausat *et al.*, 2020).

Electronic Journals: E-journals otherwise known as electronic journals are digital versions of traditional scholarly journals, published online and accessible through electronic networks, offering quick dissemination and access to articles without the need for paper printing and mailing. Electronic journals form a large part of the collection of a library for providing web based services (Haruna, 2024). They are available in various electronic formats such as PDF, ASCII, bitmaps, Postscript, SGML and HTML. Library services may be delivered to patrons via CD-ROM, email or just through the web. A lot of journals are available in electronic form of which some are full text and some include just bibliographic information with abstract. The main benefits of electronic journals over the print one is that they are always updated and easy to access but the challenge which could also be regarded as the disadvantage is that breaching of copyright law (Haruna, 2024). According to Deshpande (2019), some societies and associations both locally and internationally have converted their own contents into digital format and develop digital libraries through which users can get access to all their publications such as newsletters. The services are made available to the members of society, researchers or associations by subscription.

Electronic Book: An e-book or electronic book is an instantly accessible book with digital pages designed to be read on a computer, tablet, or mobile device. It is also described as a book publication made available in electronic form, consisting of text, images, or both, readable on the flat-panel display of computers or other electronic devices (Haruna, 2024). A digital book service offer platforms or systems that provide access to digital versions of books, often called e-books. These services allow users to read books on various 27 digital devices such as tablets, smartphones, and e-readers. Digital libraries are providing books in electronic form which can be read on the screen and download them in Portal Document Format (PDF) for study, teaching, learning and research purposes (Sabouri *et al.* 2019). Through e-books users and researchers worldwide including agricultural research institutes can access a wide range of books from anywhere with an internet connectivity. The books can be store on devices, making it easy to carry multiple books without the physical bulk. Many services offer features like adjustable font sizes, search functions, best sellers, classics and niche genres. Examples of popular digital book service include Amazon Kindle, Apple Books and Google Play Books.

Electronic theses and Dissertations: These are digital versions of postgraduate students' research works, offering enhanced accessibility, multimedia integration, and easy search ability, replacing traditional printed formats. The Digital Theses and Dissertations Service (DTDS) typically provide platforms that provide access to electronic versions of academic theses and dissertations by researchers in different libraries including agricultural research institute libraries (Jibrin *et al.*, 2025). These services aim to promote the creation, dissemination and preservation of scholarly work. However, libraries are now providing theses and dissertation online via digital repositories. They do this by converting the hard copies or asking postgraduate students to submit their research works in CD-ROM (Deshpande, 2019). These digital services by libraries provide global access to a vast collection of theses and dissertations, ensure the long-term preservation of academic research works, agricultural researchers and other users can search for specific topics, authors, or institutions and also offer open access to their collections, making research works freely available to the public and agricultural researchers.

Online Public Access Catalogue (OPAC): This is a computerized library catalog accessible online, allowing users to search for materials by title, author, subject, or keyword without needing librarian assistance. An online public access catalog (OPAC) can be described as a computerized library catalog (Ozoemelem, 2022). Salawu (2020) viewed it as a database of bibliographic records describing the information resources in a library that are accessible to the public through public terminals. It is noted that with the emergence of the Internet, most libraries including that agricultural institutes have made their OPAC accessible from a server to users and other libraries globally. The author equally maintained that as a result of the availability of call numbers that are 22 displayed for accessibility through OPAC, it has become a standard form of bibliographic access globally, and databases are built based on it. Thus, the WWW has also enabled libraries to make their catalogs freely available to a wider audience and serves as an online cataloguing tool for catalogers, thereby enhancing bibliographic control. According to Sabouri et al. (2019), the online public access catalogs service (OPACS) is designed to the following functions; to provide access to literature available in the library, to provide multi- points and multi person access, to tell about, what books have been lent, and what books are stock in the library thereby enhancing the work of the researchers.

Digital Selective Dissemination of Information (DSDI): Also known as a "current awareness service," is a system that automatically delivers relevant information to users and researchers based on their specific interests and preferences, effectively acting as a personalized information filter (Ozoemelem, 2022). It is a system that attempts to facilitate users' information retrieval and filtering. It is also an information alerting service designed to keep individuals and researchers in different field and agricultural institutes informed of new developments in their particular fields of interest by providing at regular intervals a listing of citations (Akhar, 2019). The goal is to deliver new information to users via library blog, library website, social media, text messaging, emailing and others. Clearly, e-SDI could give great benefit to users like saving the users time and effort and allowing them to concentrate on the specific information which relates to their interests. It provides regular updates on new developments in their fields of interest via various channels, saving time and effort. e-SDI allows users and researchers to focus on specific information related to their interests, enhancing their overall library experience (Jibrin *et al.*, 2025).

Online Repositories: These are digital archives that collect, manage, preserve, and disseminate digital content, often scholarly works, accessible to both internal and external users. They can store various formats and types of content, including research papers, data, and e-learning materials. Online repositories serve as a centralized platform for managing and storing digital content, making it accessible to a wider audience. They help ensure the long-term preservation of digital content, make research and other scholarly outputs readily available to a wider audience, facilitate the sharing and dissemination of knowledge and can facilitate resource sharing and collaboration between researchers and institutions.

Purposes for which researchers in research institutes utilize digital information services

Digital information services in agricultural research institute libraries are very crucial for researchers. This is because it empowers researchers by providing access to a vast array of resources, facilitating access to information on livestock, crops and other related agricultural activities enabling the discovery of new knowledge through online databases, journals, and many others (Abubakar & Akpor, 2019). Agricultural research institute researchers also use digital information services to access to a wider range of Information such as online databases, e-journals, and e-books, provide researchers with access to a vast and diverse collection of information that may not be readily available in traditional print formats (Roopa & Krishnamurthy, 2016).

They also use the digital services for the purpose of collaboration enable researchers to collaborate on projects, share data and findings, and stay up-to-date with the latest research in their fields. Allow researchers to access information quickly and easily, saving time and effort. Sola *et al.*, (2016) also stated that researchers employed digital information service to enhanced research productivity: Bygetting access to a wider range of information and contribute to increased research productivity and higher-quality research outcomes. Facilitating literature reviews, Digital services offer advanced search capabilities, enabling researchers to conduct targeted and efficient literature reviews. Online public access catalogs (OPACs) allow researchers to browse and search library collections quickly and easily. The also use the services for purpose of getting information on research methodology and data analysis. Digital information services provide tools and resources for data analysis, helping researchers to analyze and interpret their findings (Aina, 2014).

Digital information services facilitate the dissemination of research findings through online publications, repositories, and other channels as well for information on scholarships and grants. These are both forms of financial aid, but scholarships are typically merit-based and awarded for academic achievements, while grants are generally need-based and awarded to those who demonstrate financial need (Abubakar & Akpor, 2019). Digital information services play a

crucial role in preserving research materials in digital formats, ensuring their long-term accessibility and integrity usage by researchers especially for conducting research which involves a systematic process of inquiry, encompassing identifying a research question, reviewing existing literature, developing a methodology, collecting and analyzing data, and drawing conclusions, ultimately leading to a report or publication (Akpojotor, 2022). This implies that digital information services are utilized by researchers for diverse purpose in agricultural research institutes but the extent of the utilization of these services remain uncertain thus the need for this study.

Utilization of digital information services in research institutes

The advent of digital information services has been a blessing to research institutes and information centres. The significant changes associated with digital information and services are the shift towards end user searching, leading to big increase in the total number of searches carried out by researchers in research institutes (Elonye, 2017). However, utilization of digital information and services in research institutes has enabled researchers to access instantly, easily and conveniently a substantial amount of current and retrospective information. Aboluwarin in Okeuhie et al. (2021) reported an increase in library use when digital information services was introduced and has made staff more knowledgeable about a variety of operating systems, hardware configurations, software packages and interface designs. Therefore to utilise the growing range of digital information services, users (researchers) must acquire digital skills necessary to exploit them using a variety of online databases.

Currently research institutes have realized the potentials of digital information services, hence more institutes are embracing it to enhance the quality of research. This is due to the fact that library automation is making profound changes to the research environment, as the librarians make available to the user community a wide range of research and scholarly information (Umukoro & Tiamiyu, 2016). According to Schutte in Unegbu and Onyegiri (2020) utilization of digital information and services have led to the shift from an emphasis of the book and journal collection to an emphasis on information services or from ownership to access. He further argued that the shift has been necessitated by new trends in the provision of higher education and developments in digital information storage and their accessibility over computer networks. The developmental trends which impact on the provision of information services include current trends in published knowledge whereby more information is made available in electronic format.

The use of online information services and retrieval systems require a basic knowledge of computing and searching skills. This is because library databases use web based technologies that may not be very different from the general web based resources. The skill required to maximize the potentials of digital information services are much greater than those required to search printed sources. These skills include; a knowledge of the structure of the database and the kind of information which may be implanted into the computer by the searcher as well as an understanding of the ways in which the institutions are linked with one another (Sohail & Ahmed, 2020).

Researchers are increasingly utilizing library resources through the available digital information services. However, Pullinger in Kabiru and Usman (2020) noted that the extent to which the use of e-journals becomes part of normal research practice depends not only on the discipline concerned but also on the role and status of the researcher, the services and on the specific information needs. Utilising digital library resources is crucial for enhancing research activities. The importance of utilisation of digital library services for research activities of researchers as per Chore and Salwe (2019) are as: Preservation of the precious records, exceptional and extraordinary compilations of libraries, archives and museums, guarded informational sources, provision of downloading as well as printing, provision of fast accessibility to the assets of libraries which are universally located by means of automated enhanced catalogues, helping in locating physical as well as digitized accounts of scholarly articles and books by means of solo interface, optimization of search, possibility of concurrent investigations on the internet, preparation of commercial databases, and library collected works.

Furthermore, Warr and Hangsing (2020) highlighted importance of the use of digital libraries as removing physical peripheries since digital library is not required to visit the library in a physical form and people or groups of people can get access to the similar data, provided that the internet connection is readily available. Also, provide accessibility to a more affluent information and that too in a much better organized format which means that one can conveniently shift from the record to the specific book then to a specific chapter and so on. Recovery of information to researchers accessing digital libraries are capable of using any search term (word, phrase, title, name, subject) for searching the complete collection, digital libraries can offer extremely useful user friendly interfaces, through clickable accessibility to its content (Okeke *et al.*, 2015). Based on this, the study focus on digital information services and utilization of library resources by researchers in agricultural research institutes libraries in South-South, Nigeria.

RESEARCH METHODS

This chapter discusses the method and procedure that was employed in carrying out the study. Method of Data Analysis was the mean. The study adopted descriptive survey research design. The population of this study was 9 professional librarians in NRCRI agricultural library. There was no sample for the study; hence the population was manageable by the researcher.. This is called "Census study". According to Nworgu (2018), when the population of the study is small or manageable, the entire population will be used for the study. The instrument used for data collection was the questionnaire

The data collected were analysed using mean. Using a four point scale of 2.50 as cut off point which means that mean score of 2.50 and above was accepted, while mean below 2.50 was rejected.

RESULTS AND DISCUSSION

The data obtained for this study were analyzed and presented based on the research questions. 9 questionnaires distributed were duly completed and returned. Which recorded a return rate of 100%? Analysis was based on the returned questionnaire as indicated on the tables below.

RESULTS

Research Question One

What is the types of digital information service available in NRCRI agricultural library?

Table 1. Mean response of Types of Digital Information Services Available in NRCRI Library Listed Below: = 9

S/N	Items	SA	A	D	SD	\bar{x}	RMK
1	CD-ROM Database	1	2	4	2	2.22	D
2	(OPAC)	2	2	2	3	2.33	D
3	Electronic books	2	1	4	2	2.33	D
4	Bibliographic services	3	3	1	2	2.78	A
5	Online repositories	2	4	1	2	2.67	A
6	E-Journals	4	2	2	1	3.00	A
7	Online Search services	2	2	2	3	2.33	D
8	Virtual reference services	2	1	4	2	2.33	D
Cluster Mean						2.50	A

Cluster Mean = 2.50

The data presented in Table 5 above showed that cluster mean of the responses of staff of NRCRI library of all the 8 items is 2.50 (cluster mean), which is greater than the criterion mean of 2.50 on 4-point rating scale. This indicates that staff in NRCRI library agreed that items listed in table 5 above are the digital information services available in NRCRI library.

Research Question 2

To what extent are researchers aware of digital information services in NRCRI agricultural library?

Table 2 - The results of the responses are presented in in Table 2.

Table 2. Mean response of the Extent Researchers awareness of digital information services in NRCRI agricultural library.

S/N	Items	SA	A	D	SD	\bar{x}	RMK
9	CD-ROM Database	1	2	4	2	2.22	LE
10	(OPAC)	2	2	2	3	2.33	LE
11	Electronic books	2	1	4	2	2.33	LE
12	Bibliographic services	3	3	1	0	2.56	HE
13	Online repositories	2	2	2	3	2'56	HE
14	E-Journals	4	2	2	1	3.22	HE
15	Online Search services	2	3	3	1	2.33	HE
16	Virtual reference services	2	1	4	2	2.33	LE
	Cluster Mean					2.49	HE

Cluster Mean = 2.93

The data presented in Table 2 above showed that cluster mean of the responses of staff of NRCRI library of all the 8 items is 2.49 (cluster mean), which is lesser than the criterion mean of 2.50 on 4-point rating scale. This indicates that staff in NRCRI library agreed that items listed in table 5 above are not digital information services in NRCRI agricultural library.

Research Question 3

What is the purpose for which researchers in research institutes utilize digital information services in NRCRI agricultural library?

The results of the responses are presented in Table 3.

Table 3. Mean response of librarians in NRCRI library on purposes for which researchers in NRCRI agricultural library

S/N	Purposes for the utilization of digital information services	SA	A	D	SD	\bar{x}	RMK
17	I utilize digital information services when conducting research	4	3	2	0	3.22	A
18	I utilize digital information services to update my knowledge	5	2	1	1	3.22	A
19	I utilize digital information services for watching Online Games and Videos	6	2	1	0	3.56	SA
20	I utilize digital information services to chat with friends	3	3	3	0	3.00	A
21	I utilize digital information services for leisure and recreational services	2	3	4	0	2'78	A
22	I utilize digital information services for job opportunities	7	2	0	0	3.78	SA
23	I utilize digital information services for e-mail services	2	3	3	1	2.67	A
24	I utilize digital information services for scholarship and grants	2	4	1	2	2.67	A
	Cluster Mean					3.11	A

Cluster Mean = 3.11

The data presented in Table 3 above showed that cluster mean of the responses of staff of NRCRI library of all the 8 items is 3.11 (cluster mean), which is greater than the criterion mean of 2.50 on 4-point rating scale. This indicates that

staff in NRCRI library agreed that items listed in table 5 above are .purposes for which researchers in research institutes utilize digital information in NRCRI library

Research Question 4

To what extent do researchers utilize digital information services available NRCRI agricultural library?
The results of the responses are presented in Table 4.

Table 4. Mean response of on the extent researchers utilize digital information services available in NRCRI agricultural library

S/N	Extent of the utilization of digital information services	SA	A	D	SD	\bar{x}	RMK
25	CD-ROM databases	1	2	4	2	2.22	LE
26	E-Journals	1	2	5	1	2.33	LE
27	Electronic databases (TEEAL, Agora, Hinari, etc)	3	2	3	1	2.78	HE
28	Electronic books	2	1	4	2	2.33	LE
29	Bibliographic services	2	3	4	0	2'78	HE
30	Online Search services	2	2	2	3	2.33	LE
31	Visual Reference Services	2	1	4	2	2.33	LE
32	Online Public Access Catalogue (OPAC)	2	2	2	3	2.33	LE
	Cluster Mean					2.43	LE

Cluster Mean = 2.43

The data presented in Table 4 above showed that cluster mean of the responses of staff of NRCRI library of all the 8 items is 2.43 (cluster mean), which is lesser than the criterion mean of 2.50 on 4-point rating scale. This indicates that staff in NRCRI library agreed that items listed in table 5 above were utilized at low extent in NRCRI library

SUMMARY OF FINDINGS

The major findings of this study are that:

1. types of digital information services available in NRCRI agricultural library include Bibliographic services, Online repositories, and E-journals. Electronic CD-ROM Database. OPAC, Electronic books, Online Search services and Virtual reference services were unavailable.
2. researchers are aware of digital information services such as Bibliographic Services, Online Repositories and E-Journals. Services such as CD ROM Database, OPAC, Electronic Books, , researchers in NRCRI agricultural library are not aware of the following digital information services: Online Search services. and visual reference services
3. the purposes for which researchers in NRCRI agricultural library utilize digital information services in the libraries include for conducting research, for updating knowledge, for watching online games and videos to chat with friends, for leisure and recreational services, for e-mail services, for scholarship and grants, and for job opportunities and to perform institutes official duties
4. researchers in the NRCRI library utilized the following digital information services at a high extent: Electronic databases and Bibliographic services. Electronic books, CD-ROM, E-journals, online search services, Virtual Reference services, and OPAC were utilized at a low extent.

DISCUSSION OF FINDINGS

The discussion of results is based on the research questions that guided the study.

The types of digital information services available in research institutes libraries

The results of this study showed that the types of digital information services available in NRCRI agricultural library include E-journals, Bibliographic services, online repositories, while majority of them such as CD-ROM Database, Electronic books, Online Search services, , Online public access catalogue (OPAC), Virtual reference services, were unavailable. The results indicated that only very few of the digital information services were available in NRCRI agricultural library whereas majority of them were not available. This results supports tyhat of Jibrin et al. (2025) who discovered that digital information services that should be available in libraries were DVD, CD, E-books, E-Journals, Digital archives and Online databases among others but lamented that most of them were not available in many libraries.

Awareness of digital information services in NRCRI Agricultural Library

It was found from the study that researchers are aware of digital information services such as Bibliographic services, Online Repositories and E-journals.. NRCRI library staff were not aware of Digital information services like CD ROM, OPAC, E-Books, Online search services and visual reference services.. The result is in conformity with that of Okongo (2016) who in a similar study found that majority of researchers rarely use library to access digital information resources probably due to their being unaware of such resources in the library.

The purposes for which researchers in research institutes utilize digital information services in the libraries

The results from the study showed that the purposes for which researchers in NRCRI agricultural library utilize digital information services in the libraries include for conducting research, for updating knowledge, for leisure and recreational services, for e-mail services, for scholarship and grants, and for job opportunities. The result is in agreement with that of Abdullahi *et al.* (2020) who found that many universities basically establish digital information services in the libraries for many purposes among which is for effective, reliable and adequate library information dissemination.

Researchers' utilization of digital information services available in research institute libraries in South-South, Nigeria

The results from the study revealed that researchers in NRCRI library utilized digital information services such as E-data bases and bibliographic services at a high extent. CD-ROM databases, E-Journals, Electronic databases (TEEAL, Agora, Hinari, etc), Electronic books, Bibliographic services, Online Repositories, Virtual Reference services, were utilized at a low extent. The result is in agreement with studies by Tofi *et al* (2020), and Haruna (2024) which reported low use of digital information services in university libraries in Benue state and Ahmadu Bello University Zaria respectively. Okongo (2016) who also recorded low extent utilization of digital information services in a separate study blamed it to some factors ranging from lack of adequate information skills, lack of awareness and training as well as poor information infrastructure.

CONCLUSION

The study examined accessibility and utilization of digital information services in NRCRI agricultural library Based on the analysis carried out and the results of the study, it could be concluded that types of digital information services available in NRCRI agricultural library include Bibliographic services, Online repositories, and E-journals. Electronic researchers access digital information services such as Bibliographic Services, Online Repositories and E-Journals. The purposes for which researchers in NRCRI agricultural library utilize digital information services in the libraries include for conducting research, for updating knowledge, for watching online games and videos to chat with friends, for leisure and recreational services, for e-mail services, for scholarship and grants, and for job opportunities and to perform institutes official duties researchers in the NRCRI library utilized the following digital information services at a high extent: Electronic databases and Bibliographic services.

LIMITATIONS OF THE STUDY

The findings of the study was limited by the following factors: The researcher had planned to extend this study to other agricultural research institutes in Nigeria since they have libraries that offer digital information services, but could not due to economic constraints.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations are made;

1. The research institute and library management should acquire more digital information services for their libraries in order to improve both the researchers' awareness and utilization of those services.
2. Agricultural libraries should make available online services for the accessibility and utilization by research scientists and other library clientele.
3. The Administration of Agricultural Research Institutes should organise regular sensitizations to researchers in the institute about the purposes and benefits derivable from the use of digital information services.
4. Agricultural research institutes should organize regular trainings for researchers and every category of Librarians on effective use of digital information services for research and other related purposes.

SUGGESTIONS FOR FURTHER STUDIES

1. Comparative study of availability and utilization of digital information service in University Libraries and Agriculture Research Institute libraries in Nigeria.
2. Awareness and utilization of digital information services in polytechnic libraries in Abia State.

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